**PROJECT MANUAL**

**For:**

**HUMBOLDT COUNTY**
# FERNDALE VETERANS MEMORIAL BUILDING HVAC UPGRADES PROJECT

**COUNTY OF HUMBOLDT**
**Project Number: 170250**

*Prepared by:*

HUMBOLDT COUNTY PUBLIC WORKS
Jake Johnson, Architect


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**PROJECT SPECIFICATIONS**
**To Accompany Project Plans for the**
**Ferndale Veterans Memorial Building HVAC Upgrades Project**
**County Project Number: 170250**

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NOTICE IS HEREBY GIVEN that sealed bids are invited by the Department of Public Works of Humboldt County, a public body, corporate and politic, for the performance of all the work and the furnishing of all the labor, materials, supplies, tools, and equipment for the following project:

**CONSTRUCTION OF:**
**FERNDALE VETERANS MEMORIAL BUILDING HVAC UPGRADES PROJECT**
**COUNTY OF HUMBOLDT**
**PROJECT NUMBER: 170250**

Pursuant to the Contract Documents on file with the Department of Public Works of Humboldt County.

A pre-bid meeting is scheduled for 2:00 p.m. Pacific Time, **August 27th, 2024** at the Ferndale Veterans Memorial Building, 1100 Main Street, Ferndale, California. Contract Documents, Plans and Specifications will be available on **August 13th, 2024**.

Each Bid must be contained in a sealed envelope addressed as set forth in said Bid Documents, and filed at the office of the Clerk of the Board of Supervisors of Humboldt County, 825 5th Street, Room 111, Eureka, California at or before 2:00 P.M., Pacific Daylight Time, on **September 10th, 2024**. All Bids will be publicly opened and summary amounts read aloud. The officer whose duty it is to open the Bids will decide when the specified time for the opening of Bids has arrived.

Plans and Specifications and other Contract Document forms will be available for examination upon prior arrangement at the Department of Public Works, 1106 Second Street, Eureka, CA, 95501, Phone: (707) 445-7493. Plans will also be available at the Humboldt County Bid Opportunities website: https://humboldtgov.org/bids.aspx and for viewing at area plan centers. Complete sets may be obtained via prior arrangement from Humboldt County Public Works. Complete paper sets may be obtained upon request with advanced payment of $50.00 each, 100 % of which shall be refunded upon the return of such sets unmarked and in good condition within ten (10) days after the bids are opened. Checks should be made payable to County of Humboldt.

Each Bid shall be submitted on the forms furnished by the County within the Bid Documents. All forms must be completed.

Each Bid shall be accompanied by one of the following forms of Bidder's Security to with a certified check or a cashier's check payable to the County, U.S. Government Bonds, or a Bid Bond executed by an admitted insurer authorized to issue surety bonds in the State of California (in the form set forth in said Contract Documents). The Bidder's security shall be in the amount equal to at least ten percent (10%) of the Bid.

The successful Bidder will be required to furnish and pay for a satisfactory faithful performance bond and a satisfactory payment bond in the forms set forth in said Bid Documents.

The County reserves the right to reject any or all Bids or to waive any informalities in any Bid. No Bid shall be withdrawn for a period of ninety (90) calendar days subsequent to the opening of Bids without the consent of the County.

All Bidders will be required to certify that they are eligible to submit a Bid on this project and that they are not listed either (1) on the Controller General's List of Ineligible Bidders/Contractors, or (2) on the debarred list of the Labor Commissioner of the State of California.

The successful Bidder shall possess a valid Contractor's license in good standing, with a classification of "B" (General Building Contractor) at the time the contract is awarded.

The successful Bidder will be required to comply with all equal employment opportunity laws and regulations both at the time of award and throughout the duration of the Project.

This project is subject to compliance monitoring and enforcement by the Department of Industrial Relations. Pursuant to Section 1771.1(a) of the California Labor Code, a contractor or subcontractor shall not be qualified to bid on, be listed in a bid proposal, subject to the requirements of Section 4104 of the Public Contract Code, or engage in the performance of any contract for public work, as defined in Sections 1770 et seq. of the Labor Code, unless currently registered and qualified to perform public work pursuant to Section 1725.5 of the Labor Code. It is not a violation of Section 1771.1(a) for an unregistered contractor to submit a bid that is authorized by Section 7029.1 of the Business and Professions Code or by Section 10164 or 20103.5 of the Public Contract Code, provided the contractor is registered to perform public work pursuant to Section 1725.5 at the time the contract is awarded.

The Contractor, and each subcontractor participating in the Project, shall be required to pay the prevailing wages as established by the Department of Industrial Relations, Division of Labor Statistics and Research, P.O. Box 420603, San Francisco, CA, Phone: (415) 703-4780.

The attention of Bidders is directed to the fact that the work proposed herein to be done will be financed in whole or in part with State and County funds, and therefore all of the applicable State and County statutes, rulings and regulations will apply to such work.

In the performance of this contract, the Contractor will not discriminate against any employee or applicant for employment in accordance with the provisions of the California Fair Employment and Housing Act. (Government Code section 12900et seq.)

In accordance with the provisions of Section 22300 of the Public contractors' code, the Contractor may elect to receive 100% of payments due under the contract from time to time, without retention of any portion of the payment, by entering into an Escrow Agreement for Security Deposits In Lieu of Retention.

DATED: _____

ATTEST: _____

By: _____
Tracy Damico
Clerk of the Board of Supervisors,
County of Humboldt, State of California

**END OF SECTION**

**1.1 The following documents shall be submitted by each Bidder, as part of their complete Bid:**

A. Section 00 41 00 - Bid Form.

B. Section 00 43 13 - Bid Security Form (Bid Bond).

C. Section 00 43 36 - Subcontractor List.

D. Section 00 45 13 – Bidder’s Qualifications.

E. Section 00 45 19 - Non-collusion Affidavit.

F. Section 00 45 26 - Workers' Compensation Certification.

G. Section 00 45 50 - Debarment and Suspension Certification.

H. Section 00 46 00 - Public Contract Code 10232 Statement.

**END OF SECTION**

Sealed Bids will be received by the Clerk of the Board of Supervisors of the County of Humboldt, Humboldt County Courthouse, 825 5th Street, Room 111, Eureka, California 95501, until 2:00 p.m. Pacific Time, on **September 10, 2024** at which time they will be publicly opened by the Clerk of the Board of the County of Humboldt at a public meeting in the Office of the Clerk of the Board, for performance of the following work:

**CONSTRUCTION OF**
**FERNDALE VETERANS MEMORIAL BUILDING HVAC UPGRADES PROJECT**
**COUNTY OF HUMBOLDT**
**PROJECT NUMBER: 170250**

## 1.1 SECURING DOCUMENTS:

Plans and Specifications and other Contract Document forms will be available for examination upon prior arrangement at the Department of Public Works, 1106 Second Street, Eureka, CA, 95501, Phone: (707) 445-7493. Plans will also be available at the Humboldt County Bid Opportunities website: https://humboldtgov.org/bids.aspx and for viewing at area plan centers. Complete sets may be obtained via prior arrangement from Humboldt County Public Works. Complete sets may be obtained upon advanced payment of $50.00 each, 100% of which shall be refunded upon the return of such sets unmarked and in good condition within ten (10) days after the bids are opened. Checks should be made payable to County of Humboldt.

## 1.2 BASIC INFORMATION:

These instructions pertain to the work (as hereinafter defined) to be performed under Agreement with the County of Humboldt (hereinafter sometimes called "Owner"):

| | |
|---|---|
| Owner | Humboldt County Board of Supervisors<br>825 Fifth Street<br>Eureka, CA 95501 |
| Owner's Lead Agency: | County of Humboldt Public Works Department<br>1106 Second Street<br>Eureka, CA 95501<br>Phone: (707) 445-7493 |
| Project Location: | Ferndale Veterans Memorial Building<br>1100 Main Street<br>Ferndale, CA 95536 |

**1.3 RECEIPT OF BIDS:** Each bidder should mark its bid as "Bid for the Construction of the Ferndale Veterans Memorial Building HVAC Upgrades Project." Bids shall be deemed to include the written responses to the bidder to any questions or requests for information of County made as part of bid evaluation process after submission of bid. Telephone and telefax proposals will not be accepted. County will reject all bids received after the specified time and will return such bids to bidders unopened.

**1.4 DETERMINATION OF APPARENT LOW BIDDER:** Apparent low bid will be based on the amount of the bids listed of the Bid Form with the following criteria:

A. The apparent low bid will be based on the Base Bid plus Additive Alternate No. 1.

**1.5 REQUIRED BID FORM:** All bidders must submit bids on the Section 00 41 00, the "Bid Form." County will reject as non-responsive any bid not submitted on the required form. Bids must be full and complete. Bidders must complete all bid items and supply all information required by the bidding documents and specifications. County 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 may not modify the Bid Form or qualify their bids. Bidders must submit clearly and distinctly written bids. Bidders must clearly make any changes in their bids by crossing out original entries, entering new entries and initialing new entries. County reserves the right to reject any bid not clearly written. The Bid Form shall be signed by the bidder's legal representative as indicated on the Bid Form. If the bid is made by an individual, it shall be signed and his/her full name and his/her address shall be given; if it is made by a partnership, it shall be signed with the co-partnership name by a member of the firm, who shall sign his/her own name and provide the name and address of each member; and if it is by a corporation, the bid shall show the name of the corporation and the state under the laws of which the corporation was chartered. When the bid is signed by the duly authorized officer or officers of the corporation, it shall be attested by the corporate seal, and the names and titles of the principal officers of the corporation shall be given. When a bid is signed by an agent, other than the officer or officers of a corporation authorized to sign contracts on its behalf or a member of a partnership, a "Power of Attorney" must be filed with the County prior to opening bids or shall be submitted with the bid; otherwise, the bid may be rejected as irregular and unauthorized. Bids submitted as joint ventures must so state and be signed by each venturer.

**1.6 CONTENTS OF BID ENVELOPE:** The bid envelope shall contain all of the following:

A. Section 00 41 00 - Bid Form

B. Section 00 43 13 - Bid Security Form (Bid Bond)

C. Section 00 43 36 - Subcontractor List

D. Section 00 45 13 – Bidder's Qualifications

E. Section 00 45 19 - Non-collusion Affidavit

F. Section 00 45 26 - Workers' Compensation Certification

G. Section 00 45 50 - Debarment and Suspension Certification

H. Section 00 46 00 - Public Contract Code 10232 Statement

**1.7 BID OPENING:** The County will stamp bids with the date and time of receipt. Bids will be opened and read publicly at the time and place indicated in Section 1 above. Bidders or their authorized agents may be present. After opening of bids, the County will review all bids for accuracy and reserves the right to correct obvious errors. Upon completion of review, the bids will be ranked by the bid amount as noted in section 1.4 above, and the apparent low bidder will be determined and notified.

**1.8 FAILURE TO EXECUTE AND DELIVER DOCUMENTS:** IF the bidder to whom the Contract is awarded shall fail or neglect , with ten (10) calendar days from the date of the receipt of a notice of award, to execute and deliver all required Contract Documents and file all required bonds, insurance certificates and other documents, County may, in its sole discretion, deposit bidder's surety bond, cashier's check or certified check for collection, and retain the proceeds thereof as liquidated damages for bidder's failure to enter into the Contract Documents. Bidder agrees that calculating the damages County may suffer as a result of bidder's failure to execute and deliver all required Contract Documents would be extremely difficult and impractical and that the amount of bidder's required bid security shall be the agreed and presumed amount of County's damages.

**1.9 BIDDER'S BOND, PERFORMANCE BOND AND PAYMENT BOND:** Bid security must be submitted with the bid. The successful bidder, prior to execution of the Contract, must submit a Performance Bond in the full amount of the Contract. The successful bidder, prior to execution of the Contract, must submit a Payment Bond in the full amount of the Contract.

A. The company providing the required performance and payment bonds must be listed in U.S. Treasury Circular No. 570 as a surety approved to issue bonds securing Government contracts in the State of California

**1.10 REQUIRED LISTING OF PROPOSED SUBCONTRACTORS**: Each bid shall have listed therein the name, address, description of work, California Department of Industrial Relations Public Works Contractor registration number, and California Contractors State Licensing Board license number of each subcontractor to whom the bidder proposes to subcontract portions of the work in the amount of 1/2 of one percent of their total bid, in accordance with the Subletting and Subcontracting Fair Practices Act, commencing with Section 4100 of the Public Contract Code and for verification of conformance with Labor Code Sections 1771 and 1725.5. The bidder's attention is invited to other provisions of said Act related to the imposition of penalties for a failure to observe its provisions by using unauthorized subcontractors or by making unauthorized substitutions**.**

A. A sheet for listing the subcontractors, as required herein, is included in the specifications. Please reference Section 00 43 36 "Subcontractor List."

**1.11 INSURANCE:** It is highly recommended that bidders confer with their respective insurance carriers or brokers to determine in advance of bid submission the availability of the insurance certificates and endorsements required. A bidder, who executes the Contract and thereafter fails to comply strictly with the insurance requirements, will be deemed to be in breach of Contract.

**1.12 RESERVATION OF RIGHTS:** County specifically reserves the right, in its sole discretion, to reject any or all bids, or re-bid, or to waive minor irregularities from bid requirements. If no bids are received, the County reserves the right to identify interested contractor(s) and negotiate directly without re-bidding.

**1.13 SECURITIES IN LIEU OF RETENTION:** Public Contract Code Section 22300 gives the Contractor for option to deposit securities with an escrow agent as a substitute for retention earnings to be withheld by the County.

**1.14 PRE-BID MEETING:** The Pre-Bid Meeting is scheduled for 2:00 p.m. Pacific Time, **August 27, 2024** at the Ferndale Veterans Memorial Building located at 1100 Main Street in Ferndale, California.

**1.15 WITHDRAWAL OF BIDS:** Any bidder may withdraw his/her bid, either personally or by written request, any time prior to the scheduled closing time for receipt of bids.

**1.16 QUESTIONS AND CLARIFICATIONS:** In order to avoid any misinterpretation or misrepresentation between the Bidder, the Architect and the County as regards the plans and specifications for the Project, neither the County nor Architect will respond to any verbal or telephone inquiries, however Bidders may submit written inquiries for clarifications or questions by email, or mail to the attention of Jake Johnson, Humboldt County Public Works, 1106 Second Street, Eureka, CA 95501, Email: jbjohnson@co.humboldt.ca.us. Any responses to written Bidder inquiries will be at the full discretion of the County, and any responses will be in writing in the form of an Addendum to these Contract Documents, which will be sent to all Bidders.

**1.17 MINIMUM RATES OF PAY**: Contractor, and each subcontractor participating in the Project, shall be required to pay the prevailing wages as established by the Department of Industrial

Relations, Division of Labor Statistics and Research, P.O. Box 420603, San Francisco, CA, Phone: (415) 703-4780. A schedule of the minimum rates of pay applicable to this Contract may be determined through the Department of Industrial Relations website at: https://www.dir.ca.gov/OPRL/DPreWageDetermination.htm or is on file at the principal office of Humboldt County Public Works at 1106 Second Street, Eureka, California, and shall be made available to any interested party on request.

**1.18 COMMUNICATIONS:**

A. All notices, demands, requests, instructions, approvals, proposals, and claims must be in writing.
B. Any notice to or demand upon the Contractor shall be sufficiently given if delivered at the office of the Contractor stated on the signature page of the Contract or at such other office as Contractor may from time to time designate in writing to the County of Humboldt or deposited in the United States mail in a sealed postage-prepaid envelope, or if delivered with charges prepaid to any delivery company for transmission, in each case addressed to such office.
C. All papers required to be delivered to the County shall, unless otherwise specified in writing to the Contractor, be delivered to the County and any notice to or demand upon the County of Humboldt shall be mailed in a sealed, postage-prepaid envelope, or delivered with charges prepaid to any delivery company for transmission to the County of Humboldt at such address, or to such other representatives of the County of Humboldt or to such other address as the County may subsequently specify in writing to the Contractor for such purpose.
D. Any such notice shall be deemed to have been given as of the time of actual delivery; or, in the case of mailing, when the same should have been received in due course of post; or, in case of any delivery company, at the time of actual receipt.

**1.19 SUBSTITUTIONS:**

A. All pre-bid substitution requests for "equal" products or systems shall be submitted to the Owners Representative 10 days prior to the contract bid opening date. All pre-bid substitution requests shall be submitted on the PROCUREMENT SUBSTITUTION PROCEDURE FORM - SECTION 00 26 00, see Section 00 72 00, GC 27, B.
B. Product substitution requests for products that are “comparable” or “equal” to specified products but not produced by an “Acceptable Manufacturer”, per each technical specification shall be submitted within 35 days after the contract is awarded. All product substitution requests shall be submitted on the PRODUCT SUBSTITUTION REQUEST FORM; see Section 01 60 00, “Product Requirements.”

**1.20 ADDENDA OR BULLETINS:** Any Addenda or Bulletins issued during the time of bidding or forming a part of the Documents loaned to the Bidder, for the preparation of his Bid, shall be covered in the Bid, and shall be made a part of the Contract.

**1.21 BIDDERS INTERESTED IN MORE THAN ONE BID:** No person, firm, or corporation shall be allowed to make or file, or be interested in more than one bid for the same work, unless alternate bids are called for. A person, firm, or corporation, who has submitted a sub-proposal to a bidder, is not thereby disqualified from submitting a sub-proposal or quoting prices to the other bidders.

**1.22 VISITING THE SITE & KNOWLEDGE OF PLANS & SPECIFICATIONS:** Before submitting a bid for the work, it is recommended that the Bidder inspect the sites and inform himself as to the conditions under which he will be obligated to execute the work. A Pre-Bid meeting and walk-through are scheduled for this project. See Paragraph 1.13 above.

No allowance will be subsequently made for failure to inspect, and the Bidder will be solely responsible for the consequences of his negligence or lack of diligence. Before submitting any proposal, each Bidder shall examine the General Conditions, Plans, Specifications, as well as these Instructions to Bidders, and the forms appended hereto and made a part hereof.

**1.23 BID PROTEST:** Any bid protest must be in writing and must be received by the Director of Public Works, Humboldt County Department of Public Works, 1106 Second Street, Eureka, CA, 95501, Fax: (707) 445-7409 or by email before 5:00 p.m. no later than three (3) working days following bid opening (the "Bid Protest Deadline") and must comply with the following requirements:

A. Only a bidder who has actually submitted a Bid Proposal is eligible to submit a bid protest against another bidder. Subcontractors are not eligible to submit bid protests. A bidder may not rely on the bid protest submitted by another bidder, but must timely pursue its own protest.
B. The bid protest must contain a complete statement of the basis for the protest and all supporting documentation. Material submitted after the Bid Protest Deadline will not be considered. The protest must refer to the specific portion or portions of the Contract Documents upon which the protest is based. The protest must include the name, address and telephone number of the person representing the protesting bidder if different from the protesting bidder.
C. A copy of the protest and all supporting documents must also be transmitted by fax or by e-mail, by or before the Bid Protest Deadline, to the protested bidder and any other bidder who has a reasonable prospect of receiving an award depending upon the outcome of the protest.
D. The protested bidder may submit a written response to the protest, provided the response is received by the Department Director before 5:00 p.m., within two (2) working days after the Bid Protest Deadline or after receipt of the bid protest, whichever is sooner (the "Response Deadline"). The response must include all supporting documentation. Material submitted after the Response Deadline will not be considered. The response must include the name, address and telephone number of the person representing the protested bidder if different from the protested bidder.
E. The procedure and time limits set forth in this section are mandatory and are the bidder's sole and exclusive remedy in the event of bid protest. The bidder's failure to comply with these procedures shall constitute a waiver of any right to further pursue a bid protest, including filing a Government Code Claim or initiation of legal proceedings.

**END OF SECTION**

SECTION 00 22 13 - SUPPLEMENTARY INSTRUCTIONS TO BIDDERS

1. PROJECT DESCRIPTION

The project will replace the existing HVAC system and repair seismic damage to the building. Work includes that which is shown in the plans and specifications, but is not limited to: hazardous materials abatement, demolition, mechanical, electrical and plumbing work, insulation, carpentry, painting and tile work.

A. Project Location:
Ferndale Veterans Memorial Building
1100 Main Street
Ferndale, CA 95536
Humboldt County, California

2. TIME FOR COMPLETION

The Contractor shall complete the entire project within **one hundred twenty** (**120)** calendar days from the County's issuance of the "Notice to Proceed".

3. LIQUIDATED DAMAGES

As actual damages for any delay in completion are impossible of determination, the Contractor and their sureties shall be liable for and shall pay to the County of Humboldt the sum of **five hundred dollars ($500)** as fixed, agreed and liquidated damages for each calendar day of delay beyond the contract completion date until the work is completed and accepted.

4. JOB OFFICES

A. The Contractor must designate an area to serve the posting requirements of this contract. A board (4' x 8') must be in plain view in a well-trafficked area on site. On this board will be posted EEO and wage information in compliance with the General Conditions of this contract.

B. The Contractor and their subcontractors may maintain such office and storage facilities on the site as may be necessary for the proper conduct of the work. These shall be located so as to cause no interference with any work to be performed on the site. The Owner's Representative shall be consulted with regard to locations.

C. Upon completion of the project, or as directed by the County of Humboldt, Owner's Representative, the Contractor shall remove all such temporary structures and facilities from the site, same to become their property, and leave the premises in the condition required by the County.

D. The Contractor shall furnish and maintain, during construction of the project, adequate facilities at the site to be designated by the County of Humboldt for the use of the County of Humboldt and the Architect/Engineer.

5. NOISE ABATEMENT PROVISIONS

A. Noise Affecting Sites and Adjacent Neighborhoods:

1. Limit noise and vibration to a reasonable level as related to specific items of equipment used and their hours of use and as indicated herein. This does not preclude use of mechanical equipment, i.e. jack hammers or power driven fasteners.

2. The Owner's Representative and the Owner shall be the sole judges of permissible noise and vibration levels and they have the right to designate times when they may be used. Comply also with requirements of Section 01 11 00 – Summary Of Work.

B. External Noise:

1. Locate stationary noise sources away from noise sensitive land uses and buildings to the extent possible. Obtain approval from the Owner's Representative before locating stationary noise sources.

2. Use truck haul routes through surrounding communities which minimize impacts on noise sensitive land uses. On the site, use routes as directed and approved by Owner's Representative.

C. Vibration Control: Provide ten (10) working days notice before conducting construction activities that might cause vibration, such as, but not limited to, drilling, excavation, compaction, pile driving, etc.

D. Noise Levels: Do not exceed an average continuous sound level of 72 dBA, measured at the perimeter of the work area, and do not exceed an impact noise level of 100 dBA measured at the perimeter of the work area, and only two impact occurrences between 72 dBA and 100 dBA are permitted in a one-hour period.

END OF SECTION 00 22 13

**Date:** _____

**Project Name:**
**FERNDALE VETERANS MEMORIAL BUILDING HVAC UPGRADES PROJECT**

**Project Number: 170250**

Note to Contractor: All substitution requests for "comparable" or “equal” products or systems shall be submitted to the Owner’s Representative, ten (10) days prior to the contract bid date. Refer to specification section 00 21 13 INSTRUCTIONS TO BIDDERS, section 1.19 “ Substitutions”

We hereby submit for your consideration the following product in lieu of the specified item for the above project.

Item Specified:

| _____ | _____ | _____ | _____ |
|---|---|---|---|
| Section | Page | Paragraph | Description |

The undersigned requests consideration of the following:

Proposed Substitution (Manufacturer, Model # or Name, Color, Etc.): _____

_____

History: ___New Product, ___Available 2-5 Years, ___Available 6-10 Years, ___Available 10+ Years

Provide UL, ITS, WHI, (or other) listing / rating of proposed substitution: _____

Attached data shall include, but not be limited to, product, specification, drawings, performance and test data adequate for evaluation of the request for the proposed substitution product and the specified product, with applicable portions of the proposed substitution and the specified product data clearly identified in a point-by-point direct comparison chart. Incomplete form and attachments will result in rejection of substitution request.

Requestor shall address the following items on this Substitution Request Form. Use a separate attached sheet attached as needed:

1. Reason for not providing specified item: _____

   _____

2. Will proposed substitution affect dimensions indicated on Drawings? ____(Yes) ____(No)

   If yes, how? _____

3. Will proposed substitution affect Electrical, Mechanical, Structural, Architectural, etc.?

   ____(Yes) ____(No) If yes, explain: _____

   _____

4. Is proposed substitution larger or smaller than specified product? ____(Yes) ____(No) If yes, state size of substitute product: _____

   _____

5. Does proposed substitution weight less/more than specified product? ____(Yes) ____(No) If yes, state weight of substitute product: _____

   _____

6. Will proposed substitution affect other trades and/or parts of the Work? ____(Yes) ____(No) If yes, explain all effects: _____

   _____

7. Comparison between proposed substitution and specified product (Similarities / Differences)?

   _____

   _____

8. If Substitution Request is accepted, County will receive a credit of $_____. The Contract Sum will be adjusted accordingly.

9. Will proposed substitution affect the Contract Time? ____(Yes) ____(No) If yes, ____(Add) ____(Deduct) _____ calendar days.

---

| **INITIAL** | **UNDERSIGNED CERTIFIES:** |
|---|---|
| _____ | Proposed substitution has been fully investigated and determined to be equal or superior in all respects to specified product. |
| _____ | Proposed substitution has same or better warranty as specified product. |
| _____ | Proposed substitution has same or better maintenance service and availability of replacement parts as specified product. |
| _____ | Proposed substitution will not affect or delay the Construction Schedule. |
| _____ | Claims for additional costs related to accepted substitution, which may subsequently become apparent, are hereby waived. |
| _____ | Proposed substitution will not affect dimensions and functional clearances. |
| _____ | Coordination, installation, and changes in the Work as necessary for installation of accepted substitution will be complete in all respects, at no additional cost to County. |
| _____ | Contractor will pay for all costs associated with changes to the project's design, including, but not limited to, architectural or engineering design fees, detailing, Agency approvals and construction costs caused by the requested substitution. |
| _____ | The function, appearance and quality of the proposed substitution is equivalent or superior to the specified item. |

*(Continues next page)*

The undersigned certifies that the above is accurate and correct:

Signature: _____

Printed Name: _____

Company: _____

Address: _____

_____

Date: _____

Telephone:_____

Attachments: ___Drawings ___Product Data ___Samples ___Tests ___Reports ___Other (Describe)

Architect/Engineer's Review and Action:

_____ Substitution Accepted – Make submittals in accordance with Specification Section 01 33 00.

_____ Substitution Accepted as Noted - Make submittals in accordance with Spec Section 01 33 00.

_____ Substitution Rejected – Provide specified product.

_____ Substitution Request Received Too Late – Provide specified product.

By:_____ Date:_____

Remarks: _____

**END OF SECTION**

TO
THE COUNTY OF HUMBOLDT for the CONSTRUCTION of
FERNDALE VETERANS MEMORIAL BUILDING HVAC UPGRADES PROJECT

PROJECT # 170250

Name of Bidder:_____
(Note: Name must be exactly as it appears on Contractor's License.)

Business Address:_____

Telephone Number:_____

Residence Address:_____

The work to be done shall be constructed in accordance with the Contract Documents, prepared by Humboldt County Public Works, dated June 28, 2024, the Agreement annexed hereto and the General Prevailing Wage provisions as specified in the "Invitation to Bid".

Bids are submitted for the entire work. The amount of "The Bid" for comparison purposes will be the determination of the apparent low bid as specified in Section 00 21 13, "Instructions to Bidders".

The Bidder shall set forth for the Base Bid and each Alternate, if any, in clearly legible figures, a written lump sum price and a numeric lump sum price.

In case of a discrepancy between the two notated prices, the written price shall prevail, unless, however, if the amount set forth in writing is ambiguous, unintelligible or uncertain for any cause, or is omitted, then the amount set forth in the numeric column for the item shall prevail.

If this proposal shall be accepted and the undersigned shall fail to enter into the Contract and to give the two required bonds in the sums to be determined as aforesaid, with surety satisfactory to the Department of Public Works, within seven (7) days, not including Sundays and legal Holidays, after the Bidder has received notice from the Department that the contract has been awarded, the County may, at its option, determine that the Bidder has abandoned the Contract, and thereupon this Proposal and the acceptance thereof shall be null and void and the forfeiture of such security accompanying this Proposal shall operate and the same shall be the property of the County of Humboldt.

The undersigned, as Bidder, declares that the only persons or parties interested in this proposal as principals are those named herein; that this proposal is made without collusion with any other person, firm, or corporation; that Bidder has carefully examined the location of the proposed work, the annexed proposed form of contract, and the plans therein referred to; and proposes and agrees if this proposal is accepted, that Bidder will contract with the County of Humboldt, in the form of the copy of the contract annexed hereto, to provide all necessary machinery, tools, apparatus and other means of construction, and to do all the work and furnish all the material specified in the contract, in the manner and time therein prescribed, and according to the requirements of the Architect as therein set forth, and that he will take in full payment therefor the following item prices to wit:

Receipt and compliance with the following Addenda to the Contract Documents is acknowledged:

Addendum No. _____ Dated _____

Addendum No. _____ Dated _____

Addendum No. _____ Dated _____

I,_____ as an agent for _____
_____ declare under penalty of perjury under the laws of the State of California, that the information contained in this Bid is true and correct.

Executed at _____ , California, on _____ , 2024

The project shall be complete within the time limits specified in Section 00 22 13, "Supplementary Instructions to Bidders." The undersigned is aware the Contract includes provisions for liquidated damages as specified in Section 00 22 13, "Supplementary Instructions to Bidders," if the Project is not completed within the agreed time of completion.

**THE UNDERSIGNED,** as Bidder, proposes the following:

**BASE BID:**

To furnish and complete the entire work as shown on the drawings and listed in the specifications, including required contract bonds and insurance, without additions or subtractions on account of specified alternates, for the sum of:

| **Base Bid (Lump Sum):** | |
|---|---|
| | $ |
| Total Amount in Words | Total |

**BID ALTERNATES:**

| Additive Alternate No. 1 – ACOUSTIC PANELS **(Lump Sum):** | |
|---|---|
| | $ |
| Total Amount in Words | Total |

| **(NOT USED)** | |
|---|---|
| | |
| | |

**UNIT PRICES**

For changing quantities of work items from those indicated on the contract drawings and specifications, upon written instructions from the Architect, the following prices shall prevail:

1. Prime and paint interior walls with 2 coats of paint per specifications at a unit cost PER 50 SQUARE FEET: $_____

2. Patch and repair interior plaster finishes including replacement of backer board, and top coats to match existing adjacent finishes including texture and paint at damaged areas of wall at a unit cost PER 10 SQUARE FEET: $_____

The above unit prices shall include all labor, materials, bailing, shoring, removal, overhead, profit, insurance etc., to cover the finished work of the several kinds called for. Changes shall be processed in accordance with the General Conditions and may be additive or deductive.

(Signatures on following page)

**Proposal Signature Page**

Accompanying this proposal is _____
(Insert the words "Cash ($)", "Cashier's Check", "Certified Check", or "Bidder's Bond", as the case may be) in the amount of at least ten percent (10%) of the total Bid Price submitted. The names of all persons interested in the foregoing proposal as Principals are as follows:

_____
_____

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

Licensed in accordance with an Act providing for the registration of Contractors:

License No.:_____ Expiration Date: _____

By my signature on this proposal I certify, under penalty of perjury under the laws of the State of California, that the foregoing questionnaire and statements of Public Contract Code Section 10162, and 10232, are true and correct and that the bidder has complied with the requirements of Section 8102 of the Fair Employment and Housing Commission Regulations (Chapter 5, Title 2 of the California Administrative Code). By my signature on this proposal I further certify, under penalty of perjury under the laws of the State of California and the United States of America, that the Noncollusion Affidavit required by Title 23 United States Code, Section 112 and Public Contract Code Section 7106; and the Title 49 Code of Federal Regulation, Part 29 Debarment and Suspension Certification are true and correct.

_____ _____
Signature of Bidder Date

If a Bidder is a Corporation or a Co-partnership:

_____
Name of Corporation or Firm Name of Co-Partnership

Signatures of officer(s) or partners authorized to sign contracts on behalf of the Corporation or Co-partnership, Corporations require signature by 2 (two) corporate officers:

_____ _____
Name Title

_____ _____
Name Title

_____ _____
Name Title

If Signature is by an agent, other than an officer of a corporation or a member of a partnership, a Power of Attorney must be on file with the Department prior to opening Bids or may be submitted with the Bid; otherwise the Bid will be disregarded as irregular and unauthorized.

Bidder's Business Address: _____

Place of Residence: _____

Date: _____

**END OF SECTION**

**KNOW ALL MEN BY THESE PRESENTS:**

That _____as Principal and_____a corporation, organized and existing under and by virtue of the laws of the State of _____ and authorized to do surety business in the State of California, as Surety, are held and firmly bound unto the County of Humboldt, State of California, as Obligee, in the sum of _____,Dollars ($ _____ ), 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 County of Humboldt, State of California, for all work specifically described in the accompanying bid;

NOW, THEREFORE, if the aforesaid Principal is awarded the contract, and within the time and manner required under the specifications, 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 the two bonds, one guaranteeing faithful performance and the other guaranteeing payment for labor and materials as required by law, or if the said 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, then this obligation shall be null and void; otherwise, it shall be and remain in full force and effect.

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 attorney's fee to be fixed by the Court.

IN WITNESS WHEREOF, we have hereunto set our hands and seals this _____ day

of _____ , 20 _____ .

By: _____ _____
Principal (Seal) Surety (Seal)

NOTE: (1) Signature of those executing for the surety must be properly acknowledged.

(2) This bond must be in an amount equal to as least ten (10%) percent of the amount bid.

(3) Bidders must use this form unless the surety company form is substantially the same.

**END OF SECTION**

**LIST OF SUBCONTRACTORS**
**Project Name:**
**FERNDALE VETERANS MEMORIAL BUILDING HVAC UPGRADES PROJECT**
**PROJECT NUMBER: 170250**

The Bidder shall list all Subcontractors in accordance with Article 47 of the General Conditions.

| | Subcontractor Name & CSLB License No. | 10-Digit DIR Registration Number | Address | Description of Work / Craft |
|---|---|---|---|---|
| 1. | | | | |
| 2. | | | | |
| 3. | | | | |
| 4. | | | | |
| 5. | | | | |
| 6. | | | | |
| 7. | | | | |
| 8. | | | | |

| | Subcontractor Name & CSLB Licence No. | 10-Digit DIR Registration Number | Address | Description of Work / Craft |
|---|---|---|---|---|
| 9. | | | | |
| 10. | | | | |
| 11. | | | | |
| 12. | | | | |
| 13. | | | | |
| 14. | | | | |
| 15. | | | | |
| 16. | | | | |
| 17. | | | | |

| | Subcontractor Name & CSLB Licence No. | 10-Digit DIR Registration Number | Address | Description of Work / Craft |
|---|---|---|---|---|
| 18. | | | | |
| 19. | | | | |
| 20. | | | | |
| 21. | | | | |
| 22. | | | | |
| 23. | | | | |
| 24. | | | | |
| 25. | | | | |
| 26. | | | | |

Add additional pages for Subcontractor Listings as needed.

**END OF SECTION**

## 1.1 DETERMINATION OF BIDDER RESPONSIBILITY

A. A responsible bidder is a bidder who has demonstrated the attribute of trustworthiness, as well as quality, fitness, capacity and experience to satisfactorily perform the contract. It is the County's policy to conduct business only with responsible contractors. (Ord. 2291, § 1, 01/07/2003)

B. Bidders are hereby notified that the County may determine whether the bidder is responsible based on a review of the bidder's performance on any contracts, including but not limited to County contracts. Particular attention will be given to violations of labor laws related to employee compensation and benefits, and evidence of false claims made by the bidder against public entities. This will include subcontractors and their employees as well. (Ord. 2291, § 1, 01/07/2003)

C. The County may declare a bidder to be non-responsible for the purpose of this contract, if the Board of Supervisors, in its discretion, finds that the bidder has done any of the following: (1) committed any act or omission which negatively reflects on the bidder's quality, fitness or capacity to perform this contract with the County or a contract with any other public entity, or engaged in a pattern or practice which negatively reflects on same; (2) committed an act or omission which indicates a lack of business integrity or business honesty; or (3) made or submitted a false claim against the County or any other public entity. (Ord. 2291, § 1, 01/07/2003)

D. If there is evidence that the apparent low bidder may not be responsible, the department shall notify the bidder in writing of the evidence relating to the bidder's responsibility, and its intention to recommend to the Board of Supervisors that the bidder be found not responsible. The department shall provide the bidder and/or the bidder's representative with an opportunity to present evidence as to why the bidder should be found to be responsible and to rebut evidence which is the basis for the department's recommendation. If the bidder fails to avail itself of the opportunity to rebut the department's evidence, the bidder may be deemed to have waived all rights of appeal. (Ord. 2291, § 1, 01/07/2003)

E. If the bidder presents evidence in rebuttal to the department, the department shall evaluate the merits of such evidence, and based on that evaluation, make a recommendation to the Board of Supervisors. The final decision concerning the responsibility of the bidder shall reside with the Board of Supervisors. (Ord. 2291, § 1, 01/07/2003)

F. These terms shall also apply to proposed [subcontracts/ sub-consultants] of bidders on County contracts. (Ord. 2291, § 1, 01/07/2003)

## 1.2 DETERMINATION OF BIDDER DEBARMENT

A. The bidder is hereby notified that the County may debar the bidder from bidding on other County contracts for a specified period of time, not to exceed three (3) years, and the County may terminate any or all of the bidder's existing contracts with the County, if the Board of Supervisors finds, in its discretion, that the bidder has done any of the following: (1) violated any term of a contract with the County; (2) committed any act or omission which negatively reflects on the bidder's quality, fitness, or capacity to perform a contract with the County or any other public entity, or engaged in a pattern or practice which negatively reflects on same; (3) committed an act or offense which indicates a lack of business integrity or business honesty; or (4) made or submitted a false claim against the County or any other public entity. (Ord. 2291, § 1, 01/07/2003)

B. If there is evidence that the apparent low bidder may be subject to debarment, the

department shall notify the bidder in writing of the evidence which is the basis for the proposed debarment, and shall advise the bidder of the scheduled date for a debarment hearing before the Contractor Hearing Board (CHB). (Ord. 2291, § 1, 01/07/2003)

C. The CHB shall conduct a hearing where evidence on the proposed debarment is presented. The bidder and/or the bidder's representative shall be given an opportunity to submit evidence at that hearing. After the hearing, the CHB shall prepare a proposed decision, which shall contain a recommendation regarding whether the bidder should be debarred, and, if so, the appropriate length of time of the debarment. If the bidder fails to avail itself of the opportunity to submit evidence to the CHB, the bidder may be deemed to have waived all rights of appeal. (Ord. 2291, § 1, 01/07/2003)

D. A record of the hearing, the proposed decision and any other recommendation of the CHB shall be presented to the Board of Supervisors, by the department head. The Board of Supervisors shall have the right to modify, deny or adopt the proposed decision and recommendation of the hearing board. (Ord. 2291, § 1, 01/07/2003)

E. These terms shall also apply to proposed [subcontractors/ sub-consultants] of bidder's on County contracts. (Ord. 2291, § 1, 01/07/2003)

## 1.3 EVIDENCE OF RESPONSIBILITY / NONRESPONSIBILITY

(Humboldt County Code Sections 2141 et seq.)

The bidder shall, under penalty of perjury, answer each of the questions below and provide supporting documentation. The term "bidder" shall include any person associated with the bidder in the capacity of owner, partner, director, officer or manager.

1. Is the bidder under suspension, debarment, or determination of ineligibility by any federal, state or local agency? **[ ] No [ ] Yes (explain)**

2. Has the bidder been suspended, debarred, or determined ineligible by any federal, state or local agency within the preceding 5 years: **[ ] No [ ] Yes (explain)**

3. Is there pending against the bidder any proposed debarment or suspension proceeding?

**[ ] No [ ] Yes (explain)**

4. Has the bidder been indicted, charged with, or convicted, or assessed civil or administrative penalties, or had a civil judgment rendered against it, in any matter involving:

(a) fraud, false claims, or dishonesty;

(b) any serious or wilful violation of the California Occupational Safety and Health Act of 1973 (Labor Code Sections 6300 et seq) or the Federal Occupational Safety and Health Act of 1970;

(c) violation of the state workers' compensation laws;

(d) violation of the Contractor's State License Law (Bus & Prof Code Sections 7000 et seq.)

(e) violation of prevailing wage laws;

(f) violation of state or federal environmental laws;

(g) violation of local laws related to permits, land use, or waste disposal?

**[ ] No [ ] Yes (explain)**

5. Has the bidder defaulted on a construction contract within the preceding 10 years?

**[ ] No [ ] Yes (explain**)

6. Provide information concerning any bankruptcy or receivership of bidder, and information regarding all legal claims, disputes, or lawsuits (including administrative matters) arising from any construction project performed within the preceding 5 years, including information regarding any work completed by a surety.

NOTE: This information will not necessarily result in denial of award, but will be considered in determining bidder responsibility. Bidders are cautioned that making a false certification may subject the bidder to criminal prosecution.

Signature of Bidder: _____

Printed Name: _____

Date: _____

**END OF SECTION**

**TO THE COUNTY OF HUMBOLDT, DEPARTMENT OF PUBLIC WORKS:**

Non-Collusion Affidavit

(Title 23 United States Code Section 112 and Public Contract Code Section 7106)

In accordance with Title 23 United States Code Section 112 and Public Contract Code 7106 the Bidder declares that the Bid is not made in the interest of, or on behalf of, any undisclosed person, partnership, company, association, organization, or corporation; that the Bid is genuine and not collusive or sham; that the Bidder has not directly or indirectly induced or solicited any other Bidder to put in a false or sham bid, and they have not directly or indirectly colluded, conspired, connived, or agreed with any Bidder or anyone else to put in a sham bid, or that anyone shall refrain from bidding; that the Bidder has not in any manner, directly or indirectly, sought by agreement, communication, or conference with anyone to fix the bid price of the Bidder or any other Bidder, or to fix any overhead, profit, or cost element of the bid price, or of that of any other Bidder, or to secure any advantage against the public body awarding the contract of anyone interested in the proposed contract; that all statements contained in the bid are true; and further, that the Bidder has not directly or indirectly, submitted their bid price or any breakdown thereof, or the contents thereof, or divulged information or data relative thereto, or paid, and will not pay, any fee to any corporation, partnership, company association, organization, bid depository, or to any member of agent thereof to effectuate a collusive or sham bid.

_____
Signature of Bidder

_____
Date

Bidders are cautioned that making a false certification may subject the certifier to criminal prosecution.

**END OF SECTION**

**Labor Code Section 3700.**

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

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

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

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

_____
Signature of Contractor

_____
Printed Name

_____
Date

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 commencing any work under this contract.

**END OF SECTION**

**TITLE 49, CODE OF FEDERAL REGULATIONS, PART 29**

The CONTRACTOR, under penalty of perjury, certifies that, except as noted below, he/she or any other person associated therewith in the capacity of owner, partner, director, officer, manager:

A. Is not currently under suspension, debarment, voluntary exclusion, or determination of ineligibility by any Federal, State or local agency;

B. Has not been suspended, debarred, voluntarily excluded or determined ineligible by any Federal, State or local agency within the past 3 years;

C. Does not have a proposed debarment pending; and

D. Has not been indicted, convicted, or had a civil judgment rendered against it by a court of competent jurisdiction in any matter involving fraud or official misconduct within the past 3 years.

If there are any exceptions to this certification, insert the exceptions in the following space.

_____

_____

_____

Exceptions will not necessarily result in denial of award, but will be considered in determining bidder responsibility. For any exception noted above, indicate below to whom it applies, initiating agency, and dates of action.

Notes: Providing false information may result in criminal prosecution or administrative sanctions. The above certification is part of the Proposal. Signing this Proposal on the signature portion thereof shall also constitute signature of this Certification.

_____
Signature of Contractor

_____
Printed Name

_____
Date

**END OF SECTION**

In accordance with Public Contract Code Section 10232, the Contractor, hereby states under penalty of perjury, that no more than one final unappealable finding of contempt of court by a Federal court has been issued against the Contractor within the immediately preceding two year period because of the Contractor's failure to comply with an order of a Federal court which orders the Contractor to comply with an order of the National Labor Relations Board.

_____
Signature of Bidder

_____
Printed Name

_____
Date

Bidders are cautioned that making a false certification may subject the certifier to criminal prosecution.

**END OF SECTION**

This is an AGREEMENT made and entered into this _____ day of _____ , 2024 by and between the County of Humboldt, a political subdivision of the State of California (hereinafter referred to as COUNTY) and _____ a corporation organized and existing under the laws of the State of _____ , a partnership consisting of_____ , an individual doing business as _____ in the State of California, (hereinafter referred to as "CONTRACTOR").

County and Contractor for the consideration hereinafter named agree as follows:

## SECTION 1 - SCOPE OF WORK

Contractor shall furnish all labor, tools and materials and perform all the work for the construction of:

**HUMBOLDT COUNTY FERNDALE VETERANS MEMORIAL BUILDING**

**HVAC UPGRADES PROJECT**
**PROJECT NUMBER: 170250**

in accordance with the Contract Documents referred to in Section 3 of this Agreement.

The scope of work includes the work included in the “Base Bid” for the project and the following bid alternatives: _____
_____

_____

## SECTION 2 - CONTRACT PRICE

County shall pay, and Contractor shall accept Contractor's Price, as follows:

_____ Dollars and _____ /100 ($_____ )

as full compensation for furnishing all materials and for doing all the work contemplated and embraced in this Agreement; also for all loss or damage, arising out of the work aforesaid, or from the actions of the elements, or from any unforeseen difficulties or obstructions which may arise or be encountered in the prosecution of the work until its acceptance by County, and for all risks of every description connected with the work; also for all expenses incurred by or in consequence of the suspension or discontinuance of the work and for well and faithfully completing the work, and the whole thereof, in the manner and according to the Plans and Specifications, and the requirements of the Owner.

## SECTION 3 - CONTRACT DOCUMENTS

The complete contract between the parties hereto shall consist of the following, hereinafter referred to as the CONTRACT DOCUMENTS:

| | |
|---|---|
| Notice to Contractors | General Conditions |
| Bid Form | Supplementary General Conditions |
| Bid Security Form | General Requirements |
| This Agreement | Technical Specifications |
| Payment Bond | Plans and Drawings |
| Performance Bond | Subcontractor List |
| Insurance Certificates | Noncollusion Affidavit |
| Public Contract Code Statement | Bidders Qualifications |
| Special Conditions | Debarment and Suspension Certification |

And, as published by the California Department of Industrial Relations:

General Prevailing Wage Rates

And any addenda to any of the above documents, all of which are on file in the office of the Director of Public Works of the County of Humboldt. Each of said CONTRACT DOCUMENTS is incorporated and made a part of this Agreement by the reference contained in this Section.

All rights and obligations of the County and the Contractor are fully set forth and described in the Contract Documents. All of the above named documents are intended to be complementary, so that any work called for in one, and mentioned in the other is to be performed and executed the same as if mentioned in all said documents.

**SECTION 4 - BEGINNING OF WORK**

Following receipt and full execution and approval of the Contract Documents, and posting of the requisite Bonds as called for therein, the COUNTY will issue a "Notice to Proceed". Under no circumstances shall the CONTRACTOR enter upon the site of work until receipt of the "Notice to Proceed", unless so authorized in writing by the COUNTY.

**SECTION 5 - TIME OF COMPLETION**

The work called for in this Agreement shall be commenced within ten (10) calendar days of the date of receipt by Contractor of the Notice to Proceed and shall be fully completed within **forty-five (45)** calendar days following receipt of the Notice to Proceed by the Contractor.

**SECTION 6 - PREVAILING WAGE**

Pursuant to Section 1770 of the Labor Code, the County has determined the Prevailing Wage Rate to be as listed by the Department of Industrial Relations, Division of Labor Statistics and Research, P.O. Box 420603, San Francisco, CA, 94101, Phone: (415) 703-4780. Complete Certified Payrolls must be submitted to the OWNER together with each application for progress payment. Electronic submittal directly to DIR may be required.

**SECTION 7 - WORKERS' COMPENSATION**

By my signature hereunder, as CONTRACTOR, I certify that I am aware of the provisions of Section 3700 of the Labor Code which requires 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.

**SECTION 8 - NOTICES**

All notices shall be in writing and delivered in person or transmitted by mail. Notices required to be given to the COUNTY shall be addressed as follows:

Humboldt County Department of Public Works
Attn.: Thomas K. Mattson, Director
1106 Second Street
Eureka, CA 95501

Notices required to be given to CONTRACTOR shall be addressed as follows:

_____

_____

_____

**SECTION 9 - NUCLEAR FREE HUMBOLDT COUNTY ORDINANCE COMPLIANCE**

Neither the Contractor, his Subcontractors or their suppliers are Nuclear Weapons Contractors, and are not knowingly or intentionally engaged in the research, development, production, or testing of nuclear warheads, nuclear weapons systems, or nuclear weapons components, as defined by the Nuclear Free Humboldt County Ordinance. Contractor, his Subcontractors and/or their suppliers agree to notify Owner immediately if they become a nuclear weapons contractor as defined above.

IN WITNESS WHEREOF, The parties hereto have entered into this Agreement as of the date first above set forth.

**COUNTY OF HUMBOLDT**

(SEAL)

By: _____
Chairperson, Board of Supervisors of the County of Humboldt, State of California

ATTEST:

By: _____
Clerk of the Board of Supervisors of the County of Humboldt, State of California

**CONTRACTOR**: Corporations require signature by two (2) corporate officers

By: _____

Title: _____

By: _____

Title: _____

APPROVED AS TO FORM:

By: _____
Deputy County Counsel

INSURANCE CERTIFICATES, PERFORMANCE AND PAYMENT BONDS REVIEWED AND APPROVED:

By: _____
Risk Manager

**END OF SECTION**

SECTION 00 61 13

CONSTRUCTION PERFORMANCE BOND

This Construction Performance Bond ("Bond") is dated _____, is in the penal sum of _____ and is entered into by and between the parties listed below to ensure the faithful performance of the Construction Contract identified below. This Bond consists of this page and the Bond terms and Conditions, Paragraphs 1 through 13, attached hereto. Any singular reference to _____ ("Contractor"), _____ ("Surety"), the County of Humboldt ("Owner") or other party shall be considered plural where applicable.

CONTRACTOR:

_____
Name

_____
Address

SURETY:

_____
Name

_____
Principal Place of Business

County of Humboldt
c/o Humboldt County Public Works
825 5th Street
Eureka, California 95501

Attn: PROJECT MANAGER

CONSTRUCTION CONTRACT:
**FERNDALE VETERANS MEMORIAL BUILDING HVAC UPGRADES PROJECT #170250**

DATED_____, 20____, in the amount of $_____.

CONTRACTOR AS PRINCIPAL
Company: (Corp. Seal)

Signature: _____

_____
Name and Title:

SURETY
Company: (Corp. Seal)

Signature: _____

_____
Name and Title:

BOND TERMS AND CONDITIONS

1. The Contractor and the Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors and assigns to Owner for the complete and proper performance of the Construction Contract, which is incorporated herein by reference.

2. If the Contractor completely and properly performs all of its obligations under the Construction Contract, the Surety and the Contractor shall have no obligation under this Bond.

3. The Surety's obligation under this Bond shall arise after:

    A. Owner has declared a Contractor Default under the Construction Contract pursuant to the terms of the Construction Contract; and

    B. Owner has agreed to pay the Balance of the undisputed Contract Sum to:

        1. The Surety in accordance with the terms of this Bond and the Construction Contract; or,

        2. To a contractor selected with the Owner’s concurrence to perform the Construction Contract (per paragraph 4, below) in accordance with the terms of this Bond and the Construction Contract.

4. When Owner has satisfied the conditions of Paragraph 3, the Surety shall promptly, and in no event later than thirty (30) days after the Owner confirms in writing that it has satisfied the conditions of Paragraph 3, and at the Surety’s sole expense, confirm in writing as to its election to take one of the following actions:

    A. Arrange for the Contractor, with consent of Owner, to perform and complete the Construction Contract (but Owner may withhold consent in its sole discretion (with or without cause), in which case the Surety must immediately elect option 4B, 4C or 4D, below), and that such performance shall commence within an additional thirty (30) days; or

    B. Undertake to perform and complete the Construction Contract itself, through its agents or through independent contractors, and that such performance shall commence within an additional thirty (30) days; or

    C. As promptly as reasonably possible, obtain bids from qualified, responsible contractors acceptable to Owner for a contract for performance and completion of the Construction Contract, and, upon determination by Owner that the contractor selected with Owner’s concurrence is responsible, and subject to full compliance with all applicable laws as may be required (including, without limitation, any applicable competitive bidding and public contracting and procurement requirements pursuant to California and/or Federal laws, if applicable), arrange for a contract to be prepared for execution by Owner and the contractor selected with Owner's concurrence, to be secured with performance and payment bonds executed by a qualified surety equivalent to the bonds issued on the Construction Contract and subject to the consent of Owner; and, if the Surety's obligations defined in Paragraph 6 exceed the Balance of the Contract Sum, then the Surety shall pay to Owner the amount of such excess; or

    D. Waive its right to perform and complete, arrange for completion, or obtain a new contractor, and subject to its investigation and consultation with Owner, determine in good faith the amount for which it may then be liable to Owner under Paragraph 6 for the performance and completion of the Construction Contract and, within ten (10) additional calendar days, tender payment therefor to Owner with full explanation of the payment's calculation. If Owner accepts the Surety's tender under this paragraph 4(D), the Surety

shall remain liable for future damages, then unknown or unliquidated, and including, without limitation, additional costs incurred to complete the Construction Contract and any unsatisfied liquidated damages, resulting from the Contractor Default. If Owner disputes the amount of Surety's tender under this paragraph 4(D), Owner may exercise all remedies available to it at law to enforce the Surety's liability under paragraph 6.

5. If the Surety does not proceed as provided in Paragraph 4, then the Surety shall be deemed to be in default on this Bond ten (10) days after receipt of an additional written notice from Owner to the Surety demanding that the Surety perform its obligations under this Bond. At all times Owner shall be entitled to enforce any remedy available to Owner at law or under the Construction Contract including, without limitation, and by way of example only, rights to perform work, protect work, mitigate damages, or coordinate work with other consultants or contractors.

6. The Surety's monetary obligation under this Bond is limited by the amount of this Bond. Subject to these limits, the Surety's obligations under this Bond are commensurate with the obligations of the Contractor under the Construction Contract. The Surety's obligations shall include, but are not limited to:

   A. The responsibilities of the Contractor under the Construction Contract for completion of the Construction Contract and correction of defective, deficient and/or non-compliant work;

   B. The responsibilities of the Contractor under the Construction Contract to pay liquidated damages, and for damages for which no liquidated damages are specified in the Construction Contract, actual damages, and all damages caused by non-performance or lack of proper performance of the Construction Contract, including but not limited to, all valid and proper backcharges, offsets, payments, indemnities, and/or other damages;

   C. Additional administrative, management, legal, design professional and delay costs resulting from the Contractor Default or resulting from the actions or failure to act of the Surety under Paragraph 4.

7. No right of action shall accrue on this Bond to any person or entity other than Owner or its heirs, executors, administrators, or successors.

8. The Surety hereby waives notice of any change, alteration or addition to the Construction Contract or to related subcontracts, purchase orders and other obligations, including changes of time. The Surety consents to all terms of the Construction Contract, including provisions on changes to the Contract. No extension of time, change, alteration, modification, deletion, or addition to the Contract Documents, or of the work required thereunder, shall release or exonerate Surety on this Bond or in any way affect the obligations of Surety on this Bond.

9. Any proceeding, legal or equitable, under this Bond shall be instituted in the Superior Court for the County of Humboldt.

10. As a part of the obligation secured under this Bond, and in addition to the face amount specified therefore, there shall be included costs and reasonable expenses and fees, including reasonable attorney’s fees and expert costs, incurred by the County in successfully enforcing any obligation arising under this Bond, all to be taxed as costs and included in any judgment rendered

11. Notice to the Surety, Owner or the Contractor shall be mailed or delivered to the address shown on the signature page.

12. Any provision in this Bond conflicting with any statutory or regulatory requirement shall be deemed deleted herefrom and provisions conforming to such statutory requirement shall be deemed incorporated herein.

13. Definitions.

A. Balance of the Contract Sum: The total amount payable by Owner to the Contractor pursuant to the terms of the Construction Contract after all proper adjustments have been made under the Construction Contract, for example, deductions for progress payments made, and increases/decreases for approved modifications to the Construction Contract.

B. Construction Contract: The agreement between Owner and the Contractor identified on the signature page, including all Contract Documents and changes thereto.

C. Contractor Default: Material failure of the Contractor, which has neither been remedied nor waived, to perform or otherwise to comply with the terms of the Construction Contract.

END OF DOCUMENT

SECTION 00 61 14 - PAYMENT BOND

KNOW ALL MEN BY THESE PRESENTS, THAT WHEREAS, the County of Humboldt, by its order made _____, 20___, has awarded to _____, hereinafter designated as the "Principal," a contract for the work described as follows:

FERNDALE VETERANS MEMORIAL BUILDING HVAC UPGRADES PROJECT

PROJECT # 170250

NOW, THEREFORE, we the Principal and _____, Surety, are held and firmly bound unto the County of Humboldt in the penal sum of _____ Dollars ($_____), lawful money of the United States of America for the payment of which sum well and truly to be made, we bind ourselves, our heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents.

THE CONDITION OF THIS OBLIGATION IS SUCH that if said Principal, his/her or its heirs, executors, administrators, successors or assigns, shall fail to pay any of the persons named in Section 9100 of the Civil Code, or amounts due under the Unemployment Insurance Code with respect to work or labor performed by any such claimant, any prevailing wages due and penalties incurred pursuant to the California Labor Code or for any amounts required to be deducted, withheld, and paid over to the Franchise Tax Board from the wages of employees of the Contractor and their subcontractors pursuant to Section 18806 of the Revenue and Taxation Code with respect to such work and labor as required by Sections 9550 et seq. of the Civil Code of California, then said Surety will pay for the same, in or to an amount not exceeding the amount set forth herein, and also will pay in case suit is brought upon this bond, such reasonable attorney's fees, as shall be fixed by the court, awarded and taxed as in the above-mentioned statutes provided.

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

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

| | |
|---|---|
| PRINCIPAL | SURETY |
| BY:_____ | BY_____<br>ATTORNEY-IN-FACT |

END OF SECTION 00 61 14

SECTION 00 72 00 - GENERAL CONDITIONS

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GC 1. DEFINITIONS

A. COUNTY: The term "County", or pronouns in place of same where used herein, shall mean Humboldt County acting through its Board of Supervisors.

B. BOARD: The term "Board", or pronouns in place of same where used herein, shall mean the Humboldt County Board of Supervisors.

C. OWNER: The "Owner" is the County and is the person or entity identified as such in the Owner-Contractor Agreement; the term Owner means the Owner or its authorized representative.

D. ARCHITECT: The term "Architect" shall mean the licensed professional architect in responsible charge of the design of the project employed or contracted by the Humboldt County Department of Public Works as the authorized representative of the Owner.

E. CONTRACTOR: The term "Contractor" or "General Contractor", where used herein, shall mean the Contractor licensed by the California Contractors State License Board to whom the contract for the work described and specified herein has been awarded by the Humboldt County Board of Supervisors or their authorized representative.

F. PLANS AND SPECIFICATIONS: The term "Plans and Specifications", where used herein, shall mean and include all specifications and provisions of every kind, whether general, detailed or otherwise, relating to the equipment, material or Work, and the installation thereof, and the plans and drawings accompanying same which are made a part thereof. Such Plans and Specifications are recognized as instruments of professional service.

G. OWNER'S REPRESENTATIVE: The term "Owner's Representative" shall mean the agent or independent qualified consultant assigned to the Project by Humboldt County Department of Public Works. The Owner's Representative shall not be responsible for means, methods, techniques, sequences or procedures of construction, nor be responsible for the Contractor's failure to carry out the Work in accordance with the Contract Documents.

H. CONSTRUCTION ADMINISTRATOR: The term "Construction Administrator" shall mean the agent or independent qualified consultant assigned to the Project by Humboldt County Department of Public Works. The Construction Administrator may be a separate agent or may also perform the function of the Project Inspector or Owner's Representative. The Construction Administrator will be the prime point of contact between the Contractor and Owner. The Construction Administrator will log, route, and maintain all project communications and documentation including, but not limited to, letters of instruction, contractor letters, requests for information, submittals, cost proposals and changes to the work.

I. PROJECT INSPECTOR: The term "Project Inspector" shall mean the agent or independent qualified consultant assigned to the Project by Humboldt County Department of Public Works to perform the following services: Observe the performance of Project labor, installation of all materials and equipment to be incorporated into the Work and the placing of such materials and equipment to determine in general if the Work is proceeding in accordance with the Contract Documents as defined in section 00 52 00 "Agreement Forms". On the basis of such observations, the Project Inspector will keep the Owner's Representative informed as to the progress of the Work. The Project Inspector shall not be responsible for means, methods, techniques, sequences or procedures of construction, nor be responsible for the Contractor's failure to carry out the Work in accordance with the Contract Documents.

J. SURETY: The term "Surety" shall mean the surety or sureties that issue the Payment Bond and/or the Performance Bond required by the Contract Documents.

K. CONTRACT or AGREEMENT: “Contract” or “Agreement” shall mean the agreement signed by County and Contractor (Section 00 52 00) and shall also mean the totality of the contractual obligations of Contractor hereunder.

L. CONTRACT PRICE: “Contract Price” shall mean the amount set forth as the contract price in the Agreement (Section 00 52 00).

M. CONTRACT TIME: “Contract Time” shall mean the time for completion of the Work required by the Contract Documents as set forth in the Agreement (Section 00 52 00),

N. PROJECT: The “Project” is the total construction of which the Work performed under the Contract Documents may be the whole or a part.

O. SUBSTANTIAL COMPLETION: “Substantial Completion”, shall mean that the Work is sufficiently complete, in accordance with the Contract Documents, that the County can occupy or utilize the Work or a designated portion thereof for the use for which it is intended.

P. WORK: The “Work” comprises the completed construction required by the Contract Documents and approved change orders and includes all labor necessary to produce such construction, and all materials and equipment incorporated or to be incorporated in such construction.

Capitalized terms not defined in these General Conditions shall have the same meaning as defined in other Contract Documents.

GC 2. CONTRACT

A. The Contract Documents include all documents identified as such in the Agreement (Section 00 52 00), and any amendments and Change Orders thereto

B. In the execution of the Work or any portion thereof, Contractor shall operate as an independent contractor and not as the agent of Owner or Architect.

C. No verbal agreement or conversation with any officer, agent, or employee of Owner or Architect, either before or after execution of the Agreement, shall affect or modify any terms or obligations of the Contract unless duly incorporated into the Contract by written Change Order or amendment of the Contract.

D. The Contract Documents shall not be construed to create any contractual relationship of any kind between the Architect and the Contractor, but the Architect shall be entitled to performance of obligations intended for its benefit, and to enforcement thereof. Nothing contained in the Contract Documents shall create any contractual relationship between the Owner or the Architect and any subcontractor or sub-subcontractor.

E. By executing the Contract, the Contractor represents that Contractor has visited the Project site, familiarized itself with the local conditions under which the Work is to be performed, and correlated its observations with the requirements of the Contract Documents.

F. The intent of the Contract Documents is to include all items necessary for the proper execution and completion of the Work. The Contract Documents are complementary, and what is required by any one shall be as binding as if required by all. Contractor shall perform all work set forth in the Contract Documents and reasonably inferable therefrom as being necessary to produce the intended results. Words and abbreviations which have well-known technical or trade meanings are used in the Contract Documents in accordance with such recognized meanings.

Whenever two or more standards or requirements appear in the Contract Documents, the highest standard or requirement shall be applied and followed in the performance under this Contract. If a conflict cannot be so resolved, the following shall apply:

(a) In cases of discrepancy concerning dimension, quantity and location, the Plans shall take precedence over the Specifications. Explanatory notes on the Plans shall take precedence over conflicting drawn indications. Large-scale details shall take precedence over smaller scale details and figured dimensions shall take precedence over scaled measurement. Where figures are not shown, scale measurements shall be followed but shall in all cases be verified by measuring actual conditions of Work already in place. In cases of discrepancy concerning application of materials and non-technical requirements over materials, the specifications shall take precedence over Plans.

(b) For all other conflicts between terms of the Contract Documents that cannot be resolved as set forth above, the following order of precedence shall apply:
1. The Contract
2. The Supplementary Conditions
3. The General Conditions
4. The Specifications
5. The Plans.

G. The organization of the Specifications into divisions, sections and articles, and the arrangement of drawings shall not control the Contractor in dividing the Work among subcontractors or in establishing the extent of Work to be performed by any trade.

GC 3. BONDS

A. Contractor, simultaneously with the execution of the Agreement, will be required to furnish a Payment Bond in an amount equal to one hundred (100%) percent of the Contract Price, and a faithful Performance Bond in an amount equal to one hundred (100%) percent of the Contract Price. The Contractor must submit a certificate with all bonds indicating that the Surety is admitted to transact business in the State of California, and certify that the Surety's certificate of authority, issued by the Insurance Commissioner, has not been suspended, revoked, canceled, or annulled.

B. The bonds shall comply with Section 9554 of the Civil Code of the State of California. The Payment Bond and the faithful Performance Bond shall each be in a form that is satisfactory to the County Counsel, or Risk Management of the County of Humboldt. A copy of an acceptable format is attached to the Agreement forms of these specifications.

C. All Bonds shall meet or exceed A.M. Best's Long-Term Issuer Credit Rating (Long-Term ICR) Scale categories of Rating Category: **Excellent**; Rating Symbol: **a**; Rating Notch: **a+**, and Short-Term Issuer Credit Rating (Short-Term ICR) Scale categories of Rating Category: **Outstanding**; Rating Symbol: **AMB-1**, and Best's Financial Strength Rating (FSR) Scale categories of Rating Category: **Excellent**, Rating Symbol: **A**, Rating Notch: **A-**. All bonds shall be written by a surety company licensed through the California Department of Insurance and shall have a physical presence in the State of California. Companies providing reinsurance to the surety company shall also be a surety company licensed through the California Department of Insurance and shall have a physical presence in the State of California. The Bid Bond, Payment Bond and Performance Bond shall all be written by the same surety company. If cash or securities are provided in lieu of a Bid Bond, then both the Payment Bond and Performance Bond shall both be written by the same surety company. "Off-shore" surety companies and/or reinsuring sureties or companies shall not be accepted.

GC 4. INSURANCE REQUIREMENTS

A. THIS CONTRACT/AGREEMENT SHALL NOT BE EXECUTED BY COUNTY and the CONTRACTOR is not entitled to any rights, unless certificates of insurance, or other sufficient proof, showing that the following provisions have been complied with are filed with the Clerk of the Humboldt County Board of Supervisors.

B. Without limiting Contractor's indemnification obligations provided herein, Contractor shall, and shall require any of its subcontractors, to take out and maintain, throughout the period of this Agreement,

the policies of insurance as required herein placed with insurers with a current A.M. Best's rating of no less than A:VII or its equivalent against damages which may arise from or in connection with the activities hereunder of Contractor, its agents, employees or subcontractors.

C. Comprehensive or Commercial General Liability Insurance at least as broad as Insurance Services Office Commercial General Liability coverage (occurrence from CG 0001), in an amount of $2,000,000 per occurrence. If work involves explosive, underground or collapse risks, XCU must be included. If a general aggregate limit is used, either the general aggregate limit shall apply separately to this project or the general aggregate shall be $5,000,000. Said policy shall contain, or be endorsed with, the following provisions:

1. The County, and its Board Members, officers and officials, Owner's Representative, Construction Administrator, Project Inspector and the Architect and their agents and employees, are covered as additional insured for liability arising out of the operations performed by or on behalf of Contractor. The coverage shall contain no special limitations on the scope of protection afforded to the County, and its Board Members, officers and officials, Owner's Representative, Construction Administrator, Project Inspector and the Architect and their agents, and employees. The additional insured coverage required herein shall be provided by Insurance Services Office Additional Insured Endorsement Forms CG 20 10 and CG 20 37, or equivalent forms.
2. The policy shall not be canceled or materially reduced in coverage without thirty (30) days prior written notice (10 days for non-payment of the premium) to County by certified mail.
3. The inclusion of more than one insured shall not operate to impair the rights of one insured against another insured, and the coverage afforded shall apply as though separate policies had been issued to each insured, but the inclusion of more than one insured shall not operate to increase the limits of the insurer's liability.
4. For claims related to this Project, the Contractor's insurance is primary coverage to the County, and any insurance or self-insurance programs maintained by the County are excess to Contractor's insurance and will not be called upon to contribute with it.
5. Any failure by the County or the Contractor to comply with reporting or other provisions, including breach of warranties, shall not affect coverage provided to County, and its Board Members, officers and officials, Owner's Representative, Construction Administrator, Project Inspector and the Architect and their agents, and employees.

D. Automobile liability insurance with coverage at least as broad as Insurance Services Office form CA 0001 06092, Code 1 (any auto), for vehicles used in the performance of this Agreement with minimum coverage of not less than $1,000,000 per accident combined single limit (CSL). Such policy shall contain or be endorsed with the provision that coverage shall not be canceled or materially reduced in coverage without thirty (30) days prior written notice (10 days for non-payment of premium) to County by certified mail.

E. Workers' Compensation insurance meeting statutory limits of the California Labor Code which policy shall contain or be endorsed to contain a waiver of subrogation against County, its officers, agents, and employees and provide for thirty (30) days prior written notice in the event of cancellation.

F. Builder's Risk or Course of Construction, written on an "All-Risk" form, for 100% of the completed value of the insurable part of the Project. The Builder's Risk policy shall provide for losses to be payable to County and the Contractor as their interests may appear, and that in the event of payment for any loss under the coverage provided, the insurer shall have no rights of recovery against County and Contractor.

G. Contractor shall furnish County with certificates and original endorsements effecting the required coverage prior to execution of this Agreement by County. The endorsements shall be on forms as approved by the County's Risk Manager or County Counsel. Any deductible or self-insured retention over $100,000 shall be disclosed to and approved by County. If Contractor does not keep all required policies in full force and effect, County may, in addition to other remedies under this Agreement, take out the necessary insurance, and Contractor agrees to pay the cost of said insurance.

GC 5. DEFAULT/TERMINATION OF CONTRACT

A. Default

1. If the Contractor refuses or fails to prosecute the Work or any separable part thereof with such diligence as will ensure its completion within the time specified herein or any authorized extension thereof, or abandons the Work, or fails to perform the Work in a manner required by the Contract Documents and/or industry standards, or fails to complete such Work within such time as required under the Contract Documents, or seeks to assign the Contract, or, if the Contractor should be adjudged as bankrupt, or is otherwise deemed insolvent by the County based on good cause and is unable to proceed with the Work, or if the Contractor should make a general assignment for the benefit of creditors, or if a receiver should be appointed on account of insolvency, or if the Contractor files a petition to take advantage of any debtor's act, or should any subcontractor materially violate any of the provisions of the Contract Documents, or if the Contractor should persistently or repeatedly refuse or fail to provide the required project management, supervision, quality control, and/or supply enough properly skilled workers or proper materials to complete the Work in the time specified, or if the Contractor should fail to make prompt payment to subcontractors for material or labor, or if the Contractor should persistently disregard laws, or instructions given by County, or if the Contractor otherwise substantially fails to fulfill its obligations under, or violates, the Contract Documents or any provision or term thereof, the Contractor shall be in breach of and default under the Contract. In such instance, the County may, in its sole discretion, after providing Contractor seven (7) days written notice, and without prejudice to any other remedy the County may have:

    a. Provide any such labor, equipment and/or materials required to perform the Work or designated portion of the Work or to correct any deficiencies or delays and deduct the cost from any money due or to become due Contractor, or if the money due or to become due to Contractor is not sufficient to cover such amount, the Contractor shall pay the difference immediately to the County upon demand; or

    b. Terminate the Contract.

2. Upon receipt of the notice of termination of the Contract, the Surety shall immediately takeover and assume the control of and perform the Work as the successor to the Contractor and shall immediately assume all rights obligations and liabilities, including liquidated damages, that have accrued under the Contract. The Surety shall maintain the Project site and all of its safety controls. If the Surety fails to maintain the Project site, the County may correct unsafe conditions and charge the Surety for costs incurred. If the Surety assumes the Contractor's terminated Work, it shall take the Contractor's place in all respects for that part and shall be paid by County for all Work performed by it in accordance with the terms of the Contract Documents. If the Surety assumes the entire Contract, all money due the Contractor at the time of its default shall be payable to the Surety as the Work progresses, subject to the terms of the Contract Documents less all amounts due to County.

3. Within fifteen (15) working days of its receipt of the notice of termination of the Contract, the Surety shall provide to the County a written plan detailing the course of action it intends to take to remedy the default of the Contractor. The County will review and notify the Surety if the plan is satisfactory.

4. If the Surety fails to submit a satisfactory plan or to maintain progress on the plan as accepted by the County, or does not otherwise comply fully and completely to the County's satisfaction with the terms of the Performance Bond within the time periods stated therein, the County may, in its sole discretion, take over the Work and prosecute the same to completion by contract or by any other method it may deem advisable for the account and at the expense of the Contractor, and the Surety and/or Contractor shall be liable to the County for any excess cost and all other damages and costs incurred by the County thereby or to which the County is entitled under the Contract Documents or by law and shall pay the County all such amounts within thirty (30) days after submits an invoice for such amounts. . In such an event, the County may without liability for so doing, take possession

of and utilize such materials, tools, equipment, supplies and other property belonging to the Contractor and/or assume assignment of any and all subcontracts for subcontractors and/or suppliers that may be on the worksite and be necessary to complete the Work. For any portion of such Work that County elects to complete by furnishing its own employees, materials, tools, and equipment, the Contractor and Surety shall compensate County or all costs related thereto. If requested by County, Contractor shall demobilize, and shall remove any part or all of Contractor's materials, supplies, equipment, tools, and construction equipment and machinery, from the Project site within 7 days of such request; and if Contractor fails to do so, County may remove or store, and after 90 days sell, any of the same at Contractor's expense.

5. If a termination for default is asserted by County, and demand made upon Surety by County, Surety shall not tender the Contractor, or any affiliate thereof, as its completion contractor except as authorized in the Performance Bond and subject to the sole discretion of the County. See the Performance Bond for more details on the rights and responsibilities of the Surety.

6. Contractor hereby consents to assigning to the County and/or County's replacement contractor all subcontracts and other agreements of any and all subcontractors and/or suppliers that may be on the worksite and/or may be necessary to complete the Work in the event of Termination for Default or Termination for Convenience, as set forth below. Contractor agrees to obtain, by way of a subcontract provision, the consent of each and every subcontractor and/or supplier for such assignment prior to the commencement of each such subcontractor's and/or supplier's conduct of the Work.

7. In the event of such termination, the Contractor will not be entitled to receive any further payment until the entire Work or disputed portion of the Work is completed and accepted by the County. Any amounts due to Contractor will be based on unit prices or lump sum bid and the quantity of Work completed at the time of termination, less damages caused to the County by acts of the Contractor causing the termination, including but not limited to, all costs to the County arising from professional services and attorneys' fees, and all costs generated to insure or bond the work of substituted Contractors or subcontractors utilized to complete the Work, such excess shall be paid to the Contractor. If such costs exceed the unpaid balance, the Contractor shall pay the difference to the County promptly upon demand. On failure of the Contractor to pay, the Surety shall pay on demand by County. Any portion of such difference not paid by the Contractor or Surety within thirty (30) days following the mailing of a demand for such costs shall earn interest at the maximum rate authorized by California law. Nothing set forth herein shall limit Surety's obligations under the subject bonds or the timing thereof, which shall arise immediately upon Contractor's default.

8. The Contractor and the County agree that nothing in this section is intended to create a right of either party to recover attorney fees as prevailing party in any lawsuit on this Contract.

9. In addition to all of its rights and remedies stated herein and under the Contract Documents and by law, the County may also order the Contractor to stop the Work, or any portion thereof, until the cause for such order has been eliminated; however, this right of the County to stop the Work shall not give rise to any duty on the part of the County to exercise this right for the benefit of the Contractor or any other person or entity

10. The foregoing provisions are in addition to and not in limitation of any other rights or remedies under law or in equity available to County.

11. If it is later determined that the County's termination of the Contract was wrongful, or Contractor had an excusable reason for not performing, such as a fire, flood, or other event which was not the fault of or was beyond the control of the Contractor, the County, after setting up a new performance schedule, may allow the Contractor to continue work, or treat the termination as a termination for convenience, and the rights and obligations of the County and the Contractor shall be the same as if the termination had been issued for the convenience of the County.

12. Each of these general conditions, whether preceding or following this paragraph, is to be considered material and failure to comply with any of such conditions by the Contractor will be

deemed a breach of contract. All obligations of Contractor pursuant to the Contract Documents shall survive the termination of the Contract.

B. Termination for Convenience

1. The County may terminate the Contractor's performance under the Contract, either in whole or in part, at its own discretion or when conditions encountered during the Work make it impossible or impracticable to proceed, or when the County is prevented from proceeding with the Contract by act of God, by law, or by official action of a public authority, or upon a determination that such termination is in the best interest and convenience of the County, or whenever the County is prohibited from completing the Work for any reason.

2. Upon receipt of such written notice of termination, the Contractor shall:

   a. Stop work as specified in the written notice;

   b. Terminate all orders and subcontractors except as necessary to complete any portion of the Work that is not terminated;

   c. If directed in writing by the County to do so, assign all right, title and interest in subcontracts and materials in progress, in which case the County will have the right at its discretion to settle, or pay any or all claims arising out of the termination of such subcontractors, but in no event shall recovery by any Contractor include lost profits for uncompleted portions of the Work;

   d. Deliver or otherwise make available to the County all data, drawings, specifications, reports, estimates, summaries and such other information and material as may have been accumulated by the Contractor in performing the Work whether completed or in process;

   e. Settle outstanding liabilities and claims with the approval of County;

   f. Complete performance of such part of the Work as has not been terminated; and

   g. Take such other actions as may be necessary, or as may be directed by the County for the protection and preservation of the Work and/or property related to the Work.

3. Upon receipt of County's written notice of termination for convenience, the Contractor shall submit to the County a request for final payment in accordance with the requirements of the Contract. Such request shall be submitted promptly, but no later than sixty (60) days from the effective date of the termination for convenience.

4. The final payment to the Contractor after termination for convenience shall be limited to the following amounts due and owing under the Contract at time of termination:

   a. Any actual costs incurred by the Contractor for restocking charges;

   b. The agreed upon price of protecting the Work in any manner, if any, as directed by the County; and

   c. The Contract Price allocable to the portion of the Work properly performed or goods supplied by the Contractor as of the date of termination, as determined in accordance with the Contract Documents, reduced by any sums previously paid to the Contractor.

   Contractor shall not be entitled to payment for any Work not performed, including, without limitation, overhead and profit on Work not performed.

   The above payment shall be the sole and exclusive remedy to which Contractor is entitled in the event of a termination for convenience of the Contract pursuant to this section; and Contractor will not be entitled to any other compensation or damages and expressly waives same.

5. The County shall have the right to withhold any portion or the whole of the final payment under this provision in the event there are any outstanding Claims for compensation asserted by the County against the Contractor, or by any third party against the County which arises out of the Contractor's Work.

6. All obligations of Contractor pursuant to the Contract Documents shall survive the termination for convenience of the Contract.

7. Contractor shall include this Termination for Convenience provision in all subcontracts and purchase orders of every tier.

GC 6. INDEMNIFICATION

A. To the fullest extent permitted by law, the Contractor shall indemnify, defend and hold harmless the County and its Board Members, officers and officials, Owner's Representative, Construction Administrator, Project Inspector, and the Architect and their agents and employees (the "Indemnified Parties") from and against any and all claims, damages, liabilities, actions, losses and expenses, including but not limited to attorneys' fees, in law and in equity, of every kind or nature whatsoever related to, arising out of or resulting from the performance of the Work or Contractor's operations to be performed under the Contract Documents, regardless of whether or not caused in whole or in part by a party indemnified hereunder (collectively "Claims"); excepting only such Claims arising from the sole or active negligence or willful misconduct of the Indemnified Parties or defects in design furnished by those persons. Such obligation shall not be construed to negate, abridge, or otherwise reduce any other right or obligation of indemnity which would otherwise exist as to any party or person described in this paragraph. The obligations in this section shall not be limited by the insurance requirements set forth in these Contract Documents. Contractor's indemnification obligations shall apply to all damages or claims for damages suffered as a result of or by Contractor's operations regardless if any insurance is applicable or not.

   It is intended that this section shall comply with California Civil Code § 2782, *et seq.*, to the extent applicable to the Contractor's obligations as set forth in this section. If it is determined by a Court of competent jurisdiction that any aspect of this section exceeds the restrictions or limitations under California law applicable to indemnity obligations, only that portion which exceeds the restrictions or limitations under California law shall be null and void, and all remaining indemnity obligations shall be fully enforceable to the fullest extent allowed under California law.

B. In any and all Claims against the Indemnified Parties by any employee of the Contractor, any subcontractor, anyone directly or indirectly employed by any of them or anyone for whose acts any of them may be liable, the indemnification obligation under this paragraph shall not be limited in any way by any limitation on the amount or type of damages, compensation or benefits payable by or for the Contractor or any subcontractor under Workers' or Workmen's Compensation Acts, disability benefit acts or other employee benefit acts.

C. The right to a defense and indemnity under this section arises upon an occurrence of an event given rising to a Claim and upon tender to Contractor, Contractor shall defend the Indemnified Parties with counsel reasonably acceptable to the County. Notwithstanding the foregoing, the County shall be entitled, on its own behalf, and at the expense of the Contractor, to assume control of its defense or the defense of any Indemnified Party in any legal proceeding, with counsel reasonably selected by it. Should the County elect initially to assume control of its defense, or the defense of any Indemnified Party, it does so without prejudice to its right subsequently to request that Contractor thereafter assume control of the defense and pay all attorney's fees and costs incurred thereby.

GC 7. ASSIGNMENT OF CONTRACT

A. The Contractor shall not assign or sublet the Contract in whole or in part without the prior written consent of the Owner. The Contractor shall not assign any monies due or to become due to it under the Contract without the prior written consent of the Owner.

B. Any assignments permitted under these documents or approved by the Owner shall, in addition, have prior written approval of all sureties of the Contractor executing bonds or insurance in the interest of this Contract.

C. If the Contractor seeks to assign any portions or monies as permitted, Contractor shall pay to the Owner $1,000 to cover Owner's costs each time an assignment occurs.

GC 8. SEPARATE CONTRACTS

A. The Owner reserves the right to let other contracts in connection with this Project. The Contractor shall afford all other such contractors reasonable opportunity for storage of their materials; shall provide that the execution of their work properly connects and coordinates with theirs; and shall cooperate with them to the end of facilitating the Work.

B. The work performed or executed under other contracts in advance of work under this Contract shall be inspected and determined to be in proper condition by the Contractor before permitting related or connecting work to proceed under this Contract.

C. Contractor shall immediately notify Architect, Owner's Representative, and Project Inspector through the Construction Administrator of any discrepancies, defects or other conditions found unsuitable for proper execution of the Work.

GC 9. CONFERENCES

A. At any time during the progress of the Work, the Owner, Construction Administrator, Owner’s Representative, or Architect shall have authority to require the Contractor to attend a conference of any or all of the contractors engaged in the Work; and any notice of such conference shall be duly observed and complied with by the Contractor.

GC 10. TERMS OF PAYMENT

A. Within thirty (30) calendar days after the award of the Agreement, and before submission of the first application for payment, the Contractor shall submit to the County for approval a Schedule of Values allocated to the various portions of the Work, prepared in such form and supported by such data to substantiate its accuracy as the County may require. This schedule, unless objected to by the County, shall be used only as a basis for the Contractor's Applications for Payment. This Schedule of Values shall be so arranged that the value of the Work as it progresses may be readily determined. Payment for change order work will be made if the change order work is complete and is approved prior to the Owner’s Representative issuing the monthly certification of payment. The total sum of the Schedule of Values shall equal the Contract Price.

B. The Contractor shall, on or before the first day of each month, make an estimate of the work performed during the preceding month and submit an itemized application for payment, supported by such data substantiating the Contractor's right to payment as the County may require, including appropriate monthly updates to the construction progress schedule, and reflecting retention, if any, as provided elsewhere in the Contract Documents. Absent an express finding pursuant to Public Contract Code section 7201(b) authorizing the County to withhold a higher amount of retention (in excess of 5% of the estimated value of the work done and the labor, materials, equipment, and services provided), the County shall retain an amount from each progress payment not to exceed 5% of the estimated value of the work done and the labor, materials, equipment, and services provided, all in accordance with Public Contract Code section 7201, and the County shall pay to the Contractor ninety percent (95%) of the value of said work in place, as checked and approved, within thirty (30) calendar days of the County’s receipt of an undisputed and properly submitted application for payment. The balance of five percent (5%) of the estimate shall be retained by the

County until the time of final acceptance of the Work, and release in accordance with requirements of the Contract Documents and California law. In lieu of the five percent (5%) retainage, the Contractor may substitute securities as provided for in Public Contract Code Section 22300.

C. As a condition precedent to payment by County, each itemized application for payment shall be accompanied by a current Conditional Waiver and Release On Progress Payment, in the form specified by the applicable California Civil Code, from Contractor and each of Contractor's subcontractors, suppliers, and union trust funds for which payment is sought by the application for payment, and an Unconditional Waiver and Release On Progress Payment, in the form specified by the applicable California Civil Code, from Contractor and each of Contractor's subcontractors, suppliers, and any union trust fund for which payment was sought by Contractor in the immediately preceding application for payment and for which the County made payment.

D. The Contractor warrants that title to all work, materials and equipment covered by an application for payment will pass to the County, or its assignee, either by incorporation in the construction or upon receipt of payment by the Contractor, whichever occurs first, free and clear of all liens, stop notices, claims, security interest or encumbrances hereinafter referred to in this section as "liens"; and that no work, materials or equipment covered by an application for payment will have been acquired by the Contractor, or by any other person performing work at the Project or furnishing materials and equipment for the Project, subject to an agreement under which an interest or an encumbrance is retained by the seller or otherwise imposed by the Contractor or such other person.

E. Unless otherwise provided in the Contract Documents, payments may be made, within the sole discretion of the County, on account of materials or equipment not incorporated in the Work but delivered and suitably stored at the Project site and, if approved in advance by the County, payments may similarly be made for materials or equipment suitably stored at some other location agreed upon in writing. Applications for payment must differentiate between materials stored on site and materials stored off site. Payments for materials or equipment stored on or off the Project site shall be allowed only at the sole discretion of the County and shall be conditioned upon submission by the Contractor of a detailed description of all such materials and equipment and of bills of sale or such other procedures satisfactory to the County to establish the County's title to such materials or equipment or otherwise protect the County's interest, including applicable insurance and transportation to the Project site for those materials and equipment stored off the Project site. In addition, as a further condition precedent to payment for stored materials, Contractor shall:

1. Provide certificate of insurance, evidence of transfer of title to Owner, and consent of surety to payment, for stored materials.
2. Provide supporting documentation that verifies amount requested, such as paid invoices. Match amount requested with amounts indicated on documentation; do not include overhead and profit on stored materials.
3. Provide summary documentation for stored materials indicating the following:
    a. Value of materials previously stored and remaining stored as of date of previous applications for payment.
    b. Value of previously stored materials put in place after date of previous application for payment and on or before date of current application for payment.
    c. Value of materials stored since date of previous application for payment and remaining stored as of date of current application for payment.

Contractor must complete specific considerations and comply with the requirements of the Contract Documents before purchasing any materials ahead of their scheduled installation. While there are clearly recognized benefits to both the Owner and Contractor for purchasing materials early, there is also increased risk and additional work required to protect those purchases and track them appropriately. It is Contractor's responsibility for the risk management of stored items and security that includes warranty protections. Purchasing of items must be approved by Owner's Representative prior to ordering materials to be delivered.

The County will only consider ahead-of-schedule material purchases under the following conditions:

1. Contractor provides supporting documentation (narrative) demonstrating valid reason or cause (such as long lead time, material or manufacturing shortages, tariffs, etc.)
2. Approved items have been inventoried by the Construction Administrator or Owner's Representative
3. Materials are stored in a safe and weather protected manner
4. Stored materials will be available for periodic inspections by Construction Administrator or Owner's Representative
   a. If inspection is requested by County, Contractor shall reimburse Owner's Representative, Construction Administrator or Project Inspector for transportation, per diem and wages if out-of-town travel is required to reach storage location for inspection.
5. Stored materials have a required jobsite availability date clearly established in the project construction schedule.

The County will not consider payment for stored materials that are:

1. Not itemized
2. Raw materials or any items that are not ready for immediate installation at jobsite
3. Items that are not documented in the construction schedule
4. Items that are greater than 10% of the overall contract or 15% of current progress payment
5. Long lead items greater than 8 weeks

Additional requirements for stored materials:

1. Requests for storing materials offsite must be made at least 14 days prior to submission of pay application
2. Only bonded subcontractors and vendors will be considered for storage. Bonded subcontractors and vendors must show bonding documents that show County as assignee
3. Materials stored, but not requesting payment must be stored in a bonded facility unless in transit
4. Materials stored at the manufacturing facility will not be paid in advance unless it can be proven to be physically segregated from the rest of the facility. Materials stored at the manufacturing facility must be labeled with job identification, fenced off, shrink-wrapped or otherwise securely separated from regular inventory, to County's satisfaction.
5. Access and delivery of goods must be able to be cleared for release by Contractor in the event of a subcontractor/vendor failure to perform or replacement
6. Manufacturer warranty periods must be extended for the full duration that the materials are in storage

Contractor will keep an inventory log of stored materials offsite as well as onsite (yet to be installed) and submit with each upcoming progress payment funding request.
The inventory log must include the following:

- Description – that includes storage disposition and subcontractor/vendor responsibility information
- Onsite Previously Billed – quantities and values
- Onsite Previously Billed Now in Place – quantities and values
- Onsite Billed This Period – quantities and values
- Offsite Previously Billed – quantities and values
- Offsite Previously Billed Now in Place – quantities and values
- Offsite Billed This Period – quantities and values
- Total Currently Stored Onsite – values
- Total Currently Stored Offsite - values

Supporting documents to be submitted for approval fourteen (14) days prior to approval

- Subcontractor/vendor provides copies of insurance/bonding certification documents for storage location during the time of storage and naming the County as additional insured
- Subcontractor/vendor provides evidence of insurance coverage during transportation of stored materials and naming the County as additional insured

- Subcontractor/vendor provides letter accepting responsibility for any deductibles placed on those specific stored materials
- Copies of invoices/bill of sale
- Copy of log stored materials with updated disposition of materials stored status that includes locations, bonding information, dates of insurance certificate coverage periods, etc.
- Photographic evidence of stored materials in the conditions in which they are stored and with identifiable markings on them indicating invoice/bill of sale relationship. Packing slips do not contain enough information to identify specific materials with job orders
- Evidentiary photos must be labeled with a description of the materials and the date pictures were taken.

F. Acceptance of any work and payments therefore shall be made upon written recommendation of the Owner's Representative and Architect.

G. Payments to the Contractor will be made within 30 days of receipt of an undisputed and properly submitted application for payment in accordance with Owner's regular approval and accounting procedures, based upon statements or certificates received as issued or approved by the Owner's Representative, including written certification that complete certified payroll records have been, or will be, submitted to the Labor Commissioner as required by the California Labor Code.

H. The Contractor shall promptly pay each subcontractor upon receipt of payment from the County, out of the amount paid to the Contractor on account of such subcontractor's work, the amount to which subcontractor is entitled, reflecting the percentage actually retained, if any, from payments to the Contractor on account of such subcontractor's work. The Contractor shall, by an appropriate written agreement with each subcontractor, require each subcontractor to make payments to their sub-subcontractors in similar manner.

I. Neither certification of a progress payment, delivery of a progress payment, nor partial or entire use or occupancy of the Project by the County, shall constitute an acceptance of any work not in accordance with the Contract Documents, nor shall it be deemed a waiver of County of any remedy it may have in law or equity.

J. The County may withhold any payment in whole or in part to the extent necessary to reasonably protect the County, if it is unable to verify the accuracy of an application for payment. If the County is unable to verify the accuracy of an application for payment, the County will notify the Contractor in writing. If the Contractor and the County cannot agree on a revised amount, the County will promptly process payment for those amounts for which it is able to verify. The County may also withhold any payment, or portion thereof, to protect the County from loss because of subsequently discovered:

(i) Defective work not remedied;

(ii) Third party claims filed or reasonable evidence indicating probable filing of such claims, including claims by separate contractors;

(iii) Failure of the Contractor to make payments properly to subcontractors, or for labor, materials or equipment;

(iv) Reasonable evidence that the Work cannot be completed for the unpaid balance of the Contract Price;

(v) Damage to the County or another contractor;

(vi) Reasonable evidence that the Work will not be accomplished in compliance with the Contract Time;

(vii) Failure to carry out the Work in accordance with the Contract Documents, including, without limitation, the failure to make required submittals;

(viii) Stop notice(s) served upon the County;

(ix) Failure to submit certified weekly payrolls;

(x) Failure or refusal of Contractor to comply with the Contract Documents, including the failure of the Contractor to provide any required warranty/maintenance bond; and

(xi) Any other material breach of the Contract Documents by Contractor and/or its subcontractors or suppliers of any tier.

When the grounds above are removed, payment shall be made by County for amounts withheld because of them within 30 days thereafter.

Should Stop Notices be filed with the Owner, Owner shall in accordance with California Civil Code Section 9358, withhold the amount claimed, plus an allowance of 25% to cover its litigation costs plus interest at the rate of 10%, from certificates until such claims have been resolved pursuant to law.

K. Subject to and in accordance with the requirements of California law (including Public Contract Code section 7201) and the Contract Documents, the County shall hold retainage from the Contractor. The Contractor, or its subcontractors, shall return all monies withheld in retention from a subcontractor within the time periods authorized under California law after receiving payment for work satisfactorily completed and accepted including incremental acceptances of portions of the contract work. Any violation of this provision shall subject Contractor, or its subcontractors, to the penalties, sanctions and other remedies specified under California law. These requirements shall not be construed to limit or impair any contractual, administrative, or judicial remedies otherwise available to County or the Contractor, or its subcontractors, in the event of a dispute involving late payment or nonpayment by Contractor, deficient subcontract performance, or noncompliance by a subcontractor. This provision applies to both DBE and non-DBE contractors and subcontractors.

Pursuant to Section 22300 of the California Public Contract Code, the Contractor may elect to substitute securities for any monies withheld by the County to ensure performance under the Contract Documents. At the request and expense of the Contractor, securities equivalent to the amount withheld shall be deposited with the County, or with a state or federally chartered bank as the escrow agent, who shall then pay such monies to the Contractor. Upon satisfactory completion of the requirements of the Contract Documents, the securities will be returned to the Contractor. Such securities, if deposited by the Contractor, shall be valued by the County, whose decision on valuation of the securities shall be final. Securities eligible for investment under this provision shall be limited to those listed in Section 22300 of the Public Contract Code.

L. Contractor, and its subcontractors, shall pay any subcontractor not later than seven (7) calendar days of receipt of each progress payment in accordance with the provision in section 7108.5 of the California Business and Professions Code concerning prompt payment to subcontractors. Any violation of section 7108.5 shall subject the violating contractor or subcontractor to the penalties, sanction and other remedies of that section. This requirement shall not be construed to limit or impair any contractual, administrative, or judicial remedies otherwise available to County or the Contractor, or its subcontractors, in the event of a dispute involving late payment or nonpayment by the Contractor, deficient subcontract performance, or noncompliance by a subcontractor. This provision applies to both DBE and non-DBE subcontractors.

M. When the Work is ready for acceptance by the County, the Owner's Representative will confirm whether the Work has reached Substantial Completion and will prepare a list of items to be complete or corrected. The failure to include any item on such list does not alter the responsibility of the Contractor to complete all Work in accordance with the Contract Documents.

N. Upon final completion of all work and Final Acceptance by the Board of Supervisors, with the contract requirements having been fully and completely satisfied including, without limitation:

1. Acceptance of the work by the Owner's Representative and Architect
2. The Contractor providing to the County all documents and information required by the Contract Documents including, without limitation:
    a. All releases
    b. Maintenance guarantees
    c. Maintenance manuals and technical specifications
    d. All requirements for Contract Closeout including as set forth Section 01 77 00 herein

And Thirty-five (35) days after recordation by the County of a Notice of Completion with the County Recorder following Board of Supervisor's Acceptance:

1. All claims for labor and materials have been paid
2. No claims shall have been filed with the County based upon acts or omissions of the Contractor
3. No stop notices have been filed

The Contractor shall be entitled to the balance due for the completion and acceptance of the Work, less sums withheld for liquidated damages, if any, or any other damages incurred by the County or other sums withheld pursuant to the terms of the Contract Documents or by law.

O. The making of final payment shall not constitute a waiver of any claims by the County.

P. Subject to the terms of the Contract Documents, the acceptance of final payment shall, after the date of Substantial Completion of the Project, constitute a waiver of all Claims by the Contractor.

Q. All provisions of this Agreement, including without limitation those establishing obligations and procedures, shall remain in full force and effect notwithstanding the making or acceptance of final payment.

R. Final payment will be made in accordance with the Contract Documents and California law, including, without limitation, Public Contract Code § 7107.

S. Pursuant to Public Contract Code § 7107, in the event of a dispute between the County and Contractor, the County may withhold from the final payment an amount not to exceed 150 percent of the disputed amount.

GC 11. CONFLICTS OR ERRORS

A. During construction, if any conflicts are discovered in the Plans or Specifications, they shall be immediately submitted to the Owner's Representative who will render an interpretation on what was intended and the Contractor agrees to furnish all things necessary by such interpretation to the satisfaction of the Owner's Representative without additional expense to the Owner.

B. The Contractor shall not contend that any error, delay or default in its work is due to omission or ambiguity in said plans or specifications.

C. If errors are found in the Contract Documents that cannot be termed conflicts, the Contractor shall immediately notify the Owner's Representative no later than 10 calendar days following the discovery of any such error.

D. Refer to G.C. 24, Unity of Documents.

GC 12. CHANGES IN THE WORK

A. No modification or deviation from Plans and Specifications will be permitted by the Contractor without prior written consent of Owner. However, Owner, without invalidating the Contract, and with or without notice to Contractor's surety, may order extra work or make changes by altering, adding to, or deducting from the Work, Changes in the work may be accomplished after execution

of the Contract, and without invalidating the Contract, by Change Order or Field Order subject to the limitations stated herein.

B. A Change Order shall be based upon agreement between the Owner and Contractor; a Field Order may or may not be agreed to by the Contractor.

Changes in the work shall be performed under applicable provisions of the Contract Documents, and the Contractor shall proceed promptly, unless otherwise provided in the Change Order or Field Order. Contractor agrees that any claims for extra costs for equipment shall be determined by the rates set forth in the California Department of Transportation's equipment rental rate book. Contractor shall provide notice and documentation of such daily equipment costs together with daily time and material tags within seven (7) days of incurring such costs under a Field Order. Contractor's failure to comply with the requirements of this section shall constitute a waiver of any extra equipment cost claims.

C. The credit to or charge against the Owner shall be determined as follows:

1. In the event that a modification results in a reduction of the amount of labor and material to be supplied by the Contractor, the Owner shall be given a credit equal to the actual value of such labor and materials plus a reasonable amount for the use of tools, materials and reasonable overhead and profit as set forth below;

2. In the event a modification results in an increase in the amount of labor and materials to be supplied by the Contractor, the Owner shall pay the Contractor the actual value of such labor, materials and equipment plus reasonable overhead and profit as set forth below. All costs shall be included as a lump sum price on change orders.

3. The Contractor agrees that its reasonable overhead and profit on modifications to the work shall not exceed the values in the following table:

| **Overhead and Profit Markup for Modifications to Work** | | |
|---|---|---|
| Modified Raw Cost of Materials and Labor | Work is Self-performed by General Contractor (GC) | Work is Subcontracted |
| $1 - $1,000 | 20% to GC | 10% to Subcontractor<br>10% to GC |
| $1,001 - $15,000 | 15% to GC | 10% to Subcontractor<br>5% to GC |
| $15,001 - $30,000 | 12% to GC | 10% to Subcontractor<br>4% to GC |
| $30,001 - up | 10% to GC | 10% to Subcontractor<br>2% to GC |

2. Cost Proposals for all changes shall be submitted by the Contractor to the Construction Administrator for review by the Owner's Representative and Architect. The Contractor shall submit all Cost Proposals within 15 calendar days following the discovery of any potential change. The Owner's Representative shall render a written decision as to reasonable costs within 15 calendar days of receiving cost proposal unless more time is agreed to by both Contractor and Owner's Representative.
3. Any increases in cost or extension of time shall be approved by the Owner's Representative, Architect and Owner, on a signed change order.
4. In the event that the Contractor, for whatever reason, does not accept the dollar amount of increase or decrease or extension of time to the contract amount in the decisions rendered by the Owner, Contractor shall, upon receiving written Field Order from the Owner, proceed with the work called for in the Cost Proposal on a force account basis. Any claim for dollar increases or extension of time shall be made in writing to the Owner's Representative in accordance with the provisions of GC 51, Claims Procedures.

D. In response to a request for a proposed modification, Contractor shall promptly furnish within 15 calendar days, relevant cost breakdowns, time estimates and other information as may be required to the Owner's Representative.

E. A Change Order is a written instrument prepared by the Owner's Representative, recommended by the Architect and signed by the Owner and Contractor stating their agreement upon all of the following:

1. The change in the work;
2. The amount of the adjustment, if any, in the Contract Price; and
3. The extent of the adjustment, if any, in the Contract Time.

Eliminated Items - The Owner reserves the right to eliminate any contract item of work prior to the award of the Agreement without incurring any obligation to pay therefor. Should any contract item of the Work be eliminated in its entirety following the award of the Agreement and in the absence of an executed Change Order covering such elimination, payment will be made to the Contractor for reasonable costs actually incurred, and which are validated by Owner as being incurred, in connection with such eliminated contract item if incurred prior to the date of notification in writing by the Owner of such elimination.

An executed Change Order shall constitute a final settlement of all matters relating to the change in the work which is the subject of the Change Order, including, but not limited to, all direct and indirect costs associated with such change, any adjustments to the Contract Price, and any and all adjustments to the Schedule or Contract Time.

F. A Field Order is a written order prepared by the Owner's Representative and signed by the Owner, directing a change in the work prior to agreement on adjustment, if any, in the Contract Price or Contract Time, or both. The Owner may by Field Order, without invalidating the Contract, order changes in the work within the general scope of the Contract consisting of additions, deletions or other revisions, the Contract Price and Contract Time being adjusted accordingly.

To the extent Owner refuses to issue a change order for such work or the Owner and Contractor cannot agree on the cost or credit or time for the changed work, Contractor shall nevertheless perform that work as expeditiously and timely as possible and shall submit a complete and specific claim for additional compensation or extension of the time for performance within ten (10) days after such work is performed. For each day any extra work is performed, Contractor shall identify the same in the daily report in a format as required by Owner, and Contractor shall complete, sign and deliver to Owner a specific daily extra work form detailing the actual extra work performed. Contractor's failure to provide written notice of claim prior to undertaking such work, or failure to submit timely the daily report, the daily extra work report, and a complete and specific claim for additional compensation or extension of the time for performance, shall be deemed a waiver and abandonment of any such claim. No claim, dispute or controversy shall interfere with the progress or performance of the work.

G. A Field Order shall be used in the absence of total agreement on the terms of a Change Order.

If the Field Order provides for an adjustment to the Contract Price, the adjustment shall be based on one of the following methods:

1. Mutual acceptance of a lump sum properly itemized and supported by sufficient substantiating data to permit evaluation;
2. Unit prices stated in the Contract Documents or subsequently agreed upon;
3. Cost to be determined in a manner agreed upon by the Owner and Contractor and a mutually acceptable fixed or percentage fee; or
4. As provided in Subsection I below.

H. A Field Order signed by the Contractor indicates the Contractor's agreement therewith, including adjustment in Contract Price and Contract Time or the method for determining them. Such agreement shall be effective immediately and shall be recorded as a Change Order.

I. If the Contractor does not respond promptly or disagrees with the method for adjustment in the Contract Price, the Owner's Representative shall determine the method and the adjustment on the basis of reasonable expenditures and savings of those performing the work attributable to the change, including, in case of an increase in the Contract Price, an amount for overhead and profit as set forth in the Agreement, or if no such amount is set forth in the Agreement, a reasonable amount. In such case, and also under Subsection H above, the Contractor shall keep and present, in such form as the Owner's Representative may prescribe, an itemized accounting together with appropriate supporting data. Unless otherwise provided in the Contract Documents, costs for the purposes of this section shall be limited to the following:

1. Costs of labor, including social security, old age and unemployment insurance, fringe benefits required by agreement or custom, and workers' compensation insurance;
2. Costs of materials, supplies and equipment, including cost of transportation, whether incorporated or consumed;
3. Rental costs of machinery and equipment, exclusive of hand tools, whether rented from the Contractor or others;
4. Costs of premiums for all bonds and insurance, permit fees, and sales, use or similar taxes related to the work; and
5. Additional costs of supervision and field office personnel directly attributable to the change.

J. The amount of credit to be allowed by the Contractor to the Owner for a deletion or change that results in a net decrease in the Contract Price shall be actual net cost as calculated in paragraph C above and confirmed by the Owner's Representative. When both additions and credits covering related work or substitutions are involved in a change, the allowance for overhead and profit shall be figured on the basis of net increase, if any, with respect to that change.

K. Pending final determination of the total cost of a Field Order to the Owner, the Contractor may request payment for work completed under the Field Order in Applications for Payment. The Owner's Representative will make an interim determination for purposes of monthly certification for payment for those costs and certify for payment the amount that the Owner's Representative determines, in the Owner's Representative's professional judgment, to be reasonably justified. The Owner's Representative's interim determination of cost shall adjust the Contract Price on the same basis as a Change Order, subject to the right of either party to disagree and assert a Claim in accordance with Articles 15 and 51.

L. When the Owner and Contractor agree with a determination made by the Owner's Representative concerning the adjustments in the Contract Price and Contract Time, or otherwise reach agreement upon the adjustments, such agreement shall be effective immediately and the Owner's Representative will prepare a Change Order. Change Orders may be issued for all or any part of a Field Order. Failure of the Contractor to notify the Owner of any disagreement with any proposed adjustment to the Contract Price, Schedule and/or Contract Time, as applicable, or method for determining them set forth in a Field Order within seven (7) days after the date of receipt by the Contractor of such Field Order shall be deemed to be an agreement by the Contractor to the proposed adjustment to the Contract Price, Schedule and/or adjustment to the Contract Time, as applicable, or method for determining them set forth in such Field Order, and shall constitute a waiver by Contractor of any claims related thereto.

GC 13. GUARANTEE

A. The Contractor shall be held responsible to make-good any defects due to faulty, improper or inferior workmanship or materials arising or discovered in any part of the Work within one (1) year after the completion and final acceptance of the same by the Owner's Representative, Architect and Owner unless a longer period is called for in the Technical Specification Sections. Any and all guarantee periods, one year or otherwise, do not in any way limit or waive the County's rights to pursue legal action for patent or latent construction defects in accordance with California Code of Civil Procedure sections 337.1 and/or 337.15.

B. In the event of failure of Contractor to comply with the requirements of any guarantee by this Contract, including without limitation the guarantee(s) provided by this section, within seven (7) days after being notified in writing, Owner is authorized to proceed to have the defects repaired and made good at the expense of Contractor, who shall pay the costs and charges therefore immediately on demand.

C. Acceptance of the Work by the Owner's Representative, Architect or Owner shall in no way absolve the Contractor from the responsibility of complying with the provisions of the Plans and Specifications and other contract documents, even though deviations may not be discovered within the aforementioned one year period.

D. The bond for faithful performance furnished by the Contractor shall cover such defects and protect the Owner against them and remain in force during the one year guarantee period.

GC 14. INTERPRETATIONS

A. The Contractor shall comply with the obvious intent and meaning of the Plans and Specifications which shall be construed to include all material, measures and modes or work necessary to complete the work required in a workmanlike manner, in strict accordance with these Plans and Specifications, and to the satisfaction of the Owner.

B. Should any question arise as to the intent and interpretation of the Plans or Specifications, the Contractor shall promptly, upon discovery thereof, refer the same in writing to the Owner's Representative, whose decision thereon shall be final.

GC 15. DECISIONS BY ARCHITECT AND/OR OWNER'S REPRESENTATIVE

A. The Owner's Representative shall, in all cases, determine whether the amount and quality of the several kinds of work which are to be paid for under the Contract are in accordance with the Plans and Specifications.

B. The Owner's Representative shall have power to cause all or any part of the Work to be expedited with greater diligence when delayed or stopped.

C. When requested by the Owner's Representative, the Architect's decisions in matters relating to artistic effect will be final if consistent with the intent of the Contract Documents.

D. Where not involving a change in the agreed Contract Price or Contract Time, and not inconsistent with the intent of the Contract Documents, the Owner's Representative shall have authority to:
1. Correct any errors or inconsistencies in, and make any deletions from or additions to the drawings and specifications;
2. Order minor changes or adjustments in the work, whether by field order, notations on Contractor's submittals, or other instructions;
3. Order certain portions of the work delayed when particularly involved with or affected by any Change Order in process or being considered by Owner.

E. The Owner's Representative will be the interpreter of the requirements of the Contract Documents and the judge of the performance thereunder by both the Owner and Contractor.

F. The Architect, when requested by the Owner's Representative, will render interpretations necessary for the proper execution or progress of the Work, with reasonable promptness and within fifteen (15) calendar days.

G. Claims, disputes and other matters in question between the Contractor and the Owner relating to the execution or progress of the Work or the interpretation of the Contract Documents shall be referred to the Owner's Representative for decision which the Owner's Representative will render in writing with a reasonable promptness and within fifteen (15) calendar days. In the absence of a

written decision by Owner's Representative, said claims, disputes and other matters shall be deemed denied or rejected.

GC 16. ADMINISTRATION OF THE CONTRACT

A. The Construction Administrator will provide administration of the Contract. Maintenance of the Project records for the Contract shall be as prescribed by the Owner's Representative and as hereinafter described.

B. The Owner's Representative will be the representative of the Owner during construction and until final payment is due. The Architect will advise and consult with the Owner's Representative and Owner. The Owner's instruction to the Contractor shall be forwarded through the Construction Administrator. The Construction Administrator will have authority to act on behalf of the Owner only to the extent provided in the Contract Documents, unless otherwise modified by written instrument.

C. The Construction Administrator, Owner's Representative, Project Inspector or Architect will not be responsible for and will not have control or charge of construction means, methods, techniques, sequences or procedures, or for safety precautions and programs in connection with the Work, and will not be responsible for the Contractor's failure to carry out the Work in accordance with the Contract Documents. The Construction Administrator, Owner's Representative, Project Inspector or Architect will not be responsible for or have control over acts or omissions of the Contractor, subcontractors, or any of their agents or employees, or any other persons performing any of the Work.

D. The Construction Administrator, Project Inspector, Owner's Representative and Architect shall at all times have access to the Work wherever it is in preparation and progress. The Contractor shall provide facilities for such access so the Construction Administrator, Project Inspector, Owner's Representative and Architect may perform their functions under the Contract Documents.

E. Based on the Construction Administrator, Project Inspector, Owner's Representative and Architect's observations and an evaluation of the Contractor's applications for payment, the Owner's Representative will determine the amounts owing to the Contractor and will issue Certificates for Payment in such amounts as provided in GC Article 10.

F. The Construction Administrator shall, upon receipt of a complete submittal from the Contractor, make the submission to the Architect. The Architect shall review and take appropriate action on shop drawings, product data, samples, and other submittals required by the Contract Documents. Such review shall be only for general conformance with the design concept and general compliance with the information given in the Contract Documents. It shall not include review of quantities, dimensions, weights or gauges, fabrication processes, construction methods, coordination with the work of other trades, or construction safety precautions, all of which are the sole responsibility of the Contractor. The Architect's review shall be conducted with reasonable promptness, and within 21 calendar days unless otherwise noted, consistent with sound professional practice. Review of a specific item shall not indicate acceptance of an assembly of which the item is a component. The Architect shall not be required to review and shall not be responsible for any deviations from the Contract Documents not clearly noted by the Contractor, nor shall the Architect be required to review partial submissions or those for which submissions for correlated items have not be received.

G. The Owner's Representative will prepare Change Orders in accordance with GC Article 12.

H. The Contractor shall provide sufficient, safe and proper facilities at all times for the full inspection of the Work by the Architect or other representatives of the Owner, at the Project site and at the various other locations where the Project is being performed.

I. The Owner's Representative, Project Inspector and Architect will have authority to reject work which does not conform to the Contract Documents. Whenever, in their opinion, the Owner's

Representative, Project Inspector and Architect considers it necessary or advisable for the implementation of the intent of the Contract Documents, the Owner's Representative, Project Inspector or Architect will have authority to require special inspection or testing of the Work in accordance with GC Article 31, whether or not such work be then fabricated, installed or completed. However, the Owner's Representative, Project Inspector and Architect's authority to act under this Subparagraph and any decision made by them in good faith to exercise or not to exercise such authority, shall not give rise to any duty or responsibility of the Owner's Representative, Project Inspector or Architect to the Contractor, and subcontractor, any of their agents or employees, or any other person performing any the Work.

J. The duties, responsibilities and limitations of authority of the Owner's Representative as the representative of the Owner during construction as set forth in the Contract Documents will not be modified or extended without written consent of the Owner.

GC 17. NON-CONFORMING WORK

A. The fact that the work and materials have been inspected from time to time and payments on account have been made, shall not relieve the Contractor from the responsibility of replacing and making good any defective work or materials that may be discovered after the date of completion of the Work by the Contractor and its approval by the Owner's Representative, Architect, and its acceptance by the Owner.

B. Failure of Owner's Representative, Architect or Owner to object to any defects in work or material or variances from the Plans and Specifications during or after construction shall not be deemed a waiver by Owner, Owner's Representative or Architect of such defects or variances; nor by such failure shall Owner, Owner's Representative or Architect be deemed stopped from requiring Contractor to correct such defects or variances.

C. At Owner's sole option, if Owner prefers to accept non-conforming work, Owner may do so instead of requiring its removal and correction, in which case a Change Order will be issued to reflect an appropriate reduction in the Contract Price, or if the amount is determined after final payment it shall be paid by the Contractor.

D. Uncovering of Work:
1. If any portion of the Work should be covered contrary to the request of the Owner's Representative, Project Inspector or Architect, or to requirements specifically expressed in the Contract Documents, it must, if required in writing by the Owner's Representative, be uncovered for their observation and shall be replaced at the Contractor's expense.
2. If any other portion of the Work has been covered which the Owner's Representative, Project Inspector or Architect has not specifically requested to observe prior to being covered, the Owner's Representative, Project Inspector or Architect may request to see such work and it shall be uncovered by the Contractor. If such work be found in accordance with the Contract Documents, the cost of uncovering and replacement shall, by appropriate Change Order, be charged to the Owner. If such work be found not in accordance with the Contract Documents, the Contractor shall pay such costs unless it be found that this condition was caused by the Owner or a separate contractor as provided in GC 8 above, in which event the Owner shall be responsible for the payment of such costs.

E. The County's rights as set forth in this section are without prejudice to any other right or remedy the County may have under the Contract Documents or by law, including without limitation, under GC 5.

GC 18. OWNERSHIP OF DOCUMENTS

A. All Plans and Specifications shall remain the property of the Owner and shall be returned to the Owner's Representative or shall be accounted for by the Contractor before the final acceptance of building by the Owner.

B. Documents for this Project shall not be used on or for any other work or purposes without express written consent of Owner's Representative, Architect and Owner.

GC 19. DOCUMENTS FURNISHED

A. If requested, the Contractor will be supplied five (5) sets of Contract Documents for use in the work.

B. Additional sets of Contract Documents may be obtained from the County, at cost, at Contractor's expense.

GC 20. DRAWING DIMENSIONS

A. The general dimensions are shown in figures on the drawings furnished to the Contractor. These figured dimensions shall invariably have preference to scaled measurements; but the Contractor shall exercise proper caution and care to verify the figures before laying out the Work, and shall be held responsible for any omissions or errors therein that might have been avoided.

GC 21. DETAILED DRAWINGS

A. Drawings and details may be furnished to the Contractor as work progresses, showing in more elaboration the work intended to be done and the Contractor shall conform to them as being a part of the Contract.

B. No work shall be performed in advance of the receipt by the Contractor of such detailed drawings, except such work as the Owner's Representative shall order in writing to be done without details. Any complaint as to the character and extent of the details shall be made to the Owner's Representative within ten days after the Contractor has received the same. The Contractor shall notify the Owner's Representative in ample time as to when the Contractor will require these drawings so they may be prepared without causing any delay to the Work.

GC 22. SUBMITTALS

A. Shop Drawings are drawings, diagrams, schedules, coordination drawings, setting drawings and other data specially prepared for the Work by the Contractor or any subcontractor, manufacturer, supplier or distributor to illustrate some portion of the Work.

B. Product Data are illustrations, standard schedules, performance charts, instructions, brochures, diagrams and other information furnished by the Contractor to illustrate a material, product or system for some portion of the Work.

C. Samples are physical examples which illustrate materials equipment or workmanship and establish standards by which the Work will be judged.

D. The Contractor shall review, approve and submit, with such promptness as to cause no delay in its own work or in that of any other contractor, copies of all Shop Drawings, schedules for the work of the various trades and samples of materials and finishes required for the Work, together with information or supporting data as may be required or called for. The Owner's Representative will pass upon them with reasonable promptness in accordance with GC Article 16. The Contractor shall make any corrections required by the Owner's Representative or Architect and resubmit corrected copies to Owner's Representative or Architect for further review.

E. Samples required or called for shall be exactly as specified for and intended to be used in the work; and Shop Drawings shall accurately portray the work required. Materials, finishes and workmanship shall be equal in every respect to that of the reviewed submittals.

F. Submittals shall be delivered to, and as directed by, the Construction Administrator, postage or delivery charges prepaid by the Contractor in all cases. Samples returned upon request from the Contractor shall be returned by collect mail, parcel post or any carrier named by Contractor.

G. The furnishing by the Contractor for the review by the Architect of drawings, samples, schedules or other data shall not relieve the Contractor from responsibility for deviations from drawings or specifications, nor shall it relieve it of responsibility for errors of any sort in shop drawings, schedules or other submittals.

H. By approving and submitting Shop Drawings, Product Data and Samples, the Contractor represents that it has determined and verified all materials, field measurements, and field construction criteria related thereto, or will do so, and that it has checked and coordinated the information contained within such submittals with the requirements of the Work and of the Contract Documents.

I. Each Submittal shall be properly identified as required by the Construction Administrator.

J. Deviations from requirements of Contract Documents, errors, inconsistencies with submittals previously made to or reviewed by Architect, and corrections to dimensions or supporting data shall be clearly identified by the Contractor by notations on the submittals or attached explanations.

K. No portion of the Work requiring submission of a Shop Drawing, Product Data or Sample shall be commenced until the submittal has been reviewed by the Architect as provided in Subparagraph F of GC Article 16. All such portions of the Work shall be in accordance with reviewed submittals.

GC 23. SURVEY AND LAYOUT

A. All work pertaining to this Contract shall be laid out on the premises by the Contractor who shall be held responsible for its correctness.

B. The Contractor shall retain and pay for the services of a registered engineer or licensed surveyor, when required by the Plans and Specifications, or when applicable to ensure work is properly laid out, who shall lay out the main lines of the building and other improvements at the site and provide other primary lines, pile locations and levels as may be required.

C. All stakes, benchmarks, survey marks, monuments and other line or level points which have been or may be established in the building or on or about the premises shall be carefully preserved and respected by the Contractor.

D. On-site work shall be laid out to properly meet existing off-site work not required to be removed or replaced, or to lines and levels established by civil authorities having jurisdiction, as applicable to conditions at the place of the Work.

GC 24. UNITY OF DOCUMENTS

A. The Plans and Specifications are one document and any work shown, required or called for in the one and not in the other, or vice versa, shall be furnished or performed as though it were shown, required or called for in both.

B. The Contractor admits and agrees that the Contract Documents exhibit the intent and purpose of the Owner in regard to the Work, and that they are not complete in every detail and are to be considered as showing the purpose and intent only; and Contractor further agrees to furnish all labor or material for any detail that is necessary to carry out said intent and purpose without extra charge to the Owner.

C. The misplacement, addition or omission of any word, letter or punctuation mark shall in no way change the intent, purpose of meaning or the Plans and Specifications.

D. Any part of the Work or any article or detail pertaining thereto which is not specifically set forth in the Specifications or shown on the Drawings, but which is necessary for the proper completion of the Work, shall be furnished and installed at the Contractor's expense the same as if it had been partly or fully shown or specified. The Contractor shall do and furnish all things necessary to make a complete and workmanlike job in accordance with the intent and purpose of the Contract Documents.

GC 25. INSPECTION BY CONTRACTOR

A. The Contractor shall inspect, review, compare and familiarize himself with the Contract Documents and the premises of the Work, and shall at once report to the Architect and Owner's Representative, in writing, any error, omission or inconsistency within the documents or between information given and conditions observed or found at the premises.

B. The Contractor shall make a close inspection of all materials as delivered, and shall promptly return all damaged or defective materials without waiting for their rejection by the Owner's Representative, Project Inspector, or Architect.

C. Before beginning any of the Work, the Contractor shall examine all construction and work of other contractors or trades that may affect this work, and to satisfy that everything is in proper condition to receive this work; and shall at once notify the Construction Administrator and Owner's Representative in writing of any exception taken to any construction or condition so affecting this work, whether placed under this Contract or other contracts.

D. Failure to file with the Construction Administrator and Owner's Representative any notice to the contrary shall constitute acceptance by the Contractor of the construction of other contractors or trades as being suitable in all ways to receive its work, except as to defects which later develop in the work of other contractors after the execution of its own work.

E. Contractor's inspection of documents and premises shall include making known to itself the general and particular location, nature and character of the Project work, the physical and contractual conditions, provisions and requirements, the nature and extent of work and equipment to be furnished by Owner, and the limitations and various other aspects relative to this Project, including all coordination necessary for proper and timely execution of the Work.

F. Owner will not consider any claims whatsoever on account of Contractor's failure to fully investigate or determine the requirements of the Work in advance of commencing the Work or the conditions of the Work throughout its progress.

GC 26. DEVIATION FROM PLANS OR SPECIFICATIONS

A. No deviations shall be made from the Plans or the Specifications. If the Contractor shall vary from the plans the amount or value of the materials herein provided for, the Owner shall have the right to order such improper work or materials removed or replaced; any other work disturbed or damaged by such alteration shall be made good at the Contractor's expense.

GC 27. STANDARDS OF MATERIALS

A. Wherever the name or brand of a manufacturer's article is specified herein, it is used as a measure of quality and utility; a standard.

B. If the Contractor desires to use any other brand or manufacturer of equal quality and utility to that specified, Contractor shall make application to the Owner's Representative in writing, and submit samples if requested. Refer to Section 00 21 13, "Instructions To Bidders" for substitution request procedures.

GC 28. QUALITY OF MATERIALS AND LABOR

A. All materials used on this Contract shall be new and the best market quality unless specified or shown otherwise. All labor used on this Contract shall be competent and skilled for the Work. All work executed under this Contract shall be done in the best, most thorough, substantial and workmanlike manner. All material and labor shall be subject to the approval of the Architect as to its quality and fitness, and shall be immediately removed if it does not meet with approval. The Owner's Representative may refuse to issue a Certificate of Payment for unapproved work until all defective materials or work have been removed and other material of proper quality substituted therefore.

GC 29. DELIVERY AND STORAGE OF MATERIALS

In addition to all other requirements of the Contract Documents, including without limitation the construction progress schedule, Contractor shall comply with the following with respect to materials:

A. Contractor shall deliver all manufactured materials in the original packages, containers or bundles (with the seals intact) bearing the name or identification mark of all manufacturers.

B. Contractor shall deliver fabrications in as large assemblies as practicable and where specified to be shop-primed or shop-finished, they shall be packaged or crated as required to preserve such priming or finish intact and free from abrasion.

C. Contractor shall store all materials in such 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. Contractor must replace or repair to as new condition any damaged materials or equipment.

D. Contractor shall store materials so as to cause no obstructions. Materials shall be stored off sidewalks, roadways, and underground services. The Contractor shall be responsible for protecting all material and equipment furnished under the Contract.

E. All materials stored off site for which Contractor seeks payment are subject to the requirements of GC 10, Terms of Payment. Contractor shall provide a detailed description of all such materials in a form and substance as required by County in its sole discretion as a condition precedent for payment for those materials.

GC 30. OLD MATERIAL

A. Old material shall not be used.

B. Construction materials or other items used or placed in the Work later shall be considered old materials and not reused.

GC 31. TESTS

A. Contractor shall comply with the requirements set forth in Division 01, General Requirements Sections and those set forth in the construction documents.

B. If Contractor's performance of the work requires excess testing and inspection costs to the County, Contractor shall be responsible for, and pay to the Owner through deductive change order, costs of testing or inspection attributable to the following:
    1. Retesting due to failure of initial samples.
    2. Additional costs due to overtime work or extra shifts work because of improper scheduling of work or of delivery of materials by Contractor.
    3. Failure to properly notify laboratory or inspector.
    4. Changes in sources, lots or suppliers of materials after original tests.
    5. Changes in methods or materials of construction requested by Contractor that require testing, inspection, or other related services in excess of that required by original design.

6. Concrete mix designs in excess of first successful design for each concrete type.
7. Overtime or extra shift work requiring overtime work by Owner's Inspector.

GC 32. PATENT RIGHTS, COPYRIGHTS, TRADE NAMES AND ROYALTIES

A. The Contractor shall indemnify and save harmless the Owner and authorized persons acting for the Owner against all liability on account of any patent rights, copyrights or trade names which may affect the articles or materials or their application under the Contract.

B. The Contractor shall pay all royalties or other charges that may arise due to methods, types of construction, processes, materials or use of equipment and shall hold the Owner harmless from any claims or charges whatsoever which may arise; and shall furnish written assurance satisfactory to the Owner that such charges have been paid.

GC 33. COMPLIANCE WITH ALL LAWS

A. The Contractor shall conform to and abide by all applicable city, county, regional, state and federal building, labor, sanitary, health and safety laws, ordinances, rules and regulations as currently adopted or enforced, including Part 1 & 2 of Title 24, Calif. Code of Regulation and the International Building Code, International Fire Code, latest edition; Uniform Mechanical Code, latest edition; National Electrical Code, latest edition;; and the Uniform Plumbing Code, latest edition. The Project shall also comply with the Americans with Disabilities Act, and the latest editions of associated regulations; a copy of Title 24, CCR and the current California Building Code shall be made available at the job site at all times by the Contractor. Such laws and regulations shall be considered a part of the Contract Documents the same as if set forth herein full, and all work hereunder shall be executed in accordance therewith.

B. All work and materials shall be in full accordance with the latest rules and regulations of the State Fire Marshal, the Safety Orders of the Division of Industrial Safety, the National Electric Code, the Uniform Plumbing & Mechanical Codes published by the International Association of Plumbing and Mechanical Officials, and other applicable state laws or regulation including all of Title 24, Calif. Code of Regulation. Nothing in these plans or specifications is to be construed to permit work not conforming to these codes.

C. The Contractor shall be familiar with the various Federal, State and Local laws affecting public work, especially, but not limited to, those laws relating to hours of employment, minimum wage rates, payment of wages, sanitary and safety conditions for workmen, workmen's compensation insurance, type and kind of materials that can be used, non-discrimination in employment and affirmative-action programs. Contractor is advised that this is a Public Project which may be paid for, in whole or in part, by Federal, State and/or local funds. Contractor shall comply with applicable regulations and hold harmless the County for the Contractor's failure to comply. The identification or listing of certain of those laws, ordinances, rules and regulations in the Contract Documents does not excuse the Contractor from complying with other statutory requirements or provisions which are not set forth in these Contract Documents.

GC 34. PERMITS AND LICENSES

A. Unless otherwise provided in the Contract Documents, the Owner shall give all notices and procure and pay for permits and governmental fees, licenses and inspections necessary for the proper execution and completion of the Work which are customarily secured after execution of the Contract.

B. The Contractor shall obtain and pay fees for Encroachment Permits from the Local Municipality, County of Humboldt, and CalTrans as needed.

C. LICENSES: Professional, trade, business and other licenses required by state statute or local government are entirely the responsibility of the Contractor and subcontractors, and shall be prerequisite to submitting a bid proposal or performing work on the Project.

D. PERMITS:
1. Permits shall also include any cash deposits, returnable or otherwise, required by authorities having legal jurisdiction to make such demands;
2. Owner reserves the right to cancel and declare null and void the Contract should any legal permit be refused or not issued for any reason;
3. Due to cancellation for said reasons, Owner will not consider any claims by Contractor for loss of anticipated profits; or for work performed or materials procured prior to obtaining all permits required herein.

E. Contractor shall procure and deliver to the Construction Administrator in forms prescribed and complete with dates and authorized signatures, all certificates of inspection, testing or approvals required of or by State or Civil authorities having legal jurisdiction or any public authority bearing on the performance of the Work.

E. The Contractor shall give all notices and comply with all laws, ordinances, rules, regulations and lawful orders of any public authority bearing on the performance of the Work.

GC 35. TEMPORARY FACILITIES

A. The Contractor shall provide and maintain a temporary field base of operation on the sites. Said base of operation shall be for the exclusive use of the Contractor; and shall be wind and weatherproof, furnished with sufficient lighting to permit reading of blueprints. A complete set of Plans and Specifications shall be kept continuously at each site. When vacated, said structure shall be removed and the work in that area completed in accordance with the Contract requirements. Based on need, Contractor shall maintain and pay for all utilities and fuels; shall provide maintenance and other services necessary for proper use and operation; and comply with related provisions as specified.

B. The Contractor shall maintain a viable communications system at each site acceptable to the Owner's Representative, and shall maintain the same until the final completion of the Contract and the acceptance of the Work. The Construction Administrator, Owner's Representative, Architect and Project Inspector shall have free and unrestricted use of this communications system for all purposes in conjunction with the Work.

C. The Contractor shall provide water closets and urinals for use by its employees and subcontractors and their employees, and in no case shall the permanent plumbing fixtures of buildings on the site be used for this purpose without the written consent of the Owner's Representative.

D. The Contractor and each subcontractor shall furnish, at their own expense, all tools, equipment, appliances, materials, scaffolding or other means necessary for the entire completion of the Work; and shall be responsible for the care and guarding of same.

E. The Contractor and each subcontractor shall erect and maintain where necessary to the progress and completion of the Work, all exterior and interior scaffolding which shall be erected in accordance with the safety rules of the State of California; and use of which shall be unrestricted for all persons performing work on the Project.

F. The Contractor shall pay the cost of all water, gas and electricity used by its employees or subcontractors during the process of the Work, or as required for temporary services or tests and inspections.

G. Also refer to Division 01, General Requirements Sections.

GC 36. LIABILITY FOR ACCIDENTS

A. The Contractor shall be liable for any and all loss, accident, neglect, injury, or damage to person, life or property which may be the result of or may be caused by its building operations or its

execution of this Contract, and for which the Owner might be held liable; and shall protect and indemnify the Owner, the Owner's Representative, the Construction Administrator, the Project Inspector, the Architect, and/or any officer, agent or employee of the Owner and hold them harmless in every way from all claims and from all suits or actions at law for damage or injury to persons, life or property that may arise or be occasioned in any way because of its building operations or its execution of this Contract.

B. Safety Precautions and Programs:

1. The Contractor shall be responsible for initiating, maintaining and supervising all safety precautions and programs in connection with the Work.

C. The Contractor shall assume the full responsibility for personnel safety on the Project and the means and methods of construction that pertain to personnel safety. Contractor is responsible that such means and methods of construction are adequate to provide safety to all personnel while accomplishing all requirements and standards of the Contract Documents. The Owner, Architect, Construction Administrator, Project Inspector and/or their representatives have no obligation, responsibility, or jurisdiction over safety or means and methods of construction that pertain to personnel safety on the Project.

GC 37. ACCIDENT PREVENTION

A. The Contractor shall erect and maintain, as required by existing conditions and progress of the Work, all reasonable safeguards for safety and protection, including posting danger signs and other warnings against hazards, and any other necessary construction required to secure safety of life or property; and shall maintain during all night hours sufficient lights to prevent accidents or damage to life or property.

B. No earth, building, temporary or other structure shall be loaded, used or stressed so as to endanger its safety.

C. In the event of an emergency affecting the safety of persons or property, the Contractor shall act, at its discretion, to prevent threatened damage, injury or loss. Claims by Contractor on account of alleged emergency actions shall be filed in writing with the Owner's Representative.

GC 38. EXISTING PREMISES AND IMPROVEMENTS

A. The Contractor shall care for, preserve and protect existing structures, utilities and other features, fixtures or improvements at the premises, including adjacent or co-terminus properties which are not required to be removed or altered by reason of work under this Contract; and shall, likewise, care for and protect work or improvements newly placed or recently installed at the premises. Any part or portion of said existing or newly placed improvements which are removed, damaged or disturbed because of this work, shall be replaced, cleaned or otherwise returned to the original condition entirely at the expense of the Contractor.

B. The removal and/or replacing of any existing structure, pipe, conduit, pavement or other existing improvement necessary for the proper completion of any work under the Contract shall be performed by the Contractor, and no claim for extra work shall be made on account of such removal and replacement.

C. In case it shall be necessary to remove any telephone, telegraph or electrical power transmission poles, water pipes, electrical conduits, or underground structures of any character, or any portion thereof, the Owner or its agents shall be notified by the Contractor and the Contractor shall make the necessary arrangements for such removal. The right is reserved to the Owner and to gas, water, telephone, telegraph and electrical power transmission companies to enter upon the Work for purpose of making repairs and changes that have become necessary by reason of work related to the Project.

D. The Contractor shall thoroughly investigate all existing poles, wires, pipes and conduits above and below ground and shall provide for the maintenance or replacing of same, in good condition and at no expense to the Owner. Any necessary new or additional pipe or materials shall be furnished by the Contractor at its expense.

E. At the completion of the Work, the Contractor shall furnish the Owner's Representative with a written certificate from the owner of each and all conduits, pipes or structures to the effect that such replacements and maintenance have been satisfactorily performed.

F. The Contractor shall amply protect all work or improvements, set in the building or at the premises, against any possible damage; and shall furnish all necessary building paper, rough boarding or other means or materials necessary therefore.

G. Also refer to Division 01, General Requirements Sections.

GC 39. USE OF PREMISES AND CLEAN-UP

A. During the progress of the Work, materials shall be neatly stacked at such points so as not to interfere with site access and shall be properly cared for and protected against damage by weather or other causes. Project staging and parking area are defined in the plans.

B. In the case where there are several contractors operating at one time, arrangements must be made to allow the joint use of storage space so as to prevent delays in the Work and unnecessary inconveniences.

C. At the end of each working day, or as directed by the Owner's Representative, Construction Administrator, Project Inspector or Architect, the Contractor shall clean the building, premises, streets and adjacent properties of accumulated rubbish, debris, unnecessary appliances or any unused material which may constitute an obstruction to the progress or completion of the Work, whether the same was caused by its work or by the work of other crafts. Failure by the Contractor to maintain the site and building premises in a safe and clean condition will be considered a breach of contract and Contractor agrees to pay Owner for costs to have site cleaned and deduct said costs from any money due the Contractor under the contract.

D. At the completion of the Work, and as one of the requisites thereof, the Contractor shall remove any and all tools, construction equipment, machinery, surplus materials, appliances, rubbish, packing, debris or other extraneous matter of any kind from the building, premises, sidewalks, streets or adjacent premises; Contractor shall go over all of its work and put the same in perfect order and condition and in strict accordance with the terms of the Contract; and shall repair or replace all damaged, broken or stained parts of its work, whether so injured by its workmen or others.

E. No advertising signs of any kind shall be displayed on the building, premises, fences, offices or elsewhere upon the job, except the Project sign as called for in the specifications.

F. At the completion of each phase of work of each kind of work or activity, the areas so used or involved shall be left in a "broom clean" condition daily unless otherwise more particularly required.

GC 40. DIRECTION OF THE WORK

A. The Contractor shall do all of the Work and furnish all labor, materials, tools, and appliances, except as otherwise herein expressly stipulated, necessary or proper for performing the Work herein required in the manner and within the time herein specified. The mention of any specific duty or liability imposed upon the Contractor shall not be construed as a limitation or restriction of any general liability or duty imposed upon the Contractor by this contract, said reference to any specific duty or liability being made herein merely for the purpose of explanation. Until the completion and final acceptance by the Owner of all of the Work under and implied by the Contract Documents, the Work shall be under the responsible care and charge of the Contractor. The Contractor shall

rebuild, repair, restore and make good all injuries, damages, re-erections and repairs occasioned or rendered necessary or caused of any nature whatsoever, excepting only acts of God not covered by the all-risk insurance policy called for in Article GC 4 and no other, to all or any portions of the Work except as otherwise expressly stipulated. Construction activities at the site shall be as required by the Contractor to complete the Project by the prescribed completion date. Contractor must comply with Noise Abatement Provisions required in other parts of the Plans and Specifications.

B. The Contractor shall have control or charge over its subcontractors; shall be responsible to the Owner for the acts and omissions of its employees, subcontractors and their agents and employees, and other persons performing any of the Work under a contract with the Contractor, and for all orders or instructions from the Owner, Owner's Representative or the Architect.
It shall be the Contractor's duty to see that all of the subcontractors commence their work properly at the proper time and carry it on with due diligence as not to cause delay or injury either to work or materials; and that all damage caused by them or their workmen be properly made good by them or by himself at no cost to the Owner.

C. The Contractor shall keep on the work site at all times and until the acceptance certificate is issued, a competent Project Manager and Project Superintendent for the purpose of receiving and executing without delay any orders in keeping with the terms of the Contract issued by the Owner, Owner's Representative or Architect. This Superintendent shall have charge of Plans and Specifications kept on the job; shall be instructed to be familiarized closely with all the provisions of the Plans and Specifications and to follow them in a precise manner.

D. If at any time the Superintendent or workman who shall be employed by the Contractor or any of its subcontractors shall be declared by the Owner's Representative to be incompetent or unfaithful in executing the Work, then the Contractor upon receiving written notice shall, forthwith, dismiss such person and shall not again employ him on any part of the Work.

E. Contractor shall supervise and direct the Work using its best skill and attention, and shall be solely responsible for all construction means, methods, techniques, sequences and procedures and for coordinating all portions of the Work under the Contract; except that said responsibilities shall not be construed to permit use of any material, process, method or means if they are deemed unsuitable by Owner's Representative.

F. Processing of Change Orders, Cost Proposals and like administrative matters, shall follow the procedures established and approved by the Owner at commencement of work under the Contract. Change orders and other forms shall be as approved by the Owner's Representative or otherwise required or directed by Owner. Refer to GC 12.

G. Review of Contract Documents: The Contractor shall carefully study and compare the Contract Documents and shall at once report to the Architect and the Owner's Representative any conflict, error, inconsistency or omission Contractor may discover. Refer to GC 11 A.

H. The Contractor shall not be relieved from its obligations to perform the Work in accordance with the Contract Documents by the activities or duties of the Owner's Representative or Construction Administrator in their administration of the Contract, or by inspections, tests or approvals required or performed under GC 31, by person other than the Contractor. The right of general supervision by the Owner shall not make the Contractor an agent or employee of the Owner, and the liability of the Contractor for all damages to persons or to public or private property arising from the Contractor's execution of the Work shall not be lessened because of such general supervision.

I. Construction Progress Schedule:
In addition to the requirements herein regarding schedules, Contractor shall comply with all scheduling requirements of the Contract Documents, including, without limitation, Section 01 32 16, Construction Schedules.

1. The Contractor shall prepare and submit via the Construction Administrator to the Owner's Representative with copy to the Architect and the Project Inspector the Contractor's Initial Construction Schedule within ten (10) calendar days after date on the Notice to Proceed. The Contractor's Initial Construction Schedule shall be comprised of either a Simple Gantt Chart, if the contract value is less than one million dollars ($1,000,000), or a Critical Path Method network, if the contract value is one million dollars ($1,000,000) or more. The Contractor's Initial Construction Schedule shall show the dates on which each part or division of the Work is expected to be started and completed, and shall show all submittals associated with each work activity, allowing a minimum of twenty one (21) calendar days (per GC 16 F) for the Architect's review of each submittal unless a longer period of time is specified elsewhere in these Contract Documents. The work activities making up the schedule shall be of sufficient detail to assure that adequate planning has been done for proper execution of the Work and such that, in the sole judgment of the Owner, it provides an appropriate basis for monitoring and evaluating the progress of the Work. The schedule shall show the interdependence of each activity and a single critical path. The Contractor shall also submit a separate progress schedule listing all submittals required under the contract and when it is anticipated that each submittal will be submitted.
2. The Contractor's Initial Construction Schedule shall show the sequence, duration in calendar days, and interdependence of activities required for the complete performance of all work. The Contractor's Initial Construction Schedule shall begin with the date of issuance of the Notice to Proceed and conclude with the date of final completion.
3. Float, slack time, or contingency within the schedule (i.e., the difference in time between the Project's early completion date and the required contract completion date), and total float within the overall schedule, is not for the exclusive use of either the Owner or the Contractor, but is jointly owned by both and is a resource available to and shared by both Owner and Contractor as needed to meet contract milestones and the contract completion date.
4. The Contractor shall not sequester shared float through such strategies as extending activity duration estimates to consume available float, using preferential logic, or using extensive crew/resource sequencing, etc. Since float time within the schedule is jointly owned, no time extensions will be granted nor delay damages paid until a delay occurs which extends the Work beyond the Contract completion date. Since float time within the construction schedule is jointly owned, it is acknowledged that Owner caused delays on the Project may be offset by Owner caused time savings (i.e., critical path submittals returned in less time than allowed by the contract, approval of substitution requests which result in a savings of time to the Contractor, etc.). In such an event, the Contractor shall not be entitled to receive a time extension or delay damages until all Owner caused time savings are exceeded and the contract completion date is also exceeded.
5. Comments made by the Owner on the Contractor's Initial Construction Schedule during review will not relieve the Contractor from compliance with the requirements of the contract documents. The review is only for general conformance with the scheduling requirements of the contract documents. Upon the Owner's request, the Contractor shall participate in the review of the Contractor's Initial Construction Schedule submissions (including the original submittal, all update submittals, and any re-submittals). The Owner may request the participation of subcontractor in these reviews, as determined necessary by the Owner. All revisions shall be resubmitted within fifteen (15) calendar days after the Owner's review.
6. The submittal of a fully revised and acceptable Contractor's Initial Construction Schedule shall be a condition precedent to the processing of the <u>first</u> monthly payment application.
7. On any project with a construction value equal to or greater than one million dollars ($1,000,000), the Contractor must submit a Critical Path Method (CPM) network. The network shall provide a workable plan for monitoring the progress of all the elements of the Work, establish and clearly display the critical elements of the Work, forecast completion of the construction, and match the contract duration in time. Exclusive of those activities for submittal review and material fabrication and delivery, activity duration shall not be less than one (1) nor more than thirty (30) calendar days, unless otherwise approved by the Owner. In addition to the detailed network diagram, the Contractor shall submit the following reports with the original submittal and all updates and revisions:

a. Predecessor/Successor Report or a list showing the predecessor activities and successor activities for each activity in the schedule.
b. Activity Report sorted by early start or a list showing each activity in the schedule, arranged by early start dates.

8. Regardless of which schedule method the Contractor elects to use in formulating the Contractor's construction schedule, and unless the Owner's Representative in writing each month, specifically waives this requirement, an updated construction schedule shall be submitted to the Owner's Representative five (5) days prior to the submittal of the Contractor's monthly payment request. The submittal of the updated construction schedule which satisfies the requirements of the Contract Documents accurately reflects the status of the Work, and incorporates all changes into the schedule, shall be a condition precedent to the processing of the monthly payment application. Updated schedules shall also be submitted at such other times as the Owner may direct. Upon approval of a change order or issuance of a direction to proceed with a change, the approved change shall be reflected in the next schedule update submittal by the Contractor, or other update submittal approved by the Owner.
9. If completion of any part of the Work, the delivery of equipment or materials, or submittal of the Contractor submittals is behind the updated construction schedule and will impact the end date of the Work past the contract completion date, the Contractor shall submit in writing, a plan acceptable to the Owner for completing the Work on or before the current contract completion date.
10. No time extensions shall be granted nor delay damages paid unless the delay can be clearly demonstrated by the Contractor on the basis of the updated construction schedule current as of the month the change is issued or the delay occurred and which delay cannot be mitigated, offset, or eliminated through such actions as revising the intended sequence of work or other means. Contractor shall submit all disputes or claims under the provisions of GC 51, Claims Procedure, otherwise it shall be waived.
11. As a condition precedent to the release of retained funds, the Contractor shall, after completion of the Work has been achieved, submit a final Contractor's construction schedule which accurately reflects the manner in which the Project was constructed and includes actual start and completion dates for all work activities on the construction schedule.

J. The Contractor shall forward all communications to the Owner, Project Inspector, Owner's Representative and Architect through the Construction Administrator.

K. The Contractor shall keep an extra set of Plans and Specifications at the Project site at all times. The Contractor shall identify and dimension upon these Plans the exact locations of all pipes and conduits, and all changes in construction and details, and identify in these Specifications all changes in materials and equipment. Refer to Sections 01 77 00, Closeout Procedures and 01 78 39, Project Record Documents for requirements. The as-built Plans and Specifications shall be current (up-to-date) to qualify for payment and subject to verification by the Construction Administrator, Project Inspector, Architect or Owner's Representative. Upon completion of the Work, the Contractor shall provide these as-built Plans and Specifications for review by the Construction Administrator, Project Inspector, Architect or Owner's Representative prior to the final payment. The as-built Plans and Specifications shall be neatly drafted, printed on vellum and submitted as a CAD .dwg file. The requirements set forth herein are in addition to, and complementary of, the requirements set for in Section 01 77 00, Closeout Procedures and Section 01 78 39, Project Record Documents.

GC 41. CUTTING, FITTING AND PATCHING

A. The Contractor shall do all cutting, fitting and patching of work that may be required to make its several parts come together properly, and prepare it to join or be joined by the work of other contractors; and Contractor shall make good after them.

B. The Contractor shall not endanger any work by cutting, digging or otherwise; and shall not cut or alter the work of any other contractor without the written consent of the Architect; and shall not cut

a beam, timber or support of any kind without the consent of the Architect. Under no circumstances shall any principal brace, timber, truss, support or other structural member be cut or structurally weakened in any way.

C. Where the construction is required to join with or match existing work, it shall be finished exactly similar to that work so as to form complete, unified and finished work.

D. Contractor shall be responsible for and particularly supervise each and every operation and all work which in any way may affect the structural integrity of the various works, including below, on, or above grade structures, and whether for temporary or permanent work.

E. Any cost for repairs or restoration caused by cutting, digging or otherwise due to ill-timed or defective work shall be borne by the Contractor.

F. Also refer to Division 01, General Requirements Sections.

GC 42. RIGHT TO OCCUPY OR USE

A. The Owner reserves the right to occupy or use any part or parts, or the entirety of the building and/or grounds when the Owner deems the same may be safe for use or occupancy.

B. The exercising of this right shall in no way constitute an acceptance of such parts, or any part of the Work, nor shall it in any way affect the dates and times when payments shall become due from the Owner to the Contractor, nor shall it in any way prejudice the Owner's right under the Contract or any bonds guaranteeing the same. The Contract shall be deemed completed only when all the work contracted for shall be duly and properly performed and accepted by the Board of Supervisors.

C. When any part or portion of the Project is to be used or occupied by Owner in advance of final completion and acceptance, and when duly notified by Owner’s Representative, the Contractor shall arrange for completion of said portions of the Work the same as required under the Documents for the whole Work, including cleaning and other readying by the date stipulated with such notice.

D. Contractor shall not be held responsible for any damage to the occupied part of the Project resulting from Owner's occupancy.

E. Occupancy by Owner shall not be deemed to constitute a waiver of existing claims on behalf of Owner or Contractor against each other.

F. Use and occupancy by Owner prior to Project acceptance shall not relieve Contractor's responsibility to maintain all insurance and bonds required of Contractor under the Contract until the entire Project is completed and accepted by Owner.

G. If after written notification by the Owner of the intent to occupy, the Contractor feels that such occupancy will delay progress of the Work or will cause additional expense to the Contractor, Contractor may file a request for an equitable adjustment in Contract Price or Time of Completion, or both, with the Owner’s Representative. If the Owner’s Representative agrees he will either prepare a written change order for the Owner to sign or advise the Owner to delay occupancy.

GC 43. CHANGE OF CONTRACT TIME & LIQUIDATED DAMAGES

A. Change by Change Order. The Contract Time may only be changed by change order. A request for an extension or shortening of the Contract Time shall be based on written notice delivered by the party making the request to County promptly after the occurrence of the event giving rise to the request and stating the general nature of the request. Notice of the extent of the request with supporting data shall be delivered to County and shall be accompanied by the written statement that the adjustment requested is the entire adjustment to which the requesting party has reason to believe it is entitled as a result of the occurrence of said event. No request for an adjustment in the Contract Time will be valid if not submitted in accordance with the requirements of this paragraph.

B. Contract Time may be extended. The Contract Time will be extended in an amount equal to time lost due to delays beyond the control of Contractor if the request is made therefor as provided in this article. Such delays shall include, but not be limited to, acts of neglect by County or others performing additional work, or to fires, floods, labor disputes, epidemics, pandemics, abnormal weather conditions or acts of God.

C. Delay and price change. All time limits stated in the contract documents are of the essence. There shall be no adjustment of Contract Price due to delays for fires, floods, labor disputes, epidemics, pandemics, abnormal weather conditions or acts of God. This provision shall not exclude recovery for damages (including but not limited to fees and charges of engineers, architects, attorneys and other professionals and court costs) for delay by either party.

D. Delays in completion of work :

1. Notice of delays. Whenever the Contractor foresees any delay in the prosecution of the Work, and in any event immediately upon the occurrence of any delay which the Contractor regards as unavoidable, Contractor shall notify County in writing of the probability of the occurrence of such delay and its cause in order that County may take immediate steps to prevent, if possible, the occurrence or continuance of the delay or, if this cannot be done, may determine whether the delay is to be considered avoidable or unavoidable, how long it continues, and to what extent the prosecution and completion of the Work are to be delayed thereby. It will be assumed that any and all delays which have occurred in the prosecution and completion of the Work have been avoidable delays, except such delays as shall have been called to the attention of County at the time of their occurrence and found by County to have been unavoidable. The Contractor shall make no requests for extensions of time as to delay not called to the attention of County at the time of its occurrence.
2. Avoidable delays. Avoidable delays in the prosecution or completion of the Work shall include all delays which in the opinion of County would have been avoided by the exercise of care, prudence, foresight and diligence on the part of the Contractor or Contractor's subcontractors.
3. Unavoidable delays. Unavoidable delays in the prosecution or completion of the Work shall include all delays which, in the opinion of County, result from causes beyond the control of the Contractor and which could not have been avoided by the exercise of care, prudence, foresight and diligence on the part of the Contractor or the subcontractors and/or any suppliers. Delay in completion due to contract modifications ordered by County and unforeseeable delays in the completion of work or interference by other contractors employed by County will be considered unavoidable delays insofar as they interfere with the Contractor's completion of the Work.

E. Extension of time:

1. Avoidable delays. In case the Work is not completed in the time specified, including such extensions of time as may have been granted for unavoidable delays, the Contractor will be assessed damages for delay in accordance with liquidated damages provision. The Owner, however, shall have the right to grant an extension of time for avoidable delay if it is deemed in County's best interest to do so. During such extension of time, the Contractor will be charged for engineering and inspection services and other costs but will not be assessed damages for the delay.
2. Unavoidable delays. For delays which County considers to be unavoidable, the Contractor shall, pursuant to Contractor's application, be allowed an extension of time beyond the time herein set forth, proportional to such delay or delays, in which to complete the contract. During such extension of time, neither extra compensation for engineering and inspection provided nor damages for delay will be charged to the Contractor.
3. Liquidated damages. County and Contractor recognize that time is of the essence and that County will suffer financial loss if the Work is not completed within the time specified above, plus any extensions thereof allowed in accordance with this contract. They also recognize the delays, expense and difficulties involved in proving the actual loss suffered by County if the Work is not completed on time. Accordingly, instead of requiring any such

proof, and due to impracticality and difficulty of ascertaining exact damages caused by delay, County and Contractor agree that as liquidated damages for delay (but not as a penalty) Contractor shall pay County that amount set forth in the Contract, or if no such amount is specified, then one-half of one percent of the total Contract Price for each day that expires after the time specified above for completion. In case of joint responsibility for delay in the final completion of the Work, where two or more separate contracts are in force at the same time and cover work at the same site, liquidated damages assessed against any one Contractor will be based upon the individual responsibility of that Contractor for the delay as determined by, and in the judgment of, County. County shall have the right to deduct the liquidated damages from any money in its hands, otherwise due, or to become due, to Contractor, or to sue for and recover compensation for damages for nonperformance of this contract within the time stipulated. County has determined and the Contractor acknowledges that the liquidated damages as established herein are governed by the provisions of Government Code § 53069.85 and are predicated upon the reasonable damages accruing to County stemming from any delay in the completion of this Project.

GC 44. HOURS OF WORK

A. The time of service of any labor, workman or mechanic employed upon any of the work herein specified, shall be limited and restricted to that allowed by law, and no laborer, workman or mechanic employed upon said work herein specified shall be required or permitted to labor more than that allowed by law, except in cases of extraordinary emergency caused by fire, military or naval defenses or works in time of war.

B. Within thirty (30) calendar days after any workman is permitted to work over that allowed by law in any one calendar day due to such an extraordinary emergency, the Contractor shall file with the Owner a verified report setting forth the nature of the said emergency, which shall contain the name of said workman and the hours worked by them on said particular day; and failure to file said report within the said thirty day period shall be prima facie evidence that no extraordinary emergency existed.

C. The Contractor and each subcontractor shall keep an accurate record showing the name of and actual hours worked by each worker employed by said Contractor and subcontractor in connection with the work contemplated by this agreement. The record shall be kept open at all reasonable hours to inspection by the Owner or its officers or agents and by the Division of Labor Law Enforcement of the Department of Industrial Relations.

D. The Contractor shall forfeit as a penalty to the Owner twenty-five dollars ($25) for each laborer, workman or mechanic employed in the execution of this Contract by it or by any subcontractor under it, upon any public work herein specified for (a.) each calendar day during which any laborer, workman or mechanic is required or permitted to labor more than that allowed by law; or (b.) each calendar week during which any laborer, workman or mechanic is required or permitted to labor more than that allowed by law of the Labor Code of the State of California. Said sums and amounts which shall have been so forfeited pursuant to the herein paragraph and said provisions of said Labor Code shall be withheld and retained from payments due to the Contractor under this Contract, pursuant to this Contract, and the terms of said Labor Code. ;

GC 45. PREVAILING WAGE RATES & PAYROLL RECORDS

Contractor shall comply with all requirements of Federal and California law with respect to labor relations, including without limitation, as to the payment of prevailing wages, working hours, payroll records and apprentices. To the extent that there is anything in this Agreement in conflict with or inconsistent with Federal or California law, such law shall govern and control.

A. Prevailing Wage Rates

1. Pursuant to section 1770 and following of the Labor Code of the State of California, the Director of Industrial Relations has ascertained the general prevailing rate of per diem wages and the rates for overtime and holiday work in the locality in which the work is to be

performed for each craft, classification or type of worker needed to execute the Contract which will be awarded to the successful bidder, copies of which are on file at Humboldt County Public Works, 1106 Second Street, Eureka, CA 95501, Phone (707) 445-7493 and are available to interested parties on request and by reference are incorporated herein and made a part hereof. Contractor will maintain a copy of prevailing rates and wages on the job site during the contract period.

2. It shall be mandatory upon the Contractor and upon any subcontractor under it, to pay not less than the specified rates to all laborers, workers, and mechanics employed in the execution of the Contract. It is further expressly stipulated that the Contractor shall, as a penalty to the Owner, forfeit not more than $200 for each calendar day, or portion thereof, for paying less than the stipulated prevailing rates for any work done under this Contract by Contractor or by any subcontractor under it; and Contractor agrees to comply with all provisions of Section 1775 of the Labor Code.
3. In case it becomes necessary for the Contractor or any subcontractor to employ on the Project under this Contract any person in a trade or occupation (except executives, supervisory, administrative, clerical, or other non-manual workers as such) for which no minimum wage rate is herein specified, the Contractor shall immediately notify the Owner, who will promptly thereafter determine the prevailing rate for such additional trade or occupation and shall furnish the Contractor with the minimum rate based thereon. The minimum rate thus furnished shall be applicable as a minimum for such trade or occupation from the time of the initial employment of the person affected and during the continuance of such employment. Each contractor shall file a certified copy of the payroll records with the entity that requested the records within ten (10) days after receipt of a written request.
4. Any copy of records made available for inspection as copies and furnished upon request to the public or any public agency by the Owner, shall be marked or obliterated in such a manner as to prevent disclosure of an individual's name, address, and social security number. The name and address of the contractor awarded the contract for performing the contract shall not be marked or obliterated.
5. The Contractor shall inform the Owner of the location of the payroll records, including the street address, city and county, and shall, within five working days, provide a notice of any change of location and address.
6. The Contractor shall be responsible for compliance with this section.

B. Payroll Records. The Contractor agrees to comply with all requirements of Section 1776 of the Labor Code, including, without limitation, the following:
   1. The Contractor and each subcontractor shall keep an accurate payroll record, showing the name, address, social security number, work classification, straight time and overtime hours worked each day and week, and the actual per diem wages paid to each journeyman, apprentice, worker, or other employee employed by it in connection with the public work. Each payroll record shall be verified by written declaration, under penalty of perjury, stating both the following:
      a. The information contained in the payroll record is true and correct.
      b. The employer has complied with the requirements of sections 1771, 1811 and 1815 of Labor Code for any work performed by its employees on the Project.
   2. The above-referenced payroll records shall be certified and shall be available for inspection at all reasonable hours at the principal office of the Contractor on the following basis:
      a. A certified copy of an employee's payroll record shall be made available for inspection or furnished to the employee or his/her authorized representative on request;
      b. A certified copy of all payroll records shall be made available for inspection or furnished upon request to the Owner or the Division of Labor Standards Enforcement.
      c. A certified copy of all payroll records shall be made available upon request by the public for inspection or copies thereof made; provided, however, that a request by the public shall be made through either the Owner or the Division of Labor Standards Enforcement. If the requested payroll records have not been provided, pursuant to paragraph b. above, the requesting party shall, prior to being provided the records, reimburse the cost of the Contractor, subcontractors, and the entity through which the request was made. The public shall not be given access to the records at the principal office of the Contractor.

C. Pursuant to Section 1771.1(a) of the California Labor Code, a contractor or subcontractor shall not be qualified to bid on, be listed in a bid proposal, subject to the requirements of Section 4104 of the Public Contract Code, or engage in the performance of any contract for public work, as defined in Sections 1770 et seq. of the Labor Code, unless currently registered and qualified to perform public work pursuant to Section 1725.5 of the Labor Code. It is not a violation of Section 1771.1(a) for an unregistered contractor to submit a bid that is authorized by Section 7029.1 of the Business and Professions Code or by Section 10164 or 20103.5 of the Public Contract Code, provided the contractor is registered to perform public work pursuant to Section 1725.5 at the time the contract is awarded.

GC 46. TAXES

A. Any federal, state or city tax, including sales, excise, use and other taxes payable on articles furnished by the Contractor under the Contract shall be included in the Contract Price and paid for by the Contractor.

GC 47. SUBCONTRACTORS

A. In accordance with the provisions of Section 4100 et seq, of the Public Contract Code of the State of California, each bidder for the Work herein specified shall set forth in its Bid Proposal the name and location of the place of business of each subcontractor who will perform work or labor or render service to the Contractor in or about the construction of the Work or improvements in an amount in excess of one-half (1/2) of one percent (1%) of the Contractor's total Base Bid; and the portion of the Work which will be done by each subcontractor if the Contract or said work is awarded to said Bidder.

B. If the Contractor fails to specify a subcontractor or specifies more than one subcontractor for the same portion of the Work to be performed on the Contract in excess of one-half of one percent of the Contractor's total Bid, Contractor agrees to perform such portion himself and, if Contractor's Bid is accepted, Contractor shall not be permitted to subcontract that portion of the Work.

C. Should the Contractor violate any provision of the subletting and subcontracting Fair Practices Act, the Contractor will be deemed in violation of the contract and the Owner may at its option, (1) cancel the Contract. (2) assess upon the Contractor a penalty in an amount of not more than ten percent (10%) of the amount of the subcontract involved.

D. Prior to the award of the Contract, the Owner’s Representative shall notify the successful bidder in writing if the Owner, after due investigation, has reasonable objection to any person or organization on the required list of subcontractors.

E. The Contractor shall not contract with any subcontractor or any person or organization for any portion of the Work who has not been accepted by the Owner. The Contractor will not be required to contract with any subcontractor or person or organization against whom Contractor has a reasonable objection.

F If after the award of the contract, the Owner refuses to accept any person or organization on the required list of subcontractors, the Contractor shall submit an acceptable substitute and the Contract Price shall be increased or decreased by the difference in cost occasioned by such substitution, and an appropriate Change Order shall be issued; however, no increase in the Contract Price shall be allowed for any such substitution unless the Contractor has acted promptly and responsively in submitting a name with respect thereto prior to the award.

G. After the award, the Contractor shall resubmit the list of subcontractors, corrected or modified as may be necessary as directed by the Owner.

H. Subcontracting

1. Nothing contained in the Contract Documents shall be construed as creating any contractual relationship between Owner and any subcontractor. The Divisions or Sections of the Specifications, and the divisioning of the Drawings are not intended to control the Contractor in dividing the Work among subcontractors or to limit the Work performed by any trade.
2. The Owner, Owner's Representative or Architect will not undertake to settle any differences between the Contractor and its subcontractors or between subcontractors.
3. The Contractor shall cause appropriate provisions to be inserted in all subcontracts relative to the Work: (a) to bind subcontractors to the Contractor to the terms of the Contract and these General Conditions and other Contract Documents insofar as applicable to the work of subcontractors; (b) to require subcontractors to assume towards Contractor all the obligations and responsibilities which Contractor, by these Contract Documents, assumes toward Owner; (c) that requires subcontractor to agree to an assignment of the subcontract to the Owner and/or to any third party as designated by the Owner in its sole discretion, including without limitation, a replacement contractor; and (d) to give the Contractor the same power as regards terminating any subcontract that the Owner may exercise over the Contractor under any provision of the Contract Documents. The Contractor shall make available to each proposed subcontractor prior to the execution of the subcontract, copies of the Contract Documents to which the subcontractor will be bound by this paragraph and identify to the subcontractor any terms and conditions of the proposed Subcontract which may be at variance with the Contract Documents. Each subcontractor shall similarly make copies of such documents available to its sub-subcontractors.
4. Each subcontractor shall be required to:
    a. Enter into a written contract with Contractor acknowledging that no employee/employer relationship exists between Contractor and subcontractor and that no Workers' Compensation, unemployment benefits, or other personnel benefits are required by or available to subcontractor through Contractor or County.
    b. Hold harmless and to indemnify, defend and save harmless Contractor and County and its Board Members, officers and officials, Owner's Representative, Construction Administrator, Project Inspector, and the Architect and their agents, employees and volunteers , from any and all claims and losses accruing or resulting to any and all contractors, subcontractors, material suppliers, laborers, and any other person, firm or corporation who may be injured or damaged by subcontractor in the performance of this Agreement.
5. The Contractor shall:
    1. Schedule and coordinate the work of all subcontractors;
    2. Instruct all subcontractors to consult with other subcontractors to ascertain the locations of their various materials including stored materials and to familiarize themselves with their own material locations, making such changes as required to obtain the best results;
    3. Instruct all subcontractors to schedule their work and cooperate with the other subcontractors to avoid delays, interferences, and unnecessary work, to conform to the schedule of operations as indicated in the progress schedule, and make installations when and where directed;
    4. Require subcontractors to make all necessary changes, including removing and reinstalling of materials, at their sole expense if they fail to check with other subcontractors, and their installed work is later found to interfere with work of other subcontractors; and
    5. Follow up to ensure that all subcontractors install their work when and where directed, and in accordance with the Contract Documents.

I. Payments to Subcontractors:

1. Contractor shall pay each subcontractor or supplier upon receipt of payment from Owner, an amount equal to the percentage of completion allowed to Contractor on account of such work performed or material supplied. Contractor shall also require each subcontractor to make similar payments to its subcontractors or suppliers.

2. Contractor shall pay each subcontractor a just share of any insurance monies received by Contractor when and as applicable, and Contractor shall require each subcontractor to make similar payments to their subcontractors or suppliers.
3. The Owner's Representative may, on request and at its discretion, furnish to any subcontractor, if practicable, information regarding percentages of completion certified to the Owner on account of work done under the Contract.
4. Neither Owner, Owner's Representative or Architect shall have any obligation to see to the payment of any monies to any subcontractor except as may otherwise be required by law.

GC 48. RECORDS, ACCOUNTS AND SEGREGATED PRICES

A. The Contractor must maintain all books, records, documents, and other evidence directly pertinent to the performance of the Work in accordance with generally accepted accounting principles and practices consistently applied. The Contractor must also maintain all financial information and data used by the Contractor in the preparation or support of any cost application, or other request for equitable adjustment. Owner and its representatives will have access upon 24 hours advanced written notice, at all times during normal business hours, to all Contractor's books, summary reports, records, accounts, estimates, documents, detailed financial information, certified payroll records, and all other relevant information and documentation for the purposes of inspection, audit, and copying. The Contractor will, at no cost to Owner, provide proper facilities for such access, inspection and copying purposes.

B. Contractor shall prepare a detailed daily report in a format and containing substance subject to Owner's approval, which shall record, at a minimum, the daily work performed, the names of the trades (subcontractors) performing work and the quantity of workers for each trade, the work performed, materials delivered, equipment stored on site, weather, inspections and tests performed (and their results) and factual information sufficient to detail the daily events. All such reports shall be signed by Contractor's representative and delivered, on a weekly basis, to Owner. The Contractor shall include in the daily report information that identifies any impacts to Contractor's (including all subcontractors') activities and their productivity that Contractor contends or observes is due to conduct for which the Owner is believed to be responsible. The absence of any such notice will be understood by Owner to be an acknowledgement that Owner did not cause or contribute to any delays or impacts to the Project. Preparing and providing such daily reports is not a substitution for, or in place of the requirements of, or Contractor's obligations under, the Contract Documents.

C. Contractor agrees to include and make the requirements of this section applicable to all subcontracts, of any tier, or purchase orders in excess of $10,000, at any tier.

D. If required for convenience of Owner's accounting, Contractor shall furnish segregated prices for various other portions of the Work. These segregated prices shall be in addition to or separate from the required Schedule of Values.

E. Records must be maintained and made available during the performance of work and for five (5) years after final payment, and until final settlement of all disputes, claims, or litigation, whichever occurs later. In addition, those records which relate to any portion of this Agreement, to any change order, to any dispute, to any litigation, to the settlement of any claim arising out of such performance, or to the cost or items to which an audit exception has been taken, must be maintained and made available until final payment or final resolution of such dispute, litigation, claim, or exception, whichever occurs later.

F. The right of access provisions of this section applies to all financial records pertaining to this Agreement:
(1) to the extent the records pertain directly to Contract performance under the Agreement;
(2) to the extent required for verification of the costs incurred where such costs are the basis for billings pursuant to this Agreement including Change Orders;
(3) to the extent there is any indication of violation of the California False Claims statute or that fraud, gross abuse, or corrupt practices may be involved;

(4) if the Agreement is terminated for default or convenience.

GC 49. LIABILITY FOR TREES

A. In case of damage to or loss of trees due to carelessness or lack of sufficient protective measures specified, Contractor shall forfeit an amount as agreed to following the assessment and determination of replacement cost by an independent professional arborist.

GC 50. LIABILITY FOR SURVEY MARKS

A. In case of damage to, disturbance or removal of survey marks, field markers, monuments, or other survey or layout devices due to carelessness or lack of sufficient protective means, the party responsible for such damage, disturbance or removal shall be liable for the expense to have them replaced and reset pursuant to Section 8771 of the California Business and Professions Code.

GC 51. CLAIMS PROCEDURES

A. Notice of Potential Claim (NOPC)

1. The Contractor is not entitled to additional compensation for any cause, including a disagreement, protest, or change, an act or failure to act by the County, or the happening of an event, thing or occurrence, unless the Contractor has given the County advance written notice of potential claim (NOPC). The NOPC must clearly describe the nature, circumstances, and basis of the potential claim, and must explain the reasons that the Contractor believes additional compensation and/or time will or may be due, the nature of the costs and/or time involved, the amount of the potential claim, a request for equitable adjustment, and written and verifiable documentation and support. The nature, circumstances, basis, and reasons must remain consistent.

2. Except as otherwise required in the Contract Documents, the Contractor must promptly provide an NOPC to the County upon discovery of concealed or unknown conditions or a disagreement, protest, situation, event, or occurrence that may result in a claim. This notice must be submitted no more than 7 Calendar Days after the discovery or occurrence of an event that may be the basis for a claim for additional compensation or time; failure to do so waives the claim.

3. If costs or time cannot be reasonably determined at the time the NOPC is provided, the NOPC must be amended to include quantified cost and time impacts within 30 Calendar Days after work has ceased on the event that prompted the NOPC; failure to do so waives the claim. For NOPC events that extend more than 30 Calendar Days the Contractor must provide a monthly accounting of ongoing costs and time impacts by the 5th day of the succeeding month; failure to do so waives the claim.

B. Duty to Mitigate Damages

1. The Contractor is required to take all reasonable and practical efforts to mitigate the damaging effects of a potential current or future claim it perceives as a result of an act or failure to act on the part of the County, or as a result of an event, thing or occurrence. Written notice by the Contractor of a potential claim does not excuse the Contractor from pursuing the mitigation of a claim in good faith and with due diligence. Where possible, or if directed by the County, the Contractor must be prepared to discuss various methods of mitigation with the County prior to actual mitigation.

2. The obligation to minimize foreseeable damages requires that the Contractor use reasonable care and diligence to prevent an unwarranted incurrence of damages from a delay caused by the other party or an unforeseen event. In evaluating a delay, if, in the opinion of the County, the delay could have been avoided by due care of the Contractor, the Contractor is responsible for the additional costs attributed to the failure to mitigate.

C. Contractor's surety or sureties shall be bound by any award or judgment rendered in any proceeding arising from the Project or undertaken in accordance with the Contract Documents. Further, Contractor's surety or sureties shall be bound by and subject to the dispute resolution provisions set forth herein, and Contractor's surety or sureties shall, at the request of County (or Contractor), participate in any dispute resolution proceedings, including mediation or litigation, that occur pursuant to the Contract Documents.

D. The County and Contractor intend that differences between the County and Contractor, arising under the Agreement, be brought to the attention of the County at the earliest possible time in order that such matters may be settled, if possible, or other appropriate action promptly taken. The County and Contractor agree to initially strive to resolve all disputes amicably and in an informal manner. If the dispute resolution involves a change in the Contract work, increase or decrease in the compensation due the contractor, or adjustment in the time of completion of the Work, then the informal dispute resolution shall be confirmed by a Change Order pursuant to the Contract Documents. Informal discussions or negotiations with the County or its representatives concerning informal resolution of a dispute shall not toll or suspend the claim filing and other deadlines provided below, unless so provided by the County in writing. Contractor, and Contractor's surety or sureties, shall be bound by and subject to the dispute resolution provisions as set forth herein, and Contractor's surety or sureties shall, at the request of the County (or Contractor), participate in any dispute resolution proceedings, including mediation, arbitration or litigation that may occur pursuant to the Contract Documents.

Nothing set forth herein constitutes a waiver of the government claim filing requirements pursuant to Title 1, Division 3.6 of the California Government Code or otherwise set forth in local, state and federal law.

E. Contractor shall not be entitled to any additional time to complete work or to the payment of any additional compensation for claimed extra work (or otherwise on account of any claim, cause, act, failure to act, or happening of any event or occurrence) unless the County has issued a Change Order pursuant to the Contract Documents, or a Claim has been timely filed and approved pursuant to the Contract Documents. If the Contractor fails to timely file a written Claim in accordance with the Contract Documents, then the Contractor shall be deemed to have waived any right or remedy to thereafter pursue the claim against the County in any administrative, arbitration or litigation proceeding.

F. For purposes of this section:
1. "Claim" means a separate demand by the Contractor sent by registered mail or certified mail with return receipt requested, for one or more of the following:
    a. A time extension, including, without limitation, for relief from damages or penalties for delay assessed by the County under the Contract for the Project.
    b. Payment by the County of money or damages arising from work done by, or on behalf of, the Contractor pursuant to the Contract for the Project and payment for which is not otherwise expressly provided or to which the claimant is not otherwise entitled.
    c. Payment of an amount that is disputed by the County.
2. "Contractor" means any type of contractor within the meaning of Chapter 9 (commencing with Section 7000) of Division 3 of the California Business and Professions Code who has entered into a direct contract with the County for the Project.
3. "Subcontractor" means any type of contractor within the meaning of Chapter 9 (commencing with Section 7000) of Division 3 of the California Business and Professions Code who either is in direct contract with a Contractor or is a lower tier subcontractor.

G. Requirements for Filing of Contract Claim; Contents; Filing Deadline

1. Contents. The Contractor may file a "Contract Claim" with the County. A Contract Claim must (a) be in writing; (b) be labeled or clearly indicated as a claim under the Agreement; (c) set forth in detail the reasons why the Contractor believes additional compensation or

a time extension is or may be due, the nature of the costs involved, and, insofar as possible, the amount of the Claim; (d) include (or reference earlier provided) documents that support and substantiate the Claim; and (e) include the following certification, properly completed and executed by Contractor or any officer of Contractor:

I, _____, BEING THE _____(must be an owner or officer) OF_____(CONTRACTOR), DECLARE UNDER PENALTY OF PERJURY UNDER THE LAWS OF THE STATE OF CALIFORNIA, AND I DO PERSONALLY CERTIFY AND ATTEST THAT: I HAVE THOROUGHY REVIEWED THE ATTACHED CLAIM FOR ADDITIONAL COMPENSATION AND/OR EXTENSION OF TIME, AND KNOW ITS CONTENTS, AND SAID CLAIM IS TRUTHFUL AND ACCURATE; THAT THE AMOUNT AND/OR CONTRACT TIME EXTENSION REQUESTED ACCURATELY REFLECTS THE CONTRACT ADJUSTMENT FOR WHICH THE OWNER IS LIABLE; AND FURTHER, THAT I AM FAMILIAR WITH CALIFORNIA PENAL CODE SECTON 72 AND CALIFORNIA GOVERNMENT CODE SECTION 12650, ET SEQ., PERTAINING TO FALSE CLAIMS, AND FURTHER KNOW AND UNDERSTAND THAT SUBMISSION OR CERTIFICATION OF A FALSE CLAIM MAY LEAD TO FINES, IMPRISONMENT AND/OR OTHER SEVERE LEGAL CONSEQUENCES.

2. Filing Deadline. A Contract Claim must be submitted to the County within the following Claim filing deadlines: (a) if a deadline is set forth in the Contract Documents for filing of the particular Claim, then the Claim must be filed by the specified time; (b) if the Claim relates to extra, additional or unforeseen work for which the Contractor intends to demand additional compensation, a time extension, or both, notice shall be given to the County prior to the time that the Contractor commences performance of the work giving rise to the potential claim for additional compensation or time extension, and Contractor shall not proceed with that work until so directed by the County; and (c) for all other Claims not included within (a) or (b), the claim must be filed on or before 15 days after the date of the occurrence, event or circumstance giving rise to the Claim. In no event shall a Contract Claim be filed later than the date of final payment.

H. Claims Subject to Public Contract Code Section 9204; Procedure

1. Application. This subsection H applies solely to the handling and resolution of a Contract Claim(s) sent to the County by registered mail or certified mail with return receipt requested in accordance with Public Contract Code section 9204(c)(1).

2. Claims Handling Procedure. With respect to any Contract Claim(s) sent to the County in accordance with this Section, the provisions of Public Contract Code section 9204 shall apply, and are hereby incorporated by reference into these Standard Provisions and set forth in full in *Appendix A* to these General Conditions.

3. Claims Procedure Post-Mediation. In the event mediation, if any, is unsuccessful pursuant to Public Contract Code section 9204, and all or parts of the Contract Claim(s) remain in dispute, then the Contractor shall thereafter comply with the Claim procedures as set forth below (“Claims Equal to or Less Than $375,000”) or (“Claims Exceeding $375,000”), as applicable.

I. Claims Equal to or Less than $375,000; Procedure

1. Application. This Section applies solely to the handling and resolution of a Contract Claim(s) that is/are in an amount equal to or less than Three Hundred Seventy-Five Thousand Dollars ($375,000).

2. Claims Handling Procedure. With respect to any Contract Claim(s) subject to this section, the provisions of Public Contract Code section 20104, et seq. shall apply, and are hereby incorporated by reference into these Standard Provisions and set forth in full in Appendix B to these General Conditions.

3. Agreement to Opt-Out. Notwithstanding anything to the contrary in the Contract Documents, the County and Contractor may mutually agree at any time, in writing, that any Claim(s) to which the obligations set forth in this Section apply (i.e., unresolved Claims in an amount equal to or less than $375,000) shall be subject to the dispute resolution requirements as set forth below applicable to the resolution and handling of claims in an amount in excess of $375,000. Should the County and Contractor so agree in writing, the County and Contractor shall follow the requirements with respect to mediation and, if necessary, litigation, in accordance with Section J below.

J. Contract Work Pending Claim Resolution. In the event of any dispute between the County and Contractor, or during the pendency of any Contract Claim(s) or associated proceedings under this Section or the Contract Documents, Contractor shall not stop, or delay performance of, the Work, but shall prosecute the Work diligently to completion in the manner directed by the County.

K. Disputes Involving Architect or Design Professionals. In the event that any Claim(s) asserted by the Contractor arise from or is/are related, in any manner, to conduct or actions for which the Architect or other design professional may be responsible, the County and Contractor acknowledge and agree that the County may, in its sole discretion, require the participation and/or joinder of the Architect or other design professional in any dispute proceeding under this Section. This right shall remain solely within the discretion of the County, and Contractor shall have no rights under the Contract Documents to require or seek to compel the participation and/or joinder of the Architect or other design professional in any dispute proceeding under this Section or elsewhere under the Contract Documents.

L. Application of Section. The procedures and remedies set forth in this Section shall not apply to: (i) any claim by the County against the Contractor or its surety or sureties (unless the County, in its sole discretion, opts to proceed hereunder); (ii) any claim or dispute relating to stop notices; or (iii) any claim relating to the approval, refusal to approve or substitution of any subcontractor, regardless of tier, pursuant to Public Contract Code section 4700, et seq.

GC 52. HAZARDOUS MATERIALS AND / OR DIGGING TRENCHES

A. The following requirements shall be applicable to the Project in the event that the Contractor encounters hazardous materials and/or the Work involves digging trenches or excavations that extend deeper than four feet below the surface:

B. The Contractor shall promptly, and before the following conditions are disturbed, notify the local public entity, 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 by information about the site made available to bidders prior to the deadline for submitting bids. (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.

C. Upon receipt of notice from the Contractor, the County shall promptly investigate the conditions, and if it finds that the conditions do materially so differ, or do involve hazardous waste, and cause a decrease or increase in the contractor's cost of, or the time required for, performance of any part of the Work shall issue a change order under the procedures described in the contract.

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

contracting parties. Contractor has no right to an adjustment in Contract Time or Price after acceptance of final payment.

GC 53. NONDISCRIMINATION

A. During the performance of this contract, the Contractor and its subcontractors shall not deny the Contract's benefits to any person on the basis of religion, color, ethnic group identification, sex, age, physical or mental disability, nor shall they unlawfully discriminate, harass or allow harassment, against any employee or applicant for employment because of sex, race, color, ancestry, religious creed, national origin, disability (including HIV and AIDS), medical condition (cancer), age (over 40), marital status, denial of family care leave and denial of pregnancy disability leave in connection with any program or activity funded in whole or in part by Federal and/or State funds provided through this grant contract.

B. Contractor and all subcontractors shall insure that the evaluation and treatment of their employees and applicants for employment are free from such discrimination and harassment. Contractor and subcontractors shall comply with the provisions of the Fair Employment and Housing Act (Government Code, Section 12990 [a-f] et seq.) and the applicable regulations promulgated thereunder (California Code of Regulations, Title 2, Section 7285.0 et seq.).

C. The applicable regulations of the Fair Employment and Housing Commission implementing Government Code, Section 12990 (a-f), set forth in Chapter 5 of Division 4 of Title 2 of the California Code of Regulations are incorporated into this Contract by reference and made a part hereof as set forth in full. Contractor and subcontractors shall give written notice of their obligations under this clause to labor organizations with which they have a collective bargaining or other agreement.

D. Contractor shall comply with all applicable nondiscrimination laws and regulations.

E. The Contractor and all subcontractors shall include the nondiscrimination and compliance provisions of this clause in all contracts and subcontracts to perform work under the contract.

GC 54. RESPONSIBILITY FOR COMPLIANCE WITH OSHA

A. All work, materials, work safety procedures and equipment shall be in full accordance with the latest OSHA rules and regulations.

B. Contractor warrants that Contractor and each of its subcontractors shall, in performance of this Contract, comply with each and every compliance order issued pursuant to OSHA and CAL-OSHA. The Contractor assumes full and total responsibility for compliance with OSHA and CAL-OSHA Standards by its subcontractors as well as itself. The cost of complying with any compliance order and/or payment of any penalty assessed pursuant to OSHA and CAL-OSHA shall be borne by the Contractor. Contractor shall save, keep and hold harmless the Owner and all officers, employees and agents thereof from all liabilities, costs or expenses in law or in equity, that may at any time arise or be set up because of Contractor's or subcontractor's non-compliance or alleged non-compliance with OSHA and CAL-OSHA requirements.

C. Nothing contained herein shall be deemed to prevent the Contractor and its subcontractors from otherwise allocating between themselves responsibility for compliance with OSHA and CAL-OSHA requirements; provided, however, that the Contractor shall not thereby be, in any manner whatsoever, relieved of its responsibility to the Owner as herein above set forth.

GC 55. NUCLEAR FREE HUMBOLDT COUNTY ORDINANCE COMPLIANCE

Neither the Contractor or its subcontractors or their suppliers are Nuclear Weapons Contractors and are not knowingly or intentionally engaged in the research, development, production, or testing of nuclear warheads, nuclear weapons systems, or nuclear weapons components, as defined by the Nuclear Free Humboldt County Ordinance. Contractor and its subcontractors and/or their suppliers agree to notify Owner immediately if they become a nuclear weapons contractor as defined above.

GC 56**.** DISCOVERY OF HUMAN REMAINS OR AN ARCHAEOLOGICAL SITE

A. If cultural materials (e.g., chipped or ground stone, historic debris, building foundations, or bone) are discovered during ground-disturbance activities, work within 20 meters (66 feet) of the discovery shall be stopped, in accordance with Title 14 CCR 15064.5 [f]). The Owner's Representative will retain a professional archaeologist who meets the Secretary of the Interior's Standards and Guidelines to evaluate the materials and offer recommendations for further action. In addition, if Native American archaeological remains are inadvertently encountered, the Owner's Representative will notify the Tribal Historic Preservation Officers of the tribes which are traditionally and culturally affiliated with the geographic area of the project. The affected tribes will be provided the opportunity to observe the findings in the field and make recommendations for further action. Work near the archaeological find(s) shall not resume until the Owner's Representative provides notice that the required consultations have been performed.

B. If human remains are discovered during project construction, work within 20 meters (66 feet) of the discovery location, and within any nearby area reasonably suspected to overlie human remains, will cease (in accordance with Public Resources Code, Section 7050.5). The Humboldt County Coroner will be contacted to determine if the cause of death must be investigated. If the coroner determines that the remains are of Native American origin, it is necessary to comply with state laws regarding the disposition of Native American burials, which fall within the jurisdiction of the California Native American Heritage Commission (NAHC) (Public Resources Code, Section 5097). In this case, the coroner will contact NAHC. The descendants or most likely descendants of the deceased will be contacted. Work shall not resume until the descendants or most likely descendants have made a recommendation to the Owner's Representative for excavation work with direction regarding appropriate means of treatment and disposition, with appropriate dignity, of the human remains and any associated grave goods, as provided in Public Resources Code, Section 5097.98.

GC 57**.** CONTRACTOR RESPONSIBILITY AND DEBARMENT

A. A responsible contractor is a contractor who has demonstrated the attribute of trustworthiness, as well as quality, fitness, capacity and experience to satisfactorily perform the contract. It is the County's policy to conduct business only with responsible contractors. (Ord. 2291, § 1, 01/07/2003)

B. The Contractor is hereby notified that, in accordance with Title II, Division 14 of the County Code, if the County acquires information concerning the performance of the Contractor on this or other contract which indicates that the Contractor is not responsible, the County may, in addition to other remedies provided in the contract, debar the Contractor from bidding on County contracts for a specified period of time, not to exceed three (3) years, and terminate any or all existing contracts the Contractor may have with the County. (Ord. 2291, § 1, 01/07/2003)

C. The County may debar a contractor if the Board of Supervisors finds, in its discretion, that the contractor has done any of the following: (1) violated any term of a contract with the County; (2) committed any act or omission which negatively reflects on the contractor's quality, fitness, or capacity to perform a contract with the County or any other public entity, or engaged in a pattern or practice which negatively reflects on same; (3) committed an act or offense which indicates a lack of business integrity or business honesty; or (4) made or submitted a false claim against the County or any other public entity. (Ord. 2291, § 1, 01/07/2003)

D. If there is evidence that the Contractor may be subject to debarment, the department will notify the Contractor in writing of the evidence which is the basis for the proposed debarment and will advise the Contractor of the scheduled date for a debarment hearing before the CHB (Contractor's Hearing Board). (Ord. 2291, § 1, 01/07/2003)

E. The CHB will conduct a hearing where evidence on the proposed debarment is presented. The Contractor and/or the Contractor's representative shall be given an opportunity to submit evidence at

that hearing. After the hearing, the CHB shall prepare a proposed decision, which shall contain a recommendation regarding whether the Contractor should be debarred, and, if so, the appropriate length of time of the debarment. If the Contractor fails to avail itself of the opportunity to submit evidence to the CHB, the Contractor may be deemed to have waived all rights of appeal. (Ord. 2291, § 1, 01/07/2003)

F. A record of the hearing, the proposed decision and any other recommendation of the CHB shall be presented to the Board of Supervisors. The Board of Supervisors shall have the right to modify, deny or adopt the proposed decision and recommendation of the hearing board. (Ord. 2291, § 1, 01/07/2003)

G. These terms shall also apply to subcontractors and subconsultants of County contractors. (Ord. 2291, § 1, 01/07/2003)

## APPENDIX A: CLAIMS RELATING TO PUBLIC CONTRACTS:

**Public Contract Code - §9204** - Legislative findings and declarations regarding timely and complete payment of contractors for public works projects; claims process:

(a) The Legislature finds and declares that it is in the best interests of the state and its citizens to ensure that all construction business performed on a public works project in the state that is complete and not in dispute is paid in full and in a timely manner.

(b) Notwithstanding any other law, including, but not limited to, Article 7.1 (commencing with Section 10240) of Chapter 1 of Part 2, Chapter 10 (commencing with Section 19100) of Part 2, and Article 1.5 (commencing with Section 20104) of Chapter 1 of Part 3, this section shall apply to any claim by a contractor in connection with a public works project.

(c) For purposes of this section:

(1) “Claim” means a separate demand by a contractor sent by registered mail or certified mail with return receipt requested, for one or more of the following:

(A) A time extension, including, without limitation, for relief from damages or penalties for delay assessed by a public entity under a contract for a public works project.

(B) Payment by the public entity of money or damages arising from work done by, or on behalf of, the contractor pursuant to the contract for a public works project and payment for which is not otherwise expressly provided or to which the claimant is not otherwise entitled.

(C) Payment of an amount that is disputed by the public entity.

(2) “Contractor” means any type of contractor within the meaning of Chapter 9 (commencing with Section 7000) of Division 3 of the Business and Professions Code who has entered into a direct contract with a public entity for a public works project.

(3)(A) “Public entity” means, without limitation, except as provided in subparagraph (B), a state agency, department, office, division, bureau, board, or commission, the California State University, the University of California, a city, including a charter city, county, including a charter county, city and county, including a charter city and county, district, special district, public authority, political subdivision, public corporation, or nonprofit transit corporation wholly owned by a public agency and formed to carry out the purposes of the public agency.

(B) “Public entity” shall not include the following:

(i) The Department of Water Resources as to any project under the jurisdiction of that department.

(ii) The Department of Transportation as to any project under the jurisdiction of that department.

(iii) The Department of Parks and Recreation as to any project under the jurisdiction of that department.

(iv) The Department of Corrections and Rehabilitation with respect to any project under its jurisdiction pursuant to Chapter 11 (commencing with Section 7000) of Title 7 of Part 3 of the Penal Code.

(v) The Military Department as to any project under the jurisdiction of that department.

(vi) The Department of General Services as to all other projects.

(vii) The High-Speed Rail Authority.

(4) “Public works project” means the erection, construction, alteration, repair, or improvement of

any public structure, building, road, or other public improvement of any kind.

(5) “Subcontractor” means any type of contractor within the meaning of Chapter 9 (commencing with Section 7000) of Division 3 of the Business and Professions Code who either is in direct contract with a contractor or is a lower tier subcontractor.

(d)(1)(A) Upon receipt of a claim pursuant to this section, the public entity to which the claim applies shall conduct a reasonable review of the claim and, within a period not to exceed 45 days, shall provide the claimant a written statement identifying what portion of the claim is disputed and what portion is undisputed. Upon receipt of a claim, a public entity and a contractor may, by mutual agreement, extend the time period provided in this subdivision.

(B) The claimant shall furnish reasonable documentation to support the claim.

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

(D) Any payment due on an undisputed portion of the claim shall be processed and made within 60 days after the public entity issues its written statement. If the public entity fails to issue a written statement, paragraph (3) shall apply.

(2)(A) If the claimant disputes the public entity's written response, or if the public entity fails to respond to a claim issued pursuant to this section within the time prescribed, the claimant may demand in writing an informal conference to meet and confer for settlement of the issues in dispute. Upon receipt of a demand in writing sent by registered mail or certified mail, return receipt requested, the public entity shall schedule a meet and confer conference within 30 days for settlement of the dispute.

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

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

(D) Unless otherwise agreed to by the public entity and the contractor in writing, the mediation conducted pursuant to this section shall excuse any further obligation under Section 20104.4 to mediate after litigation has been commenced.

(E) This section does not preclude a public entity from requiring arbitration of disputes under private arbitration or the Public Works Contract Arbitration Program, if mediation under this section does not resolve the parties' dispute.

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

(4) Amounts not paid in a timely manner as required by this section shall bear interest at 7 percent per annum.

(5) If a subcontractor or a lower tier subcontractor lacks legal standing to assert a claim against a public entity because privity of contract does not exist, the contractor may present to the public entity a claim on behalf of a subcontractor or lower tier subcontractor. A subcontractor may request in writing, either on his or her own behalf or on behalf of a lower tier subcontractor, that the contractor present a claim for work which was performed by the subcontractor or by a lower tier subcontractor on behalf of the subcontractor. The subcontractor requesting that the claim be presented to the public entity shall furnish reasonable documentation to support the claim. Within 45 days of receipt of this written request, the contractor shall notify the subcontractor in writing as to whether the contractor presented the claim to the public entity and, if the original contractor did not present the claim, provide the subcontractor with a statement of the reasons for not having done so.

(e) The text of this section or a summary of it shall be set forth in the plans or specifications for any public works project that may give rise to a claim under this section.

(f) A waiver of the rights granted by this section is void and contrary to public policy, provided, however, that (1) upon receipt of a claim, the parties may mutually agree to waive, in writing, mediation and proceed directly to the commencement of a civil action or binding arbitration, as applicable; and (2) a public entity may prescribe reasonable change order, claim, and dispute resolution procedures and requirements in addition to the provisions of this section, so long as the contractual provisions do not conflict with or otherwise impair the timeframes and procedures set forth in this section.

(g) This section applies to contracts entered into on or after January 1, 2017.

(h) Nothing in this section shall impose liability upon a public entity that makes loans or grants available through a competitive application process, for the failure of an awardee to meet its contractual obligations.

(i) This section shall remain in effect only until January 1, 2027, and as of that date is repealed, unless a later enacted statute, that is enacted before January 1, 2027, deletes or extends that date.

## APPENDIX B: CLAIMS EQUAL TO OR LESS THAN $375,000:

**Public Contract Code - §20104** - Application of article; provisions included in Plans and Specifications:

(a)(1) This article applies to all public works claims of three hundred seventy-five thousand dollars ($375,000) or less which arise between a contractor and local agency.

(2) This article shall not apply to any claims resulting from a contract between a contractor and a public agency when the public agency has elected to resolve any disputes pursuant to Article 7.1 (commencing with §10240) of Chapter 1 of Part 2.

(b)(1) "Public work" means "public works contract" as defined in Section 1101 but does not include any work or improvement contracted for by the state or the Regents of the University of California.

(2) "Claim" means a separate demand by the contractor for (A) a time extension, (B) payment of money or damages arising from work done by, or on behalf of, the contractor pursuant to the contract for a public work and payment of which is not otherwise expressly provided for or the claimant is not otherwise entitled to, or (C) an amount the payment of which is disputed by the local agency.

(c) The provisions of this article or a summary thereof shall be set forth in the plans or specifications for any work which may give rise to a claim under this article.

(d) This article applies only to contracts entered into on or after January 1, 1991.

Public Contract Code - §20104.2 - Claims; requirements; tort claims excluded:

(a) The claim shall be in writing and include the documents necessary to substantiate the claim. Claims must be filed on or before the date of Final Payment. Nothing in this subdivision is intended to extend the time limit or supersede notice requirements otherwise provided by contract for the filing of claims.

(b)(1) For claims of less than fifty thousand dollars ($50,000), the local agency shall respond in writing to any written claim within 45 Days of receipt of the claim, or may request, in writing, within 30 Days of receipt of the claim, any additional documentation supporting the claim or relating to defenses to the claim the local agency may have against the claimant.

(2) If additional information is thereafter required, it shall be requested and provided pursuant to this subdivision, upon mutual agreement of the local agency and the claimant.

(3) The local agency's written response to the claim, as further documented, shall be submitted to the claimant within 15 Days after receipt of the further documentation or within a period of time no greater than that taken by the claimant in producing the additional information, whichever is greater.

(c)(1) For claims of over fifty thousand dollars ($50,000) and less than or equal to three hundred seventy-five thousand dollars ($375,000), the local agency shall respond in writing to all written claims within 60 Days of receipt of the claim, or may request, in writing, within 30 Days of receipt of the claim, any additional documentation supporting the claim or relating to defenses to the claim the local agency may have against the claimant.

(2) If additional information is thereafter required, it shall be requested and provided pursuant to this subdivision, upon mutual agreement of the local agency and the claimant.

(3) The local agency's written response to the claim, as further documented, shall be submitted to the claimant within 30 Days after receipt of the further documentation, or within a period of time no greater than that taken by the claimant in producing the additional information or requested documentation, whichever is greater.

(d) If the claimant disputes the local agency's written response, or the local agency fails to respond

within the time prescribed, the claimant may so notify the local agency, in writing, either within 15 Days of receipt of the local agency's response or within 15 Days of the local agency's failure to respond within the time prescribed, respectively, and demand an informal conference to meet and confer for settlement of the issue in dispute. Upon a demand, the local agency shall schedule a meet and confer conference within 30 Days for settlement of the dispute.

(e) Following the meet and confer conference, if the claim or any portion remains in dispute, the claimant may file a claim as provided in Chapter 1 (commencing with §900) and Chapter 2 (commencing with §910) of Part 3 of Division 3.6 of Title 1 of the Government Code. For purposes of those provisions, the running of the period of time within which a claim must be filed shall be tolled from the time the claimant submits his or her written claim pursuant to subdivision (a) until the time that claim is denied as a result of the meet and confer process, including any period of time utilized by the meet and confer process.

(f) This article does not apply to tort claims and nothing in this article is intended nor shall be construed to change the time periods for filing tort claims or actions specified by Chapter 1 (commencing with §900) and Chapter 2 (commencing with §910) of Part 3 of Division 3.6 of Title 1 of the Government Code.

Public Contract Code - § 20140.4 - Civil action procedures; mediation and arbitration; trial de novo; witnesses:

(a) Within 60 Days, but no earlier than 30 Days, following the filing or responsive pleading, the court shall submit the matter to nonbinding mediation unless waived by mutual stipulation of both parties. The mediation process shall provide for the selection within 15 Days by both parties of a disinterested third person as mediator, shall be commenced within 30 Days of the submittal, and shall be concluded within 15 Days from the commencement of the mediation unless a time requirement is extended upon a good cause showing to the court or by stipulation of both parties. If the parties fail to select a mediator within the 15-Day period, any party may petition the court to appoint the mediator.

(b)(1) If the matter remains in dispute, the case shall be submitted to judicial arbitration pursuant to Chapter 2.5 (commencing with §1141.10) of Title 3 of Part 3 of the code of Civil Procedure, notwithstanding § 1141.11 of that code. The Civil Discovery Act (Title 4 (commencing with §2016.010) of Part 4 of the Code of Civil Procedure) shall apply to any proceeding brought under this subdivision consistent with the rules pertaining to judicial arbitration.

(2) Notwithstanding any other provision of law, upon stipulation of the parties, arbitrators appointed for purposes of this article shall be experienced in construction law, and, upon stipulation of the parties, mediators and arbitrators shall be paid necessary and reasonable hourly rates of pay not to exceed their customary rate, and such fees and expenses shall be paid equally by the parties, except in the case of arbitration where the arbitrator, for good cause, determines a different division. In no event shall these fees or expenses be paid by state or county funds.

(3) In addition to Chapter 2.5 (commencing with § 1141.10) of Title 3 of Part 3 of the Code of Civil Procedure, any party who after receiving an arbitration award requests a trial de novo but does not obtain a more favorable judgment shall, in addition to payment of costs and fees under that chapter, pay the attorney's fees of the other party arising out of the trial de novo.

(c) The court may, upon request by any party, order any witnesses to participate in the mediation or arbitration process.

Public Contract Code - §20140.6 - Payment on undisputed portion of claim; interest on arbitration awards or judgments:

(a) No local agency shall fail to pay money as to any portion of a claim which is undisputed except as otherwise provided in the contract.

(b) In any suit filed under § 20104.4, the local agency shall pay interest at the legal rate on any arbitration award or judgment. The interest shall begin to accrue on the date the suit is filed in a court of law.

END OF SECTION 00 72 00

SECTION 00 73 00 - SUPPLEMENTARY GENERAL CONDITIONS

INDEX TO SUPPLEMENTARY GENERAL CONDITIONS

SGC 1. USE OF SITE – TEMPORARY FACILITES 1

SGC 2. SCHEDULING OF WORK WITH BUILDING OCCUPANTS

SUPPLEMENTARY GENERAL CONDITIONS

SGC 1. USE OF SITE – TEMPORARY FACILITIES

A. The Contractor shall have access to power and water (at exterior hose bibs) located within the area of work. Contractor parking will be allowed in parking areas on a first-come first-served basis. If building occupants require areas used for parking for loading/unloading or other uses, Contractor shall cooperate with occupants in allowing their ongoing use of these areas.
B. Under no circumstances shall Contractor or Subcontractor be allowed to washout paint, cementitious products, sealants, or other construction waste in existing bathrooms, kitchens, or utility sinks.

SGC 2. SCHEDULING OF WORK WITH BUILDING OCCUPANTS

A. The Contractor shall work with County and Veterans Groups occupying the building to allow for usage by the occupants to the maximum extent feasible, including leaving areas clear, clean, safe and available for use on specified weekends and evenings.
B. Within 10 days after Notice of Award, Contractor shall meet with County and Veterans House Committee to review building usage scheduling and identify dates for occupant usage of various spaces in the building.

END OF SECTION 00 73 00

## PART 1 GENERAL

### 1.1 SECTION INCLUDES

A. Contractor’s use of site and premises.

B. County-furnished, Contractor-installed (OFCI) items.

C. County’s occupancy requirements.

D. Specification formats and conventions.

### 1.2 CONTRACTOR’S USE OF SITE AND PREMISES

A. Vehicle access to Project site shall be held to a minimum. Vehicle access will be on one specific route approved by County; no exceptions will be allowed.

B. Coordinate use of the premises under the direction of the County.

C. Assume full responsibility for the protection and safekeeping of materials, products, and equipment under this Contract, stored on the site.

D. Move any stored materials, products, and equipment under Contractor's control which interfere with the operations of County or a separate contractor.

E. Obtain and pay for the use of additional storage or work areas needed for Contractor’s operations.

F. Contractor shall be aware of and abide by the Humboldt County and local Noise Ordinance and County’s noise prevention requirements. Contractor to verify County’s requirements.

### 1.3 COUNTY-FURNISHED AND CONTRACTOR-INSTALLED (OFCI) ITEMS

A. County-Furnished and Contractor-Installed (OFCI) Items: As indicated on the Drawings and Technical Specifications.

B. County's Responsibilities:
1. County will furnish products indicated. Schedule relocation of items with County.
2. After relocation, County will inspect delivered items for damage, jointly with Contractor.

C. Contractor's Responsibilities:
1. Contractor is responsible for relocating, unloading, and handling County-furnished items at Project site.
2. Contractor is responsible for protecting County-furnished items from damage during storage and handling, including damage from exposure to the elements.
3. Contractor shall install and incorporate County-furnished items into the Work, as indicated and as required. Work includes providing support systems to receive County's equipment and making plumbing, mechanical, electrical connections, and miscellaneous work items associated with installation of County-furnished items.
4. Contractor shall repair or replace County-furnished items damaged by Contractor’s operations, as approved by County in writing.
5. Contractor shall furnish and install fasteners and other accessories, as required for complete installation of County-furnished items.

## 1.4 COUNTY'S OCCUPANCY REQUIREMENTS

A. Full County Occupancy: County will occupy the Project site, with the exception of areas under construction, during the entire construction period to conduct normal operations.

B. Cooperate with County to minimize conflicts, and to facilitate County's operations.

C. Verify occupancy requirements with County, and schedule the Work to accommodate County's requirements.

D. Maintain access to existing walkways and other adjacent occupied or used facilities. Do not close or obstruct walkways or other occupied or used facilities without written permission from County and authorities having jurisdiction.

E. Provide not less than 72 hours' notice to County of activities that will affect County's operations.

## 1.5 ENVIRONMENTAL MANAGEMENT

A. Spills: Contractor shall clean up all fluid spills caused by leaks in the equipment or generated while Contractor is performing the work under this Contract. Contractor shall provide drip catch pans for all equipment that drips or leaks oils or other fluids. Spills generated by Contractor's operation shall be cleaned up by Contractor at no cost to County.

B. Dust and Noise Control:
1. Precaution shall be exercised at all times to control dust and excessive noise created as a result of any operations during the construction period.
2. If serious problems and/or complaints arise due to airborne dust and excessive noise, and when directed by the County, operations causing such problems shall be temporarily discontinued until a suitable remedy is established. The remedy shall be approved by the County before implementation, and shall be considered part of Contractor's normal effort to maintain safety and cleanliness without cause for further payment.

## 1.6 MATERIALS AND WORKMANSHIP

A. Except as otherwise specified all materials and equipment incorporated in the Work under the Contract shall be new. All workmanship shall be first-class and by persons qualified in the respective trades.

## 1.7 ACCIDENT PREVENTION AND PROTECTION OF LIVES AND HEALTH

A. Precaution shall be exercised at all times for protection of all personnel and occupants, including employees of Contractor, County, and property.

B. The California Department of Industrial Relations, Division of Occupational Safety and Health (DOSH, also known as Cal/OSHA) requirements for safety and health protection of workers and public apply. Other requirements not covered by Cal/OSHA, shall be in accordance with U.S. Department of Labor, Occupational Safety and Health Administration (OSHA) requirements.

C. Comply with safety requirements of CCR, Title 8, Division 1, Chapter 4, "Division of Industrial Safety," and Title 8, Division 1, Chapter 3.2, "Cal/OSHA Regulations"; CCR, Title 24, CBC; and other applicable building and construction codes. Machinery, equipment, openings, power lines, and all other safety hazards shall be guarded or eliminated in accordance with

safety requirements of Title 8, and Manual of Accident Prevention in Construction published by the Associated General Contractors of America.

D. Comply with any applicable Federal, State or Local public health orders in response to new or ongoing health pandemics, endemics or public health emergencies. Should any orders be in-place prior to, or made during the course of the Work, Contractor shall prepare and submit no later than five (5) days after it receives notice from Owner that it will be awarded a contract for the project, or within five (5) days after such order is made during the course of the Work as a condition precedent to mobilizing to the project site or continuing construction, an Exposure Prevention, Preparedness and Response Plan specific to this project that describes how to prevent worker exposure to coronavirus or other biological agent, protective measures to be taken on the jobsite, personal protective equipment and work practice controls to be used, cleaning and disinfecting procedures, and what to do if a worker(s) shows symptoms of pandemic or endemic related illness or tests positive for such biological agents. Contractor's Plan shall be consistent with and prepared in conjunction with any similar plans issued by Owner and if such plans or similar requirements impose greater obligations on Contractor, Contractor shall comply with same and revise its plan accordingly unless directed otherwise in writing by Owner. The Contractor should review the latest OSHA Workplace Safety Guidance documents that may be available in response to active pandemics or endemics (https://www.osha.gov) as a resource in preparation of its Site Specific Health and Safety Plan

## 1.8 UTILITIES

A. Excavation at the Project site requires a call to Underground Service Alert North (USA North), 811 or by internet at http://usanorth811.org.
   1. Contractor shall call USA North at least 7 days prior to commencing excavation work. Obtain a ticket number and confirm service date for marking underground facilities (utilities).
   2. Prior to placing the call, Contractor shall mark the outline of excavation with white chalk, white paint, or stakes, to enable representatives (locators) of USA North members to map the area for existing underground facilities (utilities).

B. Existing Utility Interruptions: Do not interrupt utilities serving facilities occupied by County or others unless permitted under the following conditions and then only after providing temporary utility services according to requirements indicated:
   1. Notify the County not less than three days in advance of proposed utility interruptions.
   2. Obtain County's written permission before proceeding with utility interruptions.

C. Provide necessary protection to existing utility services and repair work damaged as a result of operations under this Contract.

## 1.9 PROTECTION OF EXISTING FACILITIES

A. Contractor shall take appropriate measures to prevent damage to existing facilities, site work, landscaping, and adjoining property. Should damage occur, such facilities, site work, landscaping, and property shall be restored to original condition, at no cost to County.
   1. Contractor shall arrange for protection of existing buildings at all times. Contractor shall furnish, install, and maintain, necessary barricades, temporary coverings, etc., as required for protection, and remove them at completion of the Work. When all Work is complete, damaged areas of the premises shall be restored to original undamaged condition that existed prior to installation of temporary protection.

B. Housekeeping: The premises shall be kept in a clean, safe condition at all times. Rubbish shall be removed as fast as it accumulates, but not less than one time per day.

C. Burning: Burning of refuse, debris, and construction waste at Project site will not be permitted.

## 1.10 OVERLOADING

A. Contractor shall not overload any part or parts of structures beyond their safe calculated carrying capacities by placing materials, equipment, tools, machinery or any other item thereon. No loads shall be placed on floors or roofs before they have attained their permanent and safe strength.

## 1.11 MANUFACTURER'S INSTRUCTIONS

A. Where required in the Specifications that materials, products, equipment, and processes be installed or applied in accordance with manufacturer's instructions, directions, or specifications, or stated in words to that effect, it shall be construed to mean that said installation or application shall be in strict accordance with printed instructions furnished by manufacturer of the specified item and is suitable for use under conditions similar to those at the jobsite. Three copies of such instructions shall be included in the applicable submittal and furnished to the County for review. Obtain County’s acceptance prior to commencement of the Work.

## 1.12 RESPONSIBILITY FOR THEFT AND DAMAGE

A. County will not be responsible for the loss or theft of Contractor's tools, equipment and materials.

## 1.13 FIRE PROTECTION

A. Contractor shall at all times maintain good housekeeping practices to reduce the risk of fire and water damage. All scrap materials, rubbish and trash shall be removed daily from jobsite, inside and around the buildings or structures, as applicable, and shall not be scattered on adjacent property.

B. Suitable storage space shall be provided outside immediate building areas during construction for temporary storage of flammable materials and paints, as required by CFC Chapter 14 and NFPA 241. Excess flammable liquids being used inside the building shall be kept in closed metal containers and be removed from the building during unused periods.

C. Contractor shall provide temporary fire extinguishers during construction in accordance with the recommendations of CBC Chapter 33, CFC Chapter 14, and NFPA 10 and Bulletin No.241. However, in all cases a minimum of one fire extinguisher shall be available for use.

D. Under provisions of CFC Chapters 14 and 26, provide a fire extinguisher at each location where cutting, soldering, or welding is being performed. Where electric or gas welding or cutting work is done, interposed shields of noncombustible material shall be used to protect against fire damage due to sparks and hot metal. When temporary heating devices are used, a watchman shall be present to cover periods when other workmen are not on the premises.

## 1.14 EMERGENCY CONDITIONS

A. Emergency condition shall be any condition at the Project site which has the actual or potential for significant adverse effects to persons or property, whether or not resulting from Contractor’s operations.

B. Immediate action shall be taken by Contractor by whatever means necessary to alleviate the

condition and to prevent damage or injury to persons or property. County shall be notified of the existence of such a condition, but shall not be called upon to perform emergency service.

C. County may not respond to the emergency condition, which shall not be used as an excuse by Contractor to neglect immediate action; County will not be responsible or liable for any resulting conditions. Absence of Contractor's Representative during emergency conditions at jobsite shall not relieve Contractor from contractual responsibility of providing an immediate response to the situation, for restoration of conditions to normalcy.

D. If the emergency conditions are not caused by Contractor's fault or neglect, the Contract Sum shall be adjusted to reflect the actual direct field costs of labor and materials to perform and complete emergency measures.

E. The Contract Time shall also be adjusted to reflect the actual direct effect of such actions to the then critical path of the Construction Progress Schedule. The foregoing not withstanding, adjustments of the Contract Sum or the Contract Time for actions taken by Contractor in response to emergency circumstances shall be subject to Contractor's strict compliance with all other applicable provisions of the Contract Documents relating to notices and time for delivery of notices.

## 1.15 SPECIFICATION FORMATS AND CONVENTIONS

A. Specification Format: The Specifications are organized into Divisions and Sections using the 48-division format and numbering system of CSI "MasterFormat, 2016 Edition.

B. Division 01 Sections govern the execution of the Work of all Sections in the Specifications.

C. Specifications Conventions: Singular words shall be interpreted as plural and plural words shall be interpreted as singular, where applicable, as the context of the Contract Documents indicates.

D. These specifications are written in imperative mood and streamlined form. This imperative language is directed to the Contractor, unless specifically noted otherwise. The words "shall be" are included by inference where a colon (:) is used within sentences or phrases.

## PART 2 PRODUCTS (NOT USED)

## PART 3 EXECUTION (NOT USED)

**END OF SECTION**

## PART 1 GENERAL

### 1.1 SUMMARY

A. This Section specifies administrative and procedural requirements for handling and processing the following contract modifications:
   1. Request for Information (RFI).
   2. Field Order (FO).
   3. Request for Cost Proposal (RFCP).
   4. Cost Proposal (CP).
   5. Change Orders (CO).

### 1.2 DEFINITIONS

A. Request for Information (RFI)
   1. Written request submitted by Contractor to Owner's Representative via the County's online project management system on a form supplied by Owner's Representative requesting clarification, interpretation, or additional information pertaining to Contract Documents.
   2. An RFI shall not be used as a vehicle for only confirming or verifying issues.

B. Field Order (FO)
   1. Owner's Representative written directives to the Contractor covering a specific aspect of work, signed by the Owner or Owner's lead agency that authorizes changes in the Work to expedite the change order process.

C. Request for Cost Proposal (RFCP)
   1. Written request by the Owner's Representative to the Contractor to quote change to Contract Sum and/or Contract Time for proposed change to Contract Document.

D. Cost Proposal (CP)
   1. Written request by the Contractor to the Owner's Representative to change Contract Sum and/or Contract Time for proposed change to Contract Document.

E. Change Order (CO)
   1. Initiated by the Owner, Contractor, Consultant, Owner's lead agency, or the Owner's Representative and signed by the Owner and Contractor stating their agreement to a change to Contract Documents and adjustment to Sum and/or Contract Time.

### 1.3 REQUEST FOR INFORMATION (RFI)

A. Submit RFIs numbered in sequential order, reviewed by the Contractor with respect to Contract Documents.
   1. Submit RFI's on forms designated by the Owner's Representative.

B. Owner's Representative will monitor the RFI process and responses from the Consultant. The Consultant will receive RFI's only from the Owner's Representative; Consultant will not accept RFI's directly from any other entity.

C. Owner's Representative will receive only legible, properly prepared RFI:
   1. Unreadable facsimile machine RFI's, illegibly written RFI's, or RFI's with incomplete information, will be returned promptly without action.
   2. RFI's may be transmitted to Owner's Representative by email or online project management system.

a. Owner's Representative will forward to Consultant for review, and return response by same method received from Contractor.

3. Consultant will review RFI's with respect to Contract Documents and return response in a timely manner, generally within 7 calendar days, or commensurate with RFI subject.
   a. RFI's marked "URGENT" will take precedence over outstanding RFI's and be answered by Consultant as soon as possible.

D. Contractor being fully familiar with Contract Documents, shall not be relieved of responsibility to coordinate the Work to prevent adverse impact to Project schedule when submitting RFIs to Owner's Representative for clarification or interpretation of Contract Documents, or additional information.

E. If the Contractor believes the scope of work referenced in the RFI has a cost and /or time impact, he will not proceed with the work until either a Field Order or a Change Order has been issued.

## 1.4 FIELD ORDER (FO)

A. Field Orders may include supplementary or revised Drawings and/or Specification to describe changes to Contract Documents.

B. Field Orders will be executed on forms designated by the Owner's Representative.

C. Field Orders may be generated by the Contractor's written notice submitted on a Cost Proposal form, that an RFI response or other unforeseen condition has changed the Contract cost and /or time, and that schedule impact will result if written directive is not provided in a timely manner.

D. Contractor shall provide an estimate of cost and/or time impact at the time of the request for a Field Order.

E. Owner's Representative will review the request for a Field Order and initiate a written Field Order for authorization by the Owner or Owner's lead agency.

F. If the Field Order is approved by the Owner or Owner's lead agency, Owner's Representative will release the signed Field Order to the Contractor. If rejected, the Contractor is so notified by the Owner's Representative.

## 1.5 REQUEST FOR COST PROPOSAL (RFCP)

A. Request for Cost Proposal is an informational request only, and is not an instruction or authorization to execute a change, or an order to stop Work in progress.

B. Request for Cost Proposal may include supplementary or revised Drawings and/or Specification to describe proposed changes to Contract Documents.

C. Contractor shall submit cost and/or time quotation to Owner's Representative within 15 calendar days following receipt of Request for Cost Proposal.

## 1.6 COST PROPOSAL (CP)

A. Contractor shall submit to the Owner's Representative a Cost Proposal for all occurrences the Contractor believes impacts Scope of Work cost and/or time.
   1. A Cost Proposal shall be submitted within 15 calendar days of the occurrences.

B. Submit Cost Proposal numbered in sequential order, reviewed by the Contractor with respect to Contract Documents.
   1. Submit Cost Proposals on forms designated by the Owner's Representative.

C. All Cost Proposals submitted shall have detailed breakdown for all associated work, cost and/or time.

D. Owner's Representative will solicit and monitor independent cost estimates responses from the Consultant.

E. Owner's Representative shall return Cost Proposal responses and reviews to the Contractor within 15 calendar days following receipt of Cost Proposal.

F. A processed Cost Proposals is informational back-up for a potential Change Order, and not an instruction or authorization to execute a change, or an order to stop Work in progress.

## 1.7 CHANGE ORDER (CO)

A. Change Orders may be initiated by the Owner, Contractor, Consultant, Owner's lead agency, or the Owner's Representative.

B. Changes to the Project Contract Sum and/or Contract Time listed or indicated in Change Orders shall include or be determined by methods described in the General Conditions.

C. Owner's Representative has responsibility for processing and administering Change Orders for the Project, and will prepare each Change Order using form designated by the Owner's Representative.

D. Contractor shall provide all pricing proposals Cost Proposals for a Change Order. The Consultant shall provide independent cost estimates to Cost Proposals.
   1. Cost differentials between the Contractor's Cost Proposal and the Owner's Representative may negotiate the Consultants cost estimates.
   2. If no agreement is reached, the Owner's Representative may issue a time and material change Order.
      a. Use Daily Force Account Report designated by Owner's Representative.

E. The Contractor, Consultant, Owner's Representative, Owner's lead agency and Owner will sign a fully documented Change Order.

## 1.8 CORRELATING CHANGE ORDERS WITH OTHER CONTRACT REQUIREMENTS

A. Revise Schedule of Values and Applications for Payment to record each Change Order as a separate item of work with adjustment to Contract Sum and Contract Time.

B. Revise Construction Schedule to reflect each change in Contract Time.

C. Record modifications in Record Documents.

**END OF SECTION**

## PART 1 GENERAL

### 1.1 SUMMARY

A. Section includes: Administrative and procedural requirements for selection of products, including but not limited to:
   1. Products.
   2. Product Delivery Requirements.
   3. Product Storage and Handling Requirements.
   4. Product Options.
   5. Product Selection Procedures.
   6. Product Substitution Procedures.
   7. Comparable Products.

### 1.2 DEFINITIONS

A. Products: Items obtained for incorporating into the Work, whether purchased for Project or taken from previously purchased stock. The term *product* includes the terms *material*, *equipment*, *system*, *assembly*, and terms of similar intent.
   1. Named Products: Items identified by manufacturer's product name, including make or model number or other designation shown or listed in manufacturer's published product literature current as of date of the Contract Documents.
   2. New Products: Items that have not previously been incorporated into another project or facility. Products salvaged or recycled from other projects are not considered new products.
   3. Comparable Product: Product that is demonstrated and approved through submittal process to have the indicated qualities related to type, function, dimension, in-service performance, physical properties, appearance, and other characteristics that equal or exceed those of specified product.

B. Basis of Design Product Specification: A specification in which a specific manufacturer's product is named and accompanied by the words *basis of design product*, including make or model number or other designation, to establish the significant qualities related to type, function, dimension, in service performance, physical properties, appearance, and other characteristics for purposes of evaluating comparable products of additional manufacturers named in the specification.

### 1.3 SUBMITTALS

A. Comparable Product Requests: Submit request for consideration of each comparable product. Identify product or fabrication or installation method to be replaced. Include Specification Section number and title and Drawing numbers and titles.
   1. Include data to indicate compliance with the specified requirements.
   2. Architect's Action: If necessary, Architect will request additional information or documentation for evaluation within one week of receipt of a comparable product request. Architect will notify Contractor of approval or rejection of proposed comparable product request within 15 days of receipt of request, or seven days of receipt of additional information or documentation, whichever is later.
      a. Form of Approval: As specified in Section 01 33 00 Submittal Procedures.
      b. Use product specified if Architect does not issue a decision on use of a comparable product request within time allocated.

B. Basis of Design Product Specification Submittal: Comply with requirements in Section 01 33 00 Submittal Procedures. Show compliance with requirements.

## 1.4 QUALITY ASSURANCE

A. Compatibility of Options: If Contractor is given option of selecting between two or more products for use on Project, select product compatible with products previously selected, even if previously selected products were also options.
   1. Each contractor is responsible for providing products and construction methods compatible with products and construction methods of other contractors.
   2. If a dispute arises between contractors over concurrently selectable but incompatible products, Architect will determine which products shall be used.

## 1.5 DELIVERY, STORAGE, AND HANDLING

A. Deliver, store, and handle products using means and methods that will prevent damage, deterioration, and loss, including theft and vandalism. Comply with manufacturer's written instructions.

B. Delivery and Handling:
   1. Schedule delivery to minimize long term storage at site and to prevent overcrowding of construction spaces.
   2. Coordinate delivery with installation time to ensure minimum holding time for items that are flammable, hazardous, easily damaged, or sensitive to deterioration, theft, and other losses.
   3. Deliver products to Project site in an undamaged condition in manufacturer's original sealed container or other packaging system, complete with labels and instructions for handling, storing, unpacking, protecting, and installing.
   4. Inspect products on delivery to determine compliance with the Contract Documents and to determine that products are undamaged and properly protected.

C. Storage:
   1. Store products to allow for inspection and measurement of quantity or counting of units.
   2. Store materials in a manner that will not endanger Project structure.
   3. Store products that are subject to damage by the elements, under cover in a weathertight enclosure above ground, with ventilation adequate to prevent condensation.
   4. Protect foam plastic from exposure to sunlight, except to extent necessary for period of installation and concealment.
   5. Comply with product manufacturer's written instructions for temperature, humidity, ventilation, and weather-protection requirements for storage.
   6. Protect stored products from damage and liquids from freezing.
   7. Provide a secure location and enclosure at site for storage of materials and equipment by Owner's construction forces. Coordinate location with Owner.

## 1.6 PRODUCT WARRANTIES

A. Warranties specified in other Sections shall be in addition to, and run concurrent with, other warranties required by the Contract Documents. Manufacturer's disclaimers and limitations on product warranties do not relieve Contractor of obligations under requirements of the Contract Documents.
   1. Manufacturer's Warranty: Written warranty furnished by individual manufacturer for a particular product and specifically endorsed by manufacturer to Owner.
   2. Warranty: Written warranty required by the Contract Documents to provide specific rights for Owner.

B. Warranties: Prepare a written document that contains appropriate terms and identification, ready for execution.

1. Specified Form: When specified forms are included with the Specifications, prepare a written document using indicated form properly executed.
2. See other Sections for specific content requirements and particular requirements for submitting special warranties.

C. Submittal Time: Comply with requirements in Section 01 77 00 Closeout Procedures.

## 1.7 PRODUCTS

A. Products: Means new material, machinery, components, equipment, fixtures, and systems forming the Work. Does not include machinery and equipment used for preparation, fabrication, conveying and erection of the Work. Products may also include existing materials or components required for reuse.

B. All products shall be new, of first class quality, and shall be delivered, installed, connected and finished in every detail, and shall be so selected and arranged as to fit correctly into the proper spaces. Where no specific kind or quality of material is given, a first-class standard article as approved by Architect shall be furnished. Contractor shall provide satisfactory evidence as to the kinds and quality of material and workmanship.

C. Do not use materials and equipment removed from existing premises, except as specifically permitted by the Contract Documents.

D. Furnish interchangeable components from same manufacturer for components being replaced.

## 1.8 PRODUCT DELIVERY REQUIREMENTS

A. Transport and handle products in accordance with manufacturer's instructions.

B. Delivery of materials to the Project site shall be coordinated by and received by Contractor or his representative, and stored in secured areas as agreed upon at the job start meeting.

C. Promptly inspect shipments to assure that products comply with requirements, quantities are correct and products are undamaged.

D. Provide equipment and personnel to handle products by methods to prevent soiling, disfigurement or damage.

E. Contractor shall take into consideration the available space and location of work site when delivery of materials is necessary.

## 1.9 PRODUCT STORAGE AND HANDLING REQUIREMENTS

A. Store and protect products in accordance with manufacturer's instructions, with seals and labels intact and legible. Store sensitive products in weather tight, climate controlled, enclosures in an environment favorable to product.

B. For exterior storage of fabricated products, place on sloped supports above ground.

C. Provide off-site storage and protection when site does not permit on-site storage or protection.

D. Cover products subject to deterioration with impervious sheet covering. Provide ventilation to avoid condensation and degradation of products.

E. Store loose granular materials on solid flat surfaces in well-drained area. Prevent mixing with foreign matter.

F. Provide equipment and personnel to store products by methods to prevent soiling, disfigurement, or damage.

G. Arrange storage of products to permit access for inspection. Periodically inspect to assure products are undamaged and are maintained under specified conditions.

H. Contractor shall be responsible to provide all new materials in unopened manufacturer's original containers and deliver such items to Project site in good condition for use on this project. Contractor shall be responsible to store all new materials received as per manufacturer recommendations. Any and all materials discovered to be improperly stored and/or damaged will be replaced at the sole expense to Contractor. Any requests for delays or extension of the Contract Time due to the above will not be considered.

I. Contractor shall use all means necessary to protect all materials before, during and after installation and to protect the installed work and materials of all other trades and of existing structures. In event of damage, Contractor is to immediately make all repairs and replacements necessary using compatible and like materials.

## 1.10 PRODUCT OPTIONS

A. Products Specified by Reference Standards or by Description Only: Any product meeting those standards or description.

B. Products Specified by Naming One Manufacturer and stating “No Substitutions Allowed, County’s Standard”: Products of manufacturer named and meeting specifications, no options or substitutions allowed.

C. Products Specified by Naming One or More Manufacturers without naming a Product, with a Provision for Substitutions: Submit a request for substitution for any manufacturer not named.

D. Products specified by Naming One or More Manufacturers and Naming Product(s) by the first listed Manufacturer, with a Provision for Substitutions: Submit a request for substitution for any product, by any manufacturer, listed or not listed, other than the product(s) listed.

## 1.11 PRODUCT SUBSTITUTION PROCEDURES

A. County will consider requests for Substitutions up to 35 days after the project has been awarded.

B. Reference to any product, material, equipment, article, system, service or patented process, by trade, catalogue number, name brand product or product manufacturer is for information only and shall not be construed as limiting competition.

C. Substitutions will only be considered when one or more of the following conditions are met:
1. All aspects of the proposed substitution meet or exceed the criteria for the specified product.
2. The proposed changes are in keeping with the general intent of the Contract Documents.
3. The request is fully documented and timely and properly submitted.
4. The specified product cannot be provided within the Contract Time.
5. The request is directly related to a “comparable” clause or similar language in the

Contract Documents.

6. The request offers County a substantial advantage in cost, time, energy conservation, or other considerations, after deducting additional responsibilities that County must assume. County's additional responsibilities may include, but not be limited to, compensation to Architect for redesign and/or evaluation services and increased cost of other construction by County.
7. The specified product becomes unavailable through no fault of Contractor.
8. The specified product cannot receive necessary approvals by governing authorities, and the requested substitution can be approved by governing authorities in a timely manner.
9. It can be demonstrated that the specified product cannot be provided in a manner that is compatible with other materials and Contractor certifies that the proposed substitution will overcome the incompatibility.
10. It can be demonstrated that the specified product cannot be coordinated with other materials and Contractor certifies that the proposed substitution can be coordinated.
11. The specified product cannot provide the warranty required by the Contract Documents and Contractor certifies that the proposed substitution provides the required warranty.

D. Substitutions will not be considered when one or more of the following conditions occur:
1. Acceptance would require revisions to the Contract Documents, Contract Time extensions or an increase in the Contract Sum.
2. They are indicated or implied on shop drawing or product data submittals, without separate written request.
3. When the specified product cannot be provided as a result of failure of Contractor to pursue the Work in a timely manner or properly coordinate construction activities.

E. In those cases where the Specifications designate a product, material, equipment, article, system, service or patented process by specific brand or trade name and there is only one brand or trade name listed, the item involved is:
1. Required to be used since it is a unique or novel product application, or
2. Required to match other products in use by County, or
3. Is the only brand or trade name known to Architect.

F. Document each request on Substitution Request Form attached at the end of this Section with complete data substantiating compliance of proposed Substitution with the Contract Documents. The burden of proof as to comparative quality, suitability and performance of proposed product(s), material(s), equipment, article(s), system(s), service(s) or patented process(es) shall be upon Contractor. Architect will be the sole judge of the equality of the proposed substitution versus the specified item(s).

G. A substitution request constitutes a representation that Contractor:
1. Has investigated proposed product and determined that it meets or exceeds the quality level of the specified product.
2. Will provide the same warranty for the Substitution as for the specified product.
3. Will coordinate installation and make changes to other Work which may be required for the Work to be complete with no additional cost to County.
4. Waives claims for additional costs or time extensions which may subsequently become apparent.
5. Will reimburse County for review services associated with approvals by authorities having jurisdiction.

H. Substitution Submittal Procedure:
1. Submit request for Substitution electronically for consideration. Limit each request to one proposed Substitution.
2. Submit shop drawings, product data, and certified test results attesting to the proposed product equivalence.
3. County will notify Contractor, in writing, of decision to accept or reject request.

4. Incomplete Substitution Request package will not be reviewed and will be returned to Contractor. Contractor shall then provide the specified item.
5. Only one request for substitution will be allowed. If proposed substitution is not accepted by Architect, Contractor shall provide the specified item.
6. Use of accepted substitutions shall in no way relieve Contractor from responsibility for compliance with Drawings and Specifications. The use of accepted substitutions will assume that all extra costs caused by the use of such substitutions where they affect other work or trades shall be borne by the Contractor.
7. All substitutions affecting structural or fire/life safety items will require approval from authority having jurisdiction prior to fabrication and installation on the project.

## PART 2 PRODUCTS

### 2.1 MATERIALS

A. Materials furnished shall be new and never been used before, unless specified otherwise, and will satisfy the requirements herein and all specifications referenced by provisions within these specifications. Contractor shall furnish, upon request of Project Manager, an affidavit from the manufacturer or supplier to the effect that materials furnished shall conform to the General Conditions, the latest revision of AWWA Specifications, ASTM, and Federal Specifications that pertain. All materials shall be installed in accordance with manufacturer's recommendations and the Standard Drawings and Specifications that pertain. Material for one specific product shall be one manufacturer unless otherwise approved by Architect. All materials shall be subject to inspection after delivery to the site and during installation of the Work. Failure of the Inspector, Project Manager or Architect to note faulty material shall not relieve Contractor of the responsibility for removing or replacing any such material at no additional cost to County.

B. For the ease of maintenance and parts replacement, to the maximum extent possible use materials of a single manufacturer, delivered in manufacturer's original, unopened containers with labels intact and legible, and in sufficient quantity to allow continuity of work. Deviation from this requirement shall require written approval from County.

C. County reserves the right to reject any materials list which contains materials from various manufacturers if suitable materials can be secured from fewer manufacturers and to require that source of materials be unified to maximum extent possible.

### 2.2 PRODUCT SELECTION PROCEDURES

A. Product Requirements: Provide products that comply with the Contract Documents, are undamaged and, unless otherwise indicated, are new at time of installation.
   1. Provide products complete with accessories, trim, finish, fasteners, and items needed for complete installation and indicated use and effect.
   2. Standard Products: If available, and unless custom products or nonstandard options are specified, provide standard products of types that have been produced and used successfully in similar situations on other projects.
   3. Owner reserves the right to limit selection to products with warranties not in conflict with requirements of the Contract Documents.
   4. Where products are accompanied by the term as selected, Architect will make selection.
   5. Descriptive, performance, and reference standard requirements in the Specifications establish salient characteristics of products.

B. Product Selection Procedures:
   1. Product: Where Specifications name a single manufacturer and product, provide the

named product that complies with requirements. Comparable products or substitutions for Contractor's convenience will not be considered.

2. Manufacturer/Source: Where Specifications name a single manufacturer or source, provide a product by the named manufacturer or source that complies with requirements. Comparable products or substitutions for Contractor's convenience will not be considered.
3. Products: Where Specifications include a list of names of both manufacturers and products, provide one of the products listed that complies with requirements. Comparable products or substitutions for Contractor's convenience will not be considered.
4. Manufacturers: Where Specifications include a list of manufacturers' names, provide a product by one of the manufacturers listed that complies with requirements. Comparable products or substitutions for Contractor's convenience will not be considered.
5. Basis of Design Product: Where Specifications name a product, or refer to a product indicated on Drawings, and include a list of manufacturers, provide the specified or indicated product or a comparable product by one of the other named manufacturers. Drawings and Specifications indicate sizes, profiles, dimensions, and characteristics based on the product named. Comply with requirements for consideration of an unnamed product by one of the named manufacturers.

C. Visual Matching Specification: Where Specifications require "*match Architect's sample"*, provide a product that complies with requirements and matches Architect's sample. Architect's decision will be final on whether a proposed product matches.
   1. If no product available within specified category matches and complies with specified requirements, comply with requirements of Section 01 25 00 Substitution Procedures for proposal of product.

D. Visual Selection Specification: Where Specifications include the phrase *selected by Architect* or similar phrase, select a product that complies with requirements. Architect will select color, gloss, pattern, density, or texture from manufacturer's product line that includes both standard and premium items.

## 2.3 COMPARABLE PRODUCTS

A. Conditions for Consideration: Architect will consider Contractor's request for comparable product when the following conditions are satisfied. If the following conditions are not satisfied, Architect may return requests without action, except to record noncompliance with these requirements:
   1. Evidence that the proposed product does not require revisions to the Contract Documents, that it is consistent with the Contract Documents, will produce the indicated results, and that it is compatible with other portions of the Work.
   2. Detailed comparison of significant qualities of proposed product with those named in the Specifications. Significant qualities include attributes such as performance, weight, size, durability, visual effect, and specific features and requirements indicated.
   3. Evidence that proposed product provides specified warranty.
   4. List of similar installations for completed projects with project names and addresses and names and addresses of architects and owners, if requested.
   5. Samples, if requested.

# PART 3 EXECUTION (NOT USED)

## PRODUCT SUBSTITUTION REQUEST FORM

Substitution Request Number:_____

To: _____

Project Name/Number: _____

Item Specified:

| _____ | _____ | _____ | _____ |
|---|---|---|---|
| Section | Page | Paragraph | Description |

The undersigned requests consideration of the following:

Proposed Substitution (Manufacturer, Model # or Name, Color, Etc.): _____

_____

History: ___New Product, ___Available 2-5 Years, ___Available 6-10 Years, ___Available 10+ Years

Provide UL, ITS, WHI, (or other) listing / rating of proposed substitution: _____

Attached data shall include, but not be limited to, product, specification, drawings, performance and test data adequate for evaluation of the request for the proposed substitution product and the specified product, with applicable portions of the proposed substitution and the specified product data clearly identified in a point-by-point direct comparison chart. Incomplete form and attachments will result in rejection of substitution request.

Requestor shall address the following items on this Substitution Request Form. Use a separate attached sheet attached as needed:

1. Reason for not providing specified item: _____

   _____

2. Will proposed substitution affect dimensions indicated on Drawings? ____(Yes) ____(No)

   If yes, how? _____

3. Will proposed substitution affect Electrical, Mechanical, Structural, Architectural, etc.?

   ____(Yes) ____(No) If yes, explain: _____

   _____

4. Is proposed substitution larger or smaller than specified product? ____(Yes) ____(No) If yes, state size of substitute product: _____

   _____

5. Does proposed substitution weight less/more than specified product? ____(Yes) ____(No) If yes, state weight of substitute product: _____

   _____

6. Will proposed substitution affect other trades and/or parts of the Work? ____(Yes) ____(No) If yes, explain all effects: _____

   _____

7. Comparison between proposed substitution and specified product (Similarities / Differences)?

   _____

   _____

8. If Substitution Request is accepted, County will receive a credit of $_____. The Contract Sum will be adjusted accordingly.

9. Will proposed substitution affect the Contract Time? ____(Yes) ____(No) If yes, ____(Add) ____(Deduct) _____ calendar days.

---

| **INITIAL** | **UNDERSIGNED CERTIFIES:** |
|---|---|
| _____ | Proposed substitution has been fully investigated and determined to be equal or superior in all respects to specified product. |
| _____ | Proposed substitution has same or better warranty as specified product. |
| _____ | Proposed substitution has same or better maintenance service and availability of replacement parts as specified product. |
| _____ | Proposed substitution will not affect or delay the Construction Schedule. |
| _____ | Claims for additional costs related to accepted substitution, which may subsequently become apparent, are hereby waived. |
| _____ | Proposed substitution will not affect dimensions and functional clearances. |
| _____ | Coordination, installation, and changes in the Work as necessary for installation of accepted substitution will be complete in all respects, at no additional cost to County. |
| _____ | Contractor will pay for all costs associated with changes to the project's design, including, but not limited to, architectural or engineering design fees, detailing, Agency approvals and construction costs caused by the requested substitution. |
| _____ | The function, appearance and quality of the proposed substitution is equivalent or superior to the specified item. |

The undersigned certifies that the above is accurate and correct:

Signature: _____

Printed Name: _____

Company: _____

Address: _____

_____

Date: _____

Telephone:_____

Attachments: ___Drawings ___Product Data ___Samples ___Tests ___Reports ___Other (Describe)

Architect's Review and Action:

_____ Substitution Accepted – Make submittals in accordance with Specification Section 01 33 00.

_____ Substitution Accepted as Noted - Make submittals in accordance with Spec Section 01 33 00.

_____ Substitution Rejected – Provide specified product.

_____ Substitution Request Received Too Late – Provide specified product.

By:_____ Date:_____

Remarks: _____

**END OF SECTION**

## 1.1 SUMMARY

A. Section includes administrative and procedural requirements governing execution of the Work including, but not limited to, the following:
   1. Construction layout.
   2. Installation of the Work.
   3. Coordination of Owner-installed products.
   4. Progress cleaning.
   5. Starting and adjusting.
   6. Protection of installed construction.

## 1.2 DEFINITIONS

A. Cutting: Removal of in-place construction necessary to permit installation or performance of other Work.

B. Patching: Fitting and repair work required to restore construction to original conditions after installation of other work.

## 1.3 SUBMITTALS

A. Landfill Receipts: Submit copy of receipts issued by a landfill facility, licensed to accept hazardous materials, for hazardous waste disposal.

## 1.4 QUALITY ASSURANCE

A. Manufacturer's Installation Instructions: Obtain and maintain on-site manufacturer's written recommendations and instructions for installation of products and equipment.

# PART 2 PRODUCTS

## 2.1 MATERIALS

A. Comply with requirements specified in other Sections.

B. In Place Materials: Use materials for patching identical to in-place materials. For exposed surfaces, use materials that visually match in-place adjacent surfaces to the fullest extent possible:
   1. If identical materials are unavailable or cannot be used, use materials that, when installed, will provide a match acceptable to Architect for the visual and functional performance of in-place materials.

# PART 3 EXECUTION

## 3.1 EXAMINATION

A. Existing Conditions: The existence and location of underground and other utilities and construction indicated as existing are not warranted. Before beginning site Work, investigate and verify existence and location of underground utilities, mechanical and electrical systems, and construction affecting the Work:
   1. Before construction, verify the location and invert elevation at points of connection of sanitary sewer, storm sewer, and water service piping; underground electrical services, and other utilities.
   2. Furnish location data for Work related to the Work that must be performed by public

utilities serving the site.

B. Examination and Acceptance of Conditions: Before proceeding with each component of the Work, examine substrates, areas, and conditions for compliance with requirements for installation tolerances and other conditions affecting performance. Record observations:
   1. Examine roughing-in for mechanical and electrical systems to verify actual locations of connections before equipment and fixture installation.
   2. Examine walls, floors, and roofs for suitable conditions where products and systems are to be installed.
   3. Verify compatibility with and suitability of substrates, including compatibility with existing finishes or primers.

C. Written Report: Where a written report listing conditions detrimental to performance of the Work is required by other Sections, include the following:
   1. Description of the Work.
   2. List of detrimental conditions, including substrates.
   3. List of unacceptable installation tolerances.
   4. Recommended corrections.

D. Proceed with installation after correcting unsatisfactory conditions. Proceeding with the Work indicates acceptance of surfaces and conditions.

## 3.2 PREPARATION

A. Existing Utility Information: Furnish information to Owner necessary to adjust, move, or relocate existing utility structures, utility poles, lines, services, or other utility appurtenances located in or affected by construction. Coordinate with authorities having jurisdiction.

B. Field Measurements: Take field measurements as required to fit the Work properly. Recheck measurements before installing each product. Where portions of the Work are indicated to fit to other construction, verify dimensions of other construction by field measurements before fabrication. Coordinate fabrication schedule with construction progress to avoid delaying the Work.

C. Space Requirements: Verify space requirements and dimensions of items shown diagrammatically on Drawings.

D. Review of Contract Documents and Field Conditions: Immediately on discovery of the need for clarification of the Contract Documents caused by differing field conditions outside the control of Contractor, submit a request for information to Architect according to requirements in Section 01 31 00 Project Management and Coordination.

## 3.3 CONSTRUCTION LAYOUT

A. Verification: Before proceeding to lay out the Work, verify layout information shown on Drawings, in relation to the property survey and existing benchmarks. If discrepancies are discovered, notify Architect promptly.

B. Site Improvements: Locate and lay out site improvements, including pavements, grading, fill and topsoil placement, utility slopes, and rim and invert elevations.

C. Building Lines and Levels: Locate and lay out control lines and levels for structures, building foundations, column grids, and floor levels, including those required for mechanical and electrical Work. Transfer survey markings and elevations for use with control lines and levels. Level foundations and piers from two or more locations.

D. Record Log: Maintain a log of layout control Work. Record deviations from required lines and levels. Include beginning and ending dates and times of surveys, weather conditions, name and duty of each survey party member, and types of instruments and tapes used. Make the log available for reference by Architect.

## 3.4 INSTALLATION

A. Locate the work and components of the work accurately, in correct alignment and elevation, as indicated:
   1. Make vertical work plumb and make horizontal Work level.
   2. Where space is limited, install components to maximize space available for maintenance and ease of removal for replacement.
   3. Conceal pipes, ducts, and wiring in finished areas unless otherwise indicated.
   4. Maintain minimum headroom clearance of 96 inches (2440 mm) in occupied spaces and 90 inches (2300 mm) in unoccupied spaces.

B. Comply with manufacturer's written instructions and recommendations for installing products in applications indicated.

C. Install products at the time and under conditions ensuring the best possible results. Maintain conditions required for product performance until Substantial Completion.

D. Conduct construction operations so no part of the Work is subjected to damaging operations or loading in excess of that expected during normal conditions of occupancy.

E. Sequence the Work and allow adequate clearances to accommodate movement of construction items on site and placement in permanent locations.

F. Tools and Equipment: Do not use tools or equipment that produce harmful noise levels.

G. Templates: Obtain and distribute to the parties involved templates for Work specified to be factory prepared and field installed. Check Shop Drawings of other Work to confirm that adequate provisions are made for locating and installing products to comply with indicated requirements.

H. Attachment: Provide blocking and attachment plates and anchors and fasteners of adequate size and number to securely anchor each component in place, accurately located and aligned with other portions of the Work. Where size and type of attachments are not indicated, verify size and type required for load conditions:
   1. Mounting Heights: Where mounting heights are not indicated, mount components at heights directed by Architect.
   2. Allow for building movement, including thermal expansion and contraction.
   3. Coordinate installation of anchorages. Furnish setting drawings, templates, and directions for installing anchorages, including sleeves, concrete inserts, anchor bolts, and items with integral anchors, that are to be embedded in concrete or masonry. Deliver such items to Project site in time for installation.

I. Joints: Make joints of uniform width. Where joint locations in exposed work are not indicated, arrange joints for the best visual effect. Fit exposed connections together to form hairline joints.

J. Hazardous Materials: Use products, cleaners, and installation materials that are not considered hazardous. Materials containing asbestos lead and PCBs are prohibited.

## 3.5 OWNER INSTALLED PRODUCTS

A. Site Access: Provide access to site for Owner's construction personnel.

B. Coordination:
1. Coordinate construction and operations of the Work with Work performed by Owner's construction personnel:
   a. Construction Schedule: Inform Owner of Contractor's preferred construction schedule for Owner's portion of the Work. Adjust construction schedule based on a mutually agreeable timetable. Notify Owner if changes to schedule are required due to differences in actual construction progress.
   b. Pre-installation Conferences: Include Owner's construction personnel at pre-installation conferences covering portions of the Work that are to receive Owner's Work. Attend pre-installation conferences conducted by Owner's construction personnel if portions of the Work depend on Owner's construction.

## 3.6 PROGRESS CLEANING

A. Clean site and Work areas daily, including common areas. Enforce requirements strictly. Dispose of materials lawfully:
1. Comply with requirements in NFPA 241, Standard for Safeguarding Construction, Alteration, and Demolition Operations, for removal of combustible waste materials and debris.
2. Do not hold waste materials more than seven days during normal weather or three days if the temperature is expected to rise above 80 degrees F (27 degrees C).
3. Containerize hazardous and unsanitary waste materials separately from other waste. Mark containers appropriately and dispose of legally, according to regulations.
4. Use containers intended for holding waste materials of type to be stored.
5. Coordinate progress cleaning for joint-use areas where Contractor and other contractors are working concurrently.

B. Site: Maintain site free of waste materials and debris.

C. Work Areas: Clean areas where Work is in progress to the level of cleanliness necessary for proper execution of the Work:
1. Remove liquid spills promptly.
2. Where dust would impair proper execution of the Work, broom-clean or vacuum the entire work area, as appropriate.

D. Installed Work: Keep installed Work clean. Clean installed surfaces according to written instructions of manufacturer or fabricator of product installed, using only cleaning materials specifically recommended. If specific cleaning materials are not recommended, use cleaning materials that are not hazardous to health or property and that will not damage exposed surfaces.

E. Concealed Spaces: Remove debris from concealed spaces before enclosing the space.

F. Exposed Surfaces in Finished Areas: Clean exposed surfaces and protect as necessary to ensure freedom from damage and deterioration at time of Substantial Completion.

G. Waste Disposal: Do not bury or burn waste materials on-site. Do not wash waste materials down sewers or into waterways. Comply with waste disposal requirements in Section 01 50 00.

H. During handling and installation, clean and protect construction in progress and adjoining

materials already in place. Apply protective covering where required to ensure protection from damage or deterioration at Substantial Completion.

I. Clean and provide maintenance on completed construction as frequently as necessary through the remainder of the construction period. Adjust and lubricate operable components to ensure operability without damaging effects.

J. Limiting Exposures: Supervise construction operations to assure that no part of the construction, completed or in progress, is subject to harmful, dangerous, damaging, or otherwise deleterious exposure during the construction period.

## 3.7 STARTING AND ADJUSTING

A. Coordinate startup and adjusting of equipment and operating components with mechanical, plumbing, and electrical requirements.

B. Start equipment and operating components to confirm proper operation. Remove malfunctioning units, replace with new units, and retest.

C. Adjust equipment for proper operation. Adjust operating components for proper operation without binding.

D. Test each piece of equipment to verify proper operation. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and equipment.

E. Manufacturer's Field Service: Comply with qualification requirements in Section 01 40 00.

## 3.8 PROTECTION OF INSTALLED CONSTRUCTION

A. Provide final protection and maintain conditions that ensure installed Work is without damage or deterioration at time of Substantial Completion.

B. Comply with manufacturer's written instructions for temperature and relative humidity.

**END OF SECTION**

SECTION 017419 - CONSTRUCTION WASTE MANAGEMENT AND DISPOSAL

## PART 1 - GENERAL

### 1.1 SUMMARY

A. Section includes administrative and procedural requirements for the following:
   1. Recycling nonhazardous construction waste
   2. Disposing of nonhazardous demolition and construction waste.
   3. Handling of Universal Waste

### 1.2 SECTION REQUIREMENTS

A. Section includes administrative and procedural requirements for the following:
   1. Recycling nonhazardous construction waste.
   2. Disposing of nonhazardous demolition and construction waste.

B. Action Submittals:

   1. Construction Waste Management Plan: Contractor shall submit plan conforming to the requirements of the Authority Having Jurisdiction within **seven** (**7)** calendar days of date established by the “Notice to Proceed” of the Work.
      a. The Construction Waste Management Plan shall comply with CalGreen section 5.408.1.1 (non-residential).
      b. Sample Humboldt County Construction Waste Management Plan and related documents from the Humboldt County Building Department are attached as an Exhibit A to this specification section for reference.
   2. Construction Waste Final Certification
      a. See sample document in Exhibit A to this specification section.

C. Informational Submittals:

   1. Recycling and Processing Facility Records: Manifests, weight tickets, receipts, and invoices.
   2. Landfill and Incinerator Disposal Records: Manifests, weight tickets, receipts, and invoices.

## PART 2 - PRODUCTS

### 2.1 PERFORMANCE REQUIREMENTS

A. Achieve end-of-Project rates for salvage/recycling of sixty-five percent (65%) by weight of total nonhazardous solid waste generated by the Work.

PART 3 - EXECUTION

3.1 PLAN IMPLEMENTATION

A. General: Implement approved waste management plan. Provide handling, containers, storage, signage, transportation, and other items as required to implement waste management plan during the entire duration of the Contract.

B. Training: Train workers, subcontractors, and suppliers on proper waste management procedures, as appropriate for the Work occurring at Project site.

1. Distribute waste management plan to entities when they first begin work on-site. Review plan procedures and locations established for salvage, recycling, and disposal.

3.2 SALVAGING DEMOLITION WASTE

A. Salvaged Items for Reuse in the Work: Clean salvaged items and install salvaged items to comply with installation requirements for new materials and equipment.

B. Salvaged Items for Owner's Use: Clean salvaged items and store in a secure area until delivery to Owner.

C. Doors and Hardware: Brace open end of door frames. Except for removing door closers, leave door hardware attached to doors.

D. Equipment: Drain tanks, piping, and fixtures. Seal openings with caps or plugs.

E. Plumbing Fixtures: Separate by type and size.

F. Lighting Fixtures: Separate lamps by type and protect from breakage.

3.3 RECYCLING WASTE

A. General: Recycle paper and beverage containers used by on-site workers.

B. Packaging:

1. Cardboard and Boxes: Break down packaging into flat sheets. Bundle and store in a dry location.
2. Polystyrene Packaging: Separate and bag materials.
3. Pallets: As much as possible, require deliveries using pallets to remove pallets from Project site. For pallets that remain on-site, break down pallets into component wood pieces and comply with requirements for recycling wood.
4. Crates: Break down crates into component wood pieces and comply with requirements for recycling wood.

C. Asphaltic Concrete Paving: Break up and transport paving to asphalt-recycling facility.

D. Concrete: Remove reinforcement and other metals from concrete and sort with other metals.

1. Pulverize concrete to maximum 4-inch size.

E. Masonry: Remove metal reinforcement, anchors, and ties from masonry and sort with other metals.

1. Pulverize masonry to maximum 4-inch size.
2. Clean and stack undamaged, whole masonry units on wood pallets.

F. Wood Materials:

1. Sort and stack reusable members according to size, type, and length. Separate lumber, engineered wood products, panel products, and treated wood materials.
2. Clean Cut-Offs of Lumber: Grind or chip into small pieces.
3. Clean Sawdust: Bag sawdust that does not contain painted or treated wood.

G. Metals: Separate metals by type.

H. Asphalt Shingle Roofing: Remove and dispose of nails, staples, and accessories.

I. Gypsum Board: Stack large clean pieces on wood pallets or in container and store in a dry location. Remove edge trim and sort with other metals. Remove and dispose of fasteners.

J. Acoustical Ceiling Panels and Tile: Stack large clean pieces on wood pallets and store in a dry location.

K. Metal Suspension System: Separate metal members including trim, and other metals from acoustical panels and tile and sort with other metals.

L. Carpet and Pad: Roll large pieces tightly after removing debris, trash, adhesive, and tack strips.

1. Store clean, dry carpet and pad in a closed container or trailer provided by Carpet Reclamation Agency or carpet recycler.

M. Piping: Reduce piping to straight lengths and store by type and size. Separate supports, hangers, valves, sprinklers, and other components by type and size.

N. Conduit: Reduce conduit to straight lengths and store by type and size.

## 3.4 UNIVERSAL WASTE

A. Universal Waste shall be diverted from landfills and recycled or disposed of as required by California regulations at a facility equipped to receive them.

B. Universal Wastes include the following:

1. Batteries: Universal waste batteries include rechargeable nickel-cadmium batteries, silver button batteries, mercury batteries, small sealed lead acid batteries (burglar alarm and emergency light batteries), most alkaline batteries, carbon-zinc batteries, and any other batteries that exhibit a characteristic of a hazardous waste.

*NOTE: Spent automotive-type lead acid storage batteries are not universal waste. They are hazardous wastes that are managed under a different set of regulatory requirements.*

2. Electronic Devices: These include any electronic equipment with or without a CRT, such as cell phones, telephones, computer CPUs, printers, VCRs, and portable DVD players that exhibits a hazardous waste characteristic.

3. Cathode ray tubes (CRTs): Waste CRTs, also known as picture tubes, are found in devices such as older televisions and computer monitors.

4. CRT glass: A cathode ray tube that has been accidentally broken or processed for recycling.

5. Universal Waste Lamps: Universal waste lamps include fluorescent tubes and bulbs, high intensity discharge lamps, sodium vapor lamps, and any other type of lamps that exhibit a characteristic of a hazardous waste. Also, any electric lamp that contains added mercury, whether or not it exhibits a hazardous waste characteristic, is a universal waste.

6. Mercury-Containing Equipment:
   a. Mercury thermostats: These thermostats contain small glass capsules with mercury, a shiny liquid metal, to make electrical contact.
      *Note: Modern electronic thermostats do not contain mercury.*
   b. Mercury switches: Two different types of mercury switches are universal wastes:
      Motor vehicle switches that contain mercury. Any mercury switch that is removed from a vehicle is a universal waste. When they are to be crushed for scrap, vehicles that contain mercury light switches are also universal waste until the mercury light switches are removed.
      Non-automotive mercury switches and products that contain them. These switches include thermostats and tip switches in portable heaters, washing machine out-of-balance switches, silent wall switches, and other mercury-containing switches and products containing them. All discarded products that contain mercury switches are universal wastes.
   c. Mercury thermometers: These include fever thermometers.
   d. Pressure or vacuum gauges containing mercury: These include U-tube manometers, barometers, and sphygmomanometers (blood pressure meters).
   e. Dilators and weighted tubing: These medical devices contain mercury.
   f. Rubber flooring containing mercury: Some older gymnasium floors that were poured in place to form indoor tracks and gymnastic areas contain mercury.
   g. Mercury-added novelties: This category includes practical joke items, figurines, jewelry, toys, games, cards, ornaments, yard statues and figures, candles, holiday decorations, and footwear that contain mercury or mercury batteries.
   h. Mercury gas flow regulators: These older gas flow regulators are managed exclusively by natural gas utilities.
   i. Counterweights and dampers: These devices use mercury's high density to dampen shaking on hunting bows and snow skis or to absorb recoil on shotguns.
   j. Dental amalgam tooth filling materials: These include waste amalgam, bits and pieces from chair side traps, and spent wastewater filters.

7. Non-Empty Aerosol Cans: These are universal wastes if they contain an ignitable, corrosive, reactive, or toxic propellant or if the contents exhibit any hazardous waste characteristic.

8. Photovoltaic Modules (PV modules): Universal waste PV modules includes any device consisting of, or containing, one or more electrically connected photovoltaic cells that are designed to convert solar radiation into electrical energy. PV modules include integrated components that cannot be separated without breaking the PV module glass.

3.5 DISPOSAL OF WASTE

A. Except for items or materials to be salvaged, recycled, or otherwise reused, remove waste materials from Project site and legally dispose of them in a landfill acceptable to authorities having jurisdiction.
   1. Except as otherwise specified, do not allow waste materials that are to be disposed of accumulate on-site.
   2. Remove and transport debris in a manner that will prevent spillage on adjacent surfaces and areas.

B. Do not burn waste materials.

C. Disposal: Transport waste materials off Owner's property and legally dispose of them.

D. Washing out of concrete trucks will not be allowed at the site.

END OF SECTION 01 74 19

# CONSTRUCTION WASTE MANAGEMENT PLAN

**Project Name:** Ferndale Veterans Building HVAC Upgra

**Project Location:** 1100 Main Street, Ferndale, CA

**Building Permit #:** TBD **Project Sq. Ft.:** 5845

**Contractors Name:** TBD **Telephone:** _____

**Owners Name:** Board of Supervisors, Cou **Telephone:** 707-268-2665

This construction waste management plan is hereby submitted to comply with either section 4.408.2 (residential) or section 5.408.1.1 (nonresidential) of the current California Green Building Standards Code.

The purpose of this plan is to identify and outline the methods to be used as the minimum requirements for a construction waste management plan when the local jurisdiction does not have a construction and demolition waste management ordinance per Section 4.408.2. (Residential) or Section 5.408.1.1 (Non-Residential)

1. The method of waste tracking to be used on this project will be: (Check one box)

   ☐ **Volume** ☐ **Weight** ☐ **4 Lbs. per Sq. Ft.** ☐ **Recycling Facility**

2. Construction waste generated on this project for transport to a recycling facility will be: (Check appropriate box)

   ☐ **Sorted on-site (Source-separated)** ☐ **Bulk mixed (Single stream)**

3. The facility (or facilities) where the construction waste material will be taken is:

   Name of Facility: TBD
   Address: TBD
   Telephone: TBD
   (Attach separate sheet for additional facilities)

4. The following construction methods will be used to reduce the amount of waste generated: (Check all that apply)

   ☐ Efficient design (dimensions of building components are designed to available material sizes or standard sizes).
   ☐ Careful and accurate material ordering.
   ☐ Careful material handling and storage.
   ☐ Panelized or prefabricated construction.
   ☐ Other _____
   ☐ Other _____

5. Waste reduction and recycling strategies shall be discussed at periodic project meetings. Each new [ *Contractor* ]* that comes onto the site shall be provided with a copy of the CWMP, which shall also be posted in the project office. The [ *Project Manager* ]* shall also instruct all [ *Subcontractors* ]* as to the location and proper use of debris boxes for disposal of construction waste materials.

6. Every effort shall be made to use recycling and/or reuse (diversion) measures to reduce the amount of construction waste and other materials sent to landfills. Whenever possible, site-sorted debris boxes shall be used to segregate construction waste materials to maximize the diversion rate.

7. The [*Contractor*]* shall provide debris boxes for materials sorted on-site (source-separated) and/or bulk mixed (single stream) waste for all construction related waste generated on this project. Mixed construction waste shall be taken to a recycling facility that has a diversion rate of at least 65 percent. In the event that a [*Subcontractor*]* provides their own debris box, they shall be responsible for providing the [*Contractor*]* with a monthly report of the total Recycled and Reused (Diverted) and the total Non-Recycled (Disposed) materials to be included in the project's overall waste management/waste reduction program.

8. Any [*Supplier*]* hauling away packaging or waste materials shall notify the [*Contractor*]* of the amount of these materials and how they will be disposed of (reused, recycled, salvaged, or taken to landfill).

9. Identified below are the construction waste materials that will be reused and/or recycled during the course of this project and how they will be diverted:

| Material | Diversion Method: (Recycle/Reuse) |
|---|---|
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(See Construction Waste Management Worksheets for examples of common materials.)

10. The [*Waste Hauler*]* shall track the total amount of construction waste leaving the project by weight or by volume and supply the [*Contractor*]* with copies of tickets or detailed receipts from all loads of construction waste removed from the jobsite.

11. The [*Contractor*]* shall monitor the process of waste management, recycling, and reuse of construction waste materials to ensure compliance with the CWMP during the course of the project.

12. The [*Contractor*]* shall ensure that all supporting documentation which demonstrates compliance with the waste management plan is provided to the local enforcement agency upon completion of the project.

*** Insert title of appropriate party or responsible person, which may include, but not be limited to: *Contractor(s), Subcontractor(s), Project Manager(s), Superintendent(s), Supplier(s), or Waste Hauler(s).***

**** Refer to the attached handout created by CalRecycle for more information.***

# Current CALGreen Construction Waste Management Requirements

<table>
<tr><th colspan="5">Residential Compliance Methods (4.408)</th></tr>
<tr><th>Occupancy</th><th>Covered Projects</th><th>Waste Diversion</th><th>Waste Diversion Tracking</th><th>Space Enclosure</th></tr>
<tr><td>New Construction & Demolition[5]</td><td>Locally Permitted Structures (301.3.2)</td><td>≥ 65% Waste Diversion (4.408.1)<br><br>Or<br><br>≤ 3.4 lbs/ft$^2$ disposal for low-rise, ≤ 3 stories (4.408.4)<br><br>Or<br><br>≤ 2 lbs/ft$^2$ disposal for high-rise, ≥ 4 stories (4.408.4.1)</td><td rowspan="3">Submit a Waste Management Plan (4.408.2)<br><br>Or<br><br>Use a waste management company with verifiable documentation (4.408.3)</td><td>Provide areas that serve the entire building for depositing, storage and collection of materials for recycling including metals, paper, glass, cardboard, plastics and organic waste (4.410.2)<br><br>Only applies to multifamily dwellings[6] with ≥ 5 units (4.410.2)</td></tr>
<tr><td>Additions</td><td>Certain additions (301.1.1)[7]</td><td rowspan="2">≥ 65% Waste Diversion (4.408.1)</td><td>NA</td></tr>
<tr><td>Alterations</td><td>Certain alterations (301.1.1)[8]</td><td>NA</td></tr>
</table>

[5] Projects with demolition-only permit (not included with a construction permit) is outside the scope of the CALGreen building code. Therefore, jurisdictions using CALGreen for C&D waste management should address recycling in demolition-only projects should they occur.
[6] See Section 1102A.1 for CALGreen's definition of multifamily dwellings.
[7] Section 301.1.1 applies to additions or alterations of existing residential buildings where the addition or alteration increases the building's conditioned area, volume, or size. Applies only to and or within the specific area of addition or alteration.
[8] Section 301.1.1 applies to additions or alterations of existing residential buildings where the addition or alteration increases the building's conditioned area, volume, or size. Applies only to and or within the specific area of addition or alteration.

# Current CALGreen Construction Waste Management Requirements

| Non-Residential Compliance Methods (5.408) | | | | | |
|---|---|---|---|---|---|
| **Occupancy** | **Covered Projects** | **Waste Diversion** | **Waste Diversion Tracking** | **Space Enclosure** | **Universal Waste** |
| New Construction & Demolition[1] | Locally Permitted Structures (301.3.2) | ≥ 65% Waste Diversion (5.408.1)<br><br>Or<br><br>≤ 2 lbs/ft$^2$ Disposal (5.408.1.3) | Submit a Waste Management Plan (5.408.1.1)<br><br>Or<br><br>Use a waste management company with verifiable documentation (5.408.1.2) | Provide areas that serve the entire building for depositing, storage and collection of materials for recycling including metals, paper, glass, cardboard, plastics and organic waste (5.410.1) | NA |
| Additions | | | | See Above (5.410.1)<br><br>Applies to certain additions[2] (5.410.1.1) | Verify that Universal Waste is properly disposed. A list of materials shall be in the construction documents (5.408.2)<br><br>Applies to certain additions[3] (301.3) |
| Alterations | | | | NA | See Above (5.408.2)<br><br>Applies to certain alterations[4] |

[1] Projects with demolition-only permit (not included with a construction permit) is outside the scope of the CALGreen building code. Therefore, jurisdictions using CALGreen for C&D waste management should address recycling in demolition-only projects should they occur.
[2] All additions conducted within a 12-month period under single or multiple permits, resulting in an increase of 30 percent or more in floor area, shall provide recycling areas on site. CALGreen Section 5.410.1.1
[3] Applies to nonresidential additions 1,000 ft$^2$ or greater. CALGreen Section 301.3
[4] Applies to building alterations with a permit valuation of $200,000 or above. CALGreen Section 301.3

# Current CALGreen Construction Waste Management Requirements

**Waste Diversion Requirement**

- Newly constructed buildings and demolition projects shall divert from landfills at least 65% of the construction and demolition (C&D) materials generated at the project site.
- All locally permitted additions and alterations to **non-residential** projects shall also meet the minimum 65% waste diversion requirement.
- Additions and alterations to **residential** buildings that increase the structure's conditioned area, volume or size are also required to meet the 65% waste diversion requirement.

**Methods of Compliance**

1) Enforcing agencies can require contractors to develop and maintain a waste management plan and document diversion and disposal. OR
2) Utilize a waste management company that can provide verifiable documentation that it meets 65% waste diversion. OR
3) Use a waste stream reduction alternative:
   - Non-residential new construction and residential high rise (4 stories or more) projects with a total disposal weight of **≤** 2 lbs/ft$^2$ meets the 65% waste diversion requirement.
   - Residential low rise (3 stories or less) with new construction disposal of **≤** 3.4 lbs/ft$^2$ meets the 65% waste diversion requirement.

**Recycling by Occupants (Space for Recycling)**

- Newly constructed non-residential buildings, certain non-residential additions and multi-family housing with ≥ 5 units should provide readily accessible areas that serve the entire building and are identified for the depositing, storage and collection of non-hazardous materials for recycling, including (at minimum) paper, corrugated cardboard, glass, plastics, organic waste and metals.

**Universal Waste**

- Universal waste (such as batteries, e-waste, lamps, cathode ray tubes/glass, aerosol cans) from non-residential addition and alteration projects shall require verification that the materials are disposed of properly and diverted from landfills. A list of prohibited universal waste materials shall be included in the construction documents. This is required for nonresidential additions of 1,000 ft$^2$ or greater and building alterations with a permit valuation of $200,000 or above.

**Recycled Content (Voluntary for Non-Residential Structures)**

- Use recycled content materials that meets specified Recycled Content Value. Or simply use two (Tier 1) or three (Tier 2) materials out of 9 product types on the list: exterior paint, carpet, compost, mulch, acoustical ceiling panels, drywall, aggregate base, fiberglass or cellulose insulation.

**Division of Environmental Health**
100 H Street - Suite 100 - Eureka, CA 95501
Phone: 707-445-6215 - Toll Free: 800-963-9241
Fax: 707-441-5699
envhealth@co.humboldt.ca.us

# Commercial and Residential Construction, Demolition & Inert (CDI) Waste Guide

- Waste resulting from all construction and demolition projects must be handled in accordance with state and local regulations.
- Household and hazardous wastes must be handled separately and are not acceptable as part of this waste stream.
- Mixed (unsorted) CDI waste must be transported to an approved disposal or transfer-processing facility.
- Materials to be recycled must be separated at the point of origin and taken to a legitimate CDI recycling center or CDI transfer- processing facility.
- Waste that is transported outside of Humboldt County for disposal at a permitted landfill must be accurately accounted for by weight. Copies of weight tickets generated at the landfill must be provided by the transporter to Humboldt Waste Management Authority (HWMA: 707-268-8680) for state-mandated waste generation tracking purposes and for payment of appropriate in-county waste generation fees.
- The applicant should have demonstrated proposed disposal/recycling plans for the proposed project at the time a building permit is obtained for construction and/or demolition.

## Sites where CDI can be received and processed in Humboldt County

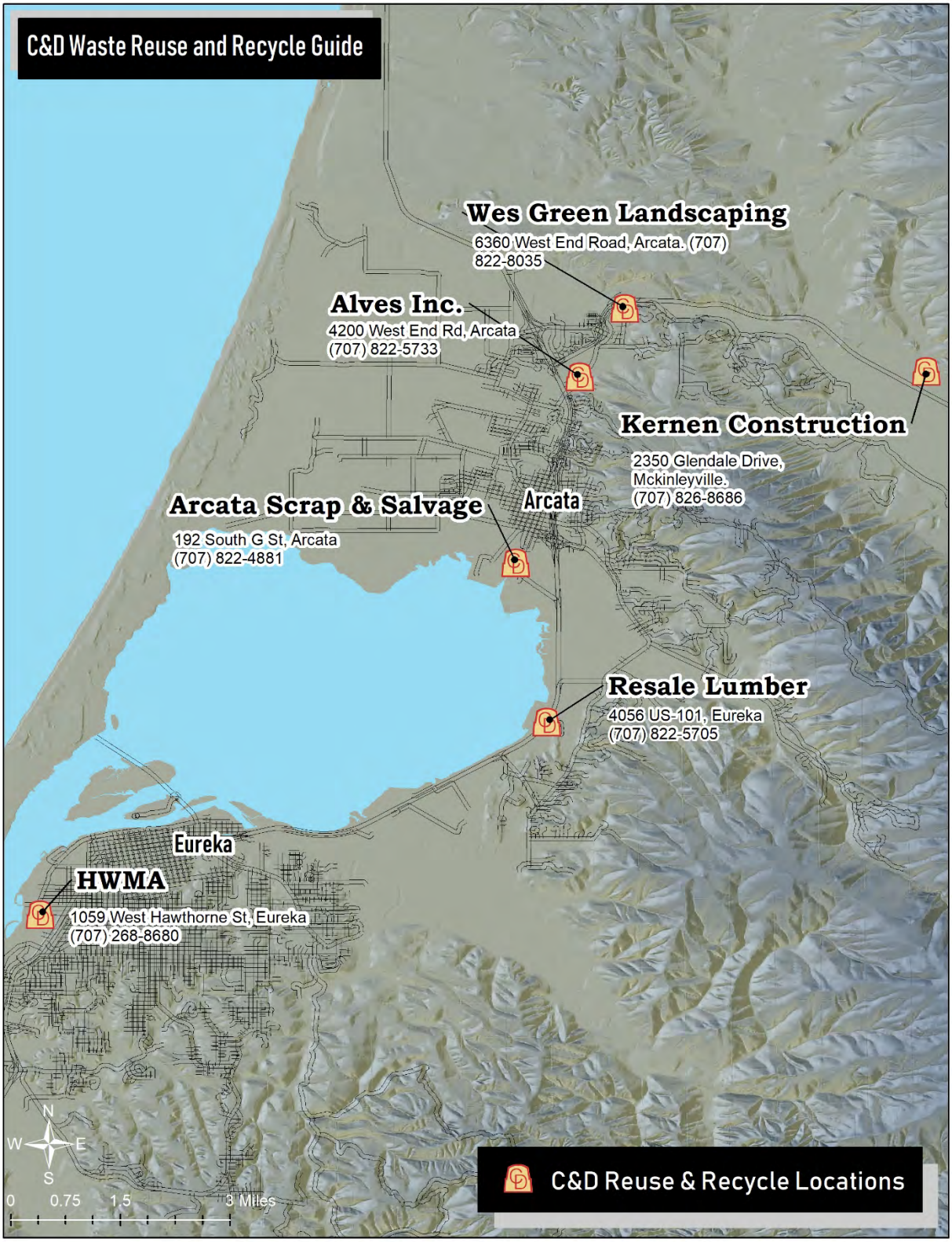
***Recommendation: call in advance to ensure the site can accept your material and whether a fee will be charged***

### C&D Processing Facilities

- Alves Inc.
  (707) 825-4725
  4200 West End Road
  Arcata, CA 95521
- Eel River Transportation & Salvage CDI
  (707) 725-6530
  850 Riverwalk Drive
  Fortuna, CA 95540

### Inert Debris Recycling Centers

- Alves Inc.
  (707) 825-4725
  200 West End Road
  Arcata, CA 95521
- Kernen Construction in Blue Lake
  (707) 826-8686
  2350 Glendale Drive
  McKinleyville, CA 95519
- Mercer-Fraser – Essex site
  (707) 443-6371
  90 Glendale Drive
  Arcata, CA 95521
- Mercer- Fraser – Fortuna Plant A
  (707) 443-6371
  700 Riverwalk Drive
  Fortuna, CA 95540
- Mercer- Fraser – Willow Creek Plant
  (707) 443-6371
  390 Highway 96
  Willow Creek, CA 95573


C&D Waste Reuse and Recycle Guide
Wes Green Landscaping
6360 West End Road, Arcata. (707) 822-8035
Alves Inc.
4200 West End Rd, Arcata (707) 822-5733
Kernen Construction
2350 Glendale Drive, Mckinleyville. (707) 826-8686
Arcata Scrap & Salvage
192 South G St, Arcata (707) 822-4881
Arcata
Resale Lumber
4056 US-101, Eureka (707) 822-5705
Eureka
HWMA
1059 West Hawthorne St, Eureka (707) 268-8680
N
W
E
S
0 0.75 1.5 3 Miles
C&D Reuse & Recycle Locations

| Construction and Demolition Recycling Guide | Arcata Scrap and Salvage (707) 822-4881 | Humboldt Waste Management Authority (707) 268-8680 | Kernen Construction (707) 826-8686 | Resale Lumber (707) 822-6034 | Wes Green Landscaping (707) 822-8035 | Alves Inc (707) 825-4725 |
|---|---|---|---|---|---|---|
| Asphalt | | | ✓ | | | |
| Bath Fixture | | | | | | $5 |
| Brick/Masonry/Tile/Cinder Block | | | ✓ | | | |
| Cardboard | | ✓ | | | | |
| Carpet / carpet padding | | $90/Ton | | | | $160/ton |
| Ceiling Tile (Acoustic) | | ✓ | | | | |
| Containers - bottles/cans | | ✓ | | | | |
| Concrete - concrete blocks / pier blocks | | | ✓ | | | |
| Dirt | | | | | | $10/ton clean, $80/ton Mixed, $160/ton Grow |
| Doors | If metal | | | | | |
| Drywall (new) - unpainted sheets / scrap | | | | | | Free without wire |
| Drywall (Used) | | | | | | $160/ton |
| Electrical Panels | ✓ | ✓ | | | | |
| Furnace/Water Heater | ✓ | ✓ | | | | $25/each |
| Green waste - brush, trees etc. | | $90/ton | | | | |
| Metal - scrap, rail, rebar, etc. | ✓ | ✓ | ✓ | | | $160/ton |
| PVC Pipe | | | | | | |
| Roofing, Roof Shingles | Tin/Corrugated | | | | | $160/ton |
| Trash, non recyclable materials | | | | | | |
| Windows, Window Frames | Metal Frames | | ✓ | If complete window | | $160/ton |
| Wood, pallets, untreated/unpainted | | $90/ton | | Call | ✓ | $160/ton |

# CONSTRUCTION WASTE FINAL CERTIFICATION

***To be filled out and signed at final inspection before final building inspection approval.***

**Project Location:** _____

**Building Permit #:** _____

**Contractors Name:** _____

**Owners Name:** _____

| Recycled Nonhazardous Waste* | Amount |
|---|---|
| | |
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| | |
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| | |
| | |
| | |
| | |
| | |
| | |
| **Total Recycled Nonhazardous Waste:** | |

**÷ Total Nonhazardous Waste:_____ = _____% (min. 65%)**

**** Table not required to be completed if using a waste management company.***

**I declare under penalty of perjury and hereby certify that:**

- I am the owner/contractor for the above referenced Construction Waste Management Plan (CWMP).
- I have completed and reviewed the above referenced CWMP.
- I have adhered to the 12 itemized methods of waste management described in the above referenced CWMP.
- I have recycled and/or salvaged for reuse a **minimum of 65%** of the nonhazardous construction and demolition waste in accordance with current California Green Building Standards Code section 4.408.2, 4.408.3, 5.408.1.1, 5.408.1.2, 5.408.1.3 OR have met a local construction and demolition waste management ordinance for the above referenced project.

**Owner/Contractor/Agent Signature:_____ Date:_____**

PURSUANT TO THE CURRENT CALIFORNIA RESIDENTIAL CODE AND CALIFORNIA BUILDING CODE, THE BUILDING OFFICIAL OR HIS DESIGNEE ARE AUTHORIZED TO CONDUCT INSPECTIONS IN ORDER TO DETERMINE CODE COMPLIANCE. COMPLETION AND SUBMISSION OF THIS FORM DOES NOT WAIVE, NEGATE, OR DIMINISH THE BUILDING OFFICIAL'S INSPECTION AURTHORITY AND DOES NOT LIMIT THE BUILDING OFFICIAL'S RIGHT TO CONDUCT INSPECTIONS FOR CODE COMPLIANCE AND/OR TO VERIFY THAT THE INFORMATION CERTIFIED ABOVE IS ACCURATE.

## PART 1 - GENERAL

### 1.1 RELATED DOCUMENTS

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

### 1.2 SUMMARY

A. This Section includes administrative and procedural requirements for contract closeout including, but not limited to, the following:
   1. Inspection procedures.
   2. Project record document submittal.
   3. Operation and maintenance manual submittal.
   4. Submittal of warranties.
   5. Final cleaning.

B. Closeout requirements for specific construction activities are included in the appropriate Sections.

### 1.3 SUBSTANTIAL COMPLETION

A. Prior to requesting inspection for certification of Substantial Completion, complete the following. List exceptions in the request.

   1. In the Application for Payment that coincides with, or first follows, the date Substantial Completion is claimed, show 100 percent completion for the portion of the Work claimed as substantially complete.
      a. 100 percent completion will bring the Contractor's progress Payment up to (95%) ninety percent of the Contract Price with (5%) percent to remain in retention until after Notice of Completion.
      b. Include supporting documentation for completion as indicated in these Contract Documents and a statement showing an accounting of changes to the Contract Sum.
      c. If 100 percent completion cannot be shown, include a list ("punchlist") of incomplete items, the value of incomplete construction, and reasons the Work is not complete.

   2. Advise the Owner of pending insurance changeover requirements.
   3. Submit specific warranties, workmanship bonds, maintenance agreements, final certifications, and similar documents.
   4. Obtain and submit releases enabling the Owner unrestricted use of the Work and access to services and utilities. Include occupancy permits, operating certificates, and similar releases.
   5. Submit record drawings, maintenance manuals, final project photographs, damage or settlement surveys, property surveys, and similar final record information.
   6. Deliver tools, spare parts, extra stock, and similar items.
   7. Make final changeover of permanent locks and transmit keys to the Owner. Advise the Owner's personnel of changeover in security provisions.
   8. Complete startup testing of systems and instruction of the Owner's operation and maintenance personnel. Discontinue and remove temporary facilities from the site, along with mockups, construction tools, and similar elements.
   9. Complete final cleanup requirements, including touchup painting.
   10. Touch up and otherwise repair and restore marred, exposed finishes.

B. Substantial Completion will not be issued without the following:

   1. Issuance of a Certificate of Occupancy.
   2. The electrical system, fire alarm, and smoke detection system 100% complete.
   3. Operation manuals, maintenance manuals and warranties submitted and approved.

4. Instruction of staff in the operation and maintenance of equipment and systems.
5. Record drawings submitted and approved.
6. Any extra material required by contract delivered.

C. Inspection Procedures:

1. On receipt of a request for inspection, the Owner's Representative and the Architect will either proceed with inspection or advise the Contractor of unfilled requirements.
2. The Owner's Representative will prepare the Certificate of Substantial Completion following inspection or advise the Contractor of construction that must be completed or corrected before the certificate will be issued.
   a. The Owner's Representative and the Architect will repeat inspection when requested and assured that the Work is substantially complete.
   b. Results of the completed inspection will form the basis of requirements for final acceptance.
3. Owner will allow the Contractor no longer than 30 calendar days from the Date of Substantial Completion to remedy deficiencies.

1.4 FINAL ACCEPTANCE

A. Prior to requesting final inspection for certification of final acceptance and final payment, complete and submit the following:

1. Final payment request with releases and supporting documentation not previously submitted and accepted. Include insurance certificates for products and completed operations where required.
2. Submit an updated final statement, accounting for final additional changes to the Contract Sum.
3. Certified copy of the Owner's Representative and Architect's final inspection list of items to be completed or corrected endorsed and dated by the Owner's Representative and Architect.
   a. Certification shall state that each item has been completed or otherwise resolved for acceptance.
4. Submit consent of surety to final payment.
5. Submit all subcontractor final unconditional lien releases.
6. Submit a final liquidated damages settlement statement.
7. Submit evidence of final, continuing insurance coverage complying with insurance requirements.

B. Re-inspection Procedure:

1. Owner's Representative and /or Architect will re-inspect the Work upon receipt of notice that the Work, including inspection list items from earlier inspections, has been completed.
   a. Indicate items whose completion is delayed under circumstances acceptable to the Owner's Representative.
2. Should the Owner's Representative determine that Work is incomplete or defective:
   a. Owner's Representative will notify the Contractor, in writing, listing incomplete or defective Work.
   b. Contractor shall remedy deficiencies promptly and notify Owner's Representative when ready for re-inspection.

.

C. Final Acceptance Certificate

1. Upon completion of inspection or any re-inspections, the Owner's Representative and /or Owner's Lead Agency will prepare a certificate of final acceptance in accordance with the Project Specification Section 00 80 00, Supplemental General Conditions.
2. Final Acceptance will be presented to the County Board of Supervisors.
   a. Only the County Board of Supervisors has final authority over Acceptance of Project.

D. Notice of Completion

1. Upon final acceptance by the County Board of Supervisors, the Owner's Lead Agency will prepare and file a Notice of Completion in accordance with the Project Specification Section 00800, Supplemental General Conditions.
   a. Start of mandatory 35-day lien period.

1.5 RECORD DOCUMENT SUBMITTALS

A. Project Record Drawings:

1. Maintain a clean, undamaged set of Contract Drawings and Shop Drawings and identify as "RECORD DRAWINGS - PROJECT SET".
   a. As an alternate to paper copies, CONTRACTOR may choose to document As-Built/Record Drawings as described below via a marked-up digital .pdf file such as Bluebeam.
2. Mark the Drawings to show the actual installation where the installation varies substantially from the Work as originally shown.
   a. Using an erasable colored pencil (not ink or indelible pencil) clearly describes change by graphic line or note.
   b. Date all entries, and note related Change Order number where applicable.
   c. Call attention to all entries by a "cloud" drawn around area affected.
   d. Where overlapping changes occur, mark with different colors.
3. Conversion of schematic layouts:
   a. Design of future modifications of facility may require accurate information as to final physical layout of items that are shown schematically on Drawings.
   b. Show on Project set of Record Drawings, by dimension accurate to within one inch, centerline of each run of items shown schematically on Drawings. Clearly identify item by accurate note such as "cast iron drain", "galv. water", and the like. Show, by symbol or note, vertical location of item ("under slab", "in ceiling plenum", "exposed" and the like).
4. Prior to request for Substantial Completion, secure from the Owner's Representative at no charge to the Contractor, a complete set, full sized drawings and (.DWG) files of all Contract Documents.
   a. Clearly transfer change data shown on Project set of Record Drawings to corresponding transparencies, coordinating changes as required.
   b. Clearly indicate at each affected detail and other drawings a full description of changes made during construction, and actual location of items.
   c. Show final location of electrical junction boxes and outlets, telephone and data outlets, supply and return registers, and like items.
   d. Call attention to all entries by a "cloud" drawn around area affected.
   e. Make changes neatly, consistently, and with proper media to assure longevity and clear reproduction.

B. Record Specifications:

1. Maintain one complete copy of the Project Manual, including addenda and other written construction documents, such as Change Orders and modifications issued during construction.
2. Mark Specifications to show substantial variations in actual Work performed in comparison with the text of the Specifications.
3. Note substitutions in reference to items specified.

C. Maintenance Manuals:

1. Contractor to submit a written summary of all maintenance manuals to be transmitted to Owner's Representative.
2. Submit 3 complete copies and one digital .pdf copy of all maintenance manuals prior to start-ups and instruction of operation to maintenance personnel.

3. Provide manuals in 8-1/2 x 11 inch format with plastic/fiberboard covers and colored fly-sheets separating sections, to include the following:

    a. Covered labeled as “Operating and Maintenance Instructions” with name and address of Project, and names of Contractor and Subcontractor.
    b. Typewritten index near front of manual, providing immediate information as to location within manual of emergency information regarding installation.
    c. Complete instructions regarding operation and maintenance of all equipment, including lubrication, disassembly, and re-assembly.
    d. Complete nomenclature of all parts of all equipment.
    e. Complete nomenclature and part number of all replacement parts, name and address of nearest vendor, and all other data pertinent to procurement and procedures.
    f. Copy of garnets and warranties issued.
    g. Manufacturers’ bulletins, cuts, and descriptive data, where applicable, clearly indicating precise items included in this installation and deleting, or otherwise clearly indicating, all manufacturers’ data which this installation is not concerned.
    h. Such other data as required in applicable Specification Sections.

D. Guarantees/warranties and Bonds:
    1. General:
        a. Manufacturers' warranties notwithstanding, warrant the entire Work against defects in materials and workmanship for twelve (12) months from the date of Substantial Completion in accordance with the GENERAL CONDITIONS & SUPPLEMENTARY GENERAL CONDITIONS.
        b. Guarantee/warrant or bond Work as required in the Specifications.
        c. Warranties between the Contractor and manufacturers, and the Contractor and suppliers, shall not affect guarantees/ warranties between the Contractor and the Owner.
        d. The Contractor will not be held responsible for defects due to misuse, negligence, willful damage, improper maintenance, or accident caused by Others, nor shall he be responsible for defective parts whose replacement is necessitated by failure of the Owner's maintenance forces to properly clean and service them, provided the Contractor has furnished complete maintenance instructions to the Owner.
        e. Compile specified guarantees/warranties and bonds.
        f. Time of Submittal:
            i. For equipment or component parts of accepted equipment put into service for the Owner's benefit during the progress of the Work, submit guarantees/warranties within ten (10) calendar days after acceptance of the Work.
            ii. Otherwise, submit guarantees/warranties within ten (10) calendar days after date of Substantial Completion and prior to the Final Application for Payment.
            iii. For items of Work where acceptance is delayed materially beyond the date of Substantial Completion, furnish updated submittal within ten (10) calendar days after such delayed acceptance, listing the date of delayed acceptance as the start of the guarantee/warranty period.

E. Other Documents:

    1. Three sets of warranties, guaranties and bonds.
    2. Spare parts and materials extra stock list.
    3. One set of evidence of compliance with requirements of governmental agencies having jurisdiction including, but not limited to:
        a. Certificates of Inspection.
        b. Certificates of Occupancy.
    4. One set of certificates of insurance for products and completed operations.
    5. One set of evidence of payment and release of liens.

6. One copy of list of Subcontractors, service organizations, and principal vendors, including names, addresses, and telephone numbers where they can be reach for emergency service at all times including nights, weekends, and holidays.

1.6 INSTRUCTION

A. Arrange for each Installer of equipment and systems that requires regular maintenance to meet with the Owner's personnel for instruction in proper operation and maintenance of systems, equipment and similar items, which were provided as part of the Work.

1. Submit to Owner’s Representative an instruction schedule listing instruction subjects and proposed dates at least 15 calendar days prior to the first proposed date.

1.7 FINAL CLEANING

A. Complete the following cleaning operations before requesting inspection for certification of Substantial Completion.

1. Remove labels that are not permanent labels.
2. Clean transparent materials, including mirrors and glass in doors and windows. Remove glazing compounds and other substances that are noticeable vision-obscuring materials. Replace chipped or broken glass and other damaged transparent materials.
3. Clean exposed exterior and interior hard-surfaced finishes to a dust-free condition, free of stains, films, and similar foreign substances. Restore reflective surfaces to their original condition. Leave concrete floors broom clean. Vacuum carpeted surfaces.
4. Wipe surfaces of mechanical and electrical equipment. Remove excess lubrication and other substances. Clean plumbing fixtures to a sanitary condition. Clean light fixtures and lamps.
5. Clean the site, sweep paved areas broom clean; remove stains, spills, and other foreign deposits. Rake grounds that are neither paved nor planted to a smooth, even-textured surface.

B. Remove temporary protection and facilities installed for protection of the Work during construction.

C. Comply with regulations of authorities having jurisdiction and safety standards for cleaning. Do not burn waste materials. Do not bury debris or excess materials on the Owner's property. Do not discharge volatile, harmful, or dangerous materials into drainage systems. Remove waste materials from the site and dispose of lawfully.

1. Where extra materials of value remain after completion of associated Work, they become the Owner's property. Dispose of these materials as directed by the Owner.

**END OF SECTION**

SECTION 024119 - SELECTIVE DEMOLITION

PART 1 - GENERAL

1.1 SECTION REQUIREMENTS

A. This section covers demolition of non-hazardous materials. For hazardous materials abatement requirements, refer to Appendix A for abatement specifications.

B. Items indicated to be removed and salvaged remain Owner's property. Carefully detach from existing construction, in a manner to prevent damage, and deliver to Owner ready for reuse. Include fasteners or brackets needed for reattachment elsewhere.

C. Building occupants will occupy portions of building immediately adjacent to selective demolition area. Conduct selective demolition so Owner's operations will not be disrupted.

D. Hazardous material abatement is a part of this project. Refer to Appendix A for abatement specifications and hazardous materials report.

PART 2 - PRODUCTS

2.1 PEFORMANCE REQUIREMENTS

A. Regulatory Requirements: Comply with all state and federal regulations and with hauling and disposal regulations of authorities having jurisdiction.

PART 3 - EXECUTION

3.1 DEMOLITION

A. Maintain services/systems indicated to remain and protect them against damage during selective demolition operations. Before proceeding with demolition, provide temporary services/systems that bypass area of selective demolition and that maintain continuity of services/systems to other parts of the building.

B. Locate, identify, shut off, disconnect, and seal or cap off indicated utility services and mechanical/electrical systems serving areas to be selectively demolished.

C. Provide temporary barricades and other protection required to prevent injury to people and damage to adjacent buildings and facilities to remain.

D. Protect walls, ceilings, floors, and other existing finish work that are to remain. Erect and maintain dustproof partitions. Cover and protect any furniture, furnishings, and equipment that have not been removed.
   1. Special care shall be taken to protect the existing floor in the main assembly hall from damages. Use Ram Board Plus or approved equal. If the flooring and finish is damaged, contractor shall repair at their own expense.

E. Provide and maintain shoring, bracing, and structural supports as required to preserve stability and prevent movement, settlement, or collapse of construction and finishes to remain, and to prevent unexpected or uncontrolled movement or collapse of construction being demolished.

F. Provide temporary weather protection to prevent water leakage and damage to structure and interior areas.

G. Requirements for Building Reuse:

1. Maintain existing building structure (including structural floor and roof decking) and envelope (exterior skin and framing, excluding window assemblies and nonstructural roofing material) not indicated to be demolished; do not demolish such existing construction beyond indicated limits.
2. Maintain existing interior nonstructural elements (interior walls, doors, floor coverings, and ceiling systems) not indicated to be demolished; do not demolish such existing construction beyond indicated limits.

H. 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.

I. Remove non-hazardous demolition waste materials from Project site and legally dispose of them as indicated in 01 74 19 “Construction Waste Management and Disposal”. Do not burn demolished materials.

J. 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.

END OF SECTION 02 41 19

# SECTION 07 21 00 - THERMAL INSULATION

## PART 1 - GENERAL

### 1.1 SECTION REQUIREMENTS

A. Submittals:
   1. Product Data and ICC-ES evaluation reports for foam-plastic insulation.
   2. Provide documentation verifying that thermal insulation materials meet the pollutant emission limits required in the current California Green Building Standards Code, section 5.504.4.7 “Thermal Insulation.” See section 2.1 (A) below.

B. Surface-Burning Characteristics: According to ASTM E 84 by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.

## PART 2 - PRODUCTS

### 2.1 INSULATION PRODUCTS

A. All insulation products shall comply with the requirements of the California Department of Public Health, “Standard Method for the Testing and Evaluation of volatile Organic Chemical Emissions from Indoor Sources Using Environmental Chambers,” Version 1.2, January 2017 (Emission testing method for California Specification 01350).

B. Extruded-Polystyrene Board Insulation: ASTM C 578, Type IV, with flame-spread and smoke-developed indexes of 75 and 450, respectively.

C. Glass-Fiber-Blanket Insulation: ASTM C 665, Type I, unfaced with flame-spread and smoke-developed indexes of 25 and 450, respectively.

### 2.2 ACCESSORIES

A. Eave Ventilation Troughs: Preformed, rigid fiberboard or plastic sheets designed to fit between roof framing members and to provide cross-ventilation between insulated attic spaces and vented eaves.

## PART 3 - EXECUTION

### 3.1 INSTALLATION

A. Verify joist spacing and that cavities are currently unvented. If venting is present, notify architect.

B. Install insulation in areas and in thicknesses indicated or required to produce R-values indicated. Cut and fit tightly around obstructions and fill voids with insulation.

C. Except for loose-fill insulation and insulation that is friction fitted in stud cavities, bond units to substrate with adhesive or use mechanical anchorage to provide permanent placement and support of units.

D. Extend vapor retarder to extremities of areas to be protected from vapor transmission. Secure in place with adhesives or other anchorage. Locate seams at framing members, overlap, and seal with tape. Seal joints caused by pipes, conduits, electrical boxes, and similar items with tape.

END OF SECTION 07 21 00

SECTION 079200 - JOINT SEALANTS

PART 1 - GENERAL

1.1 SECTION REQUIREMENTS

A. Submittals: Product Data and color Samples.

B. Environmental Limitations: Do not proceed with installation of joint sealants when ambient and substrate temperature conditions are outside limits permitted by joint-sealant manufacturer or are below 40 deg F.

1.2 JOINT SEALANTS

A. **Adhesives, sealants and caulks.** Adhesives, sealants, and caulks used on the project shall meet the requirements of the following standards:

1. Adhesives, adhesive bonding primers, adhesive primers, sealants, sealant primers and caulks shall comply with local or regional air pollution control or air quality management district rules where applicable, or SCAQMD Rule 1168 VOC limits, as shown in the most current California Green Building Standards Code Table 5.504.4.1 “ADHESIVE VOC LIMIT” & Table 5.504.4.2 – “VOC SEALANT LIMIT.” Such products also shall comply with the Rule 168 prohibition on the use of certain toxic compounds (chloroform, ethylene dichloride, methylene chloride, perchloroethylene and trichloroethylene), except for aerosol products as specified in subsection 2, below.

2. Aerosol adhesives, and smaller unit sizes of adhesives, and sealant or caulking compounds (in units of product, less packaging, which do not weigh more than one pound and do not consist of more than 16 fluid ounces) shall comply with statewide VOC standards and other requirements, including prohibitions on use of certain toxic compounds, of *California Code of Regulations*, Title 17, commencing with Section 94507.

B. Low-Emitting Materials: Sealants shall comply with the following limits for VOC content:
1. Architectural Sealants: 250 g/L.
2. Marine Deck: 760 g/L.
3. Nonmembrane Roof Sealants: 300 g/L.
4. Single-Ply Roof Membrane Sealants: 450 g/L.
5. Other Sealants: 420 g/L.
6. Sealant Primers for Nonporous Substrates: 250 g/L.
7. Sealant Primers for Porous Substrates: 775 g/L.
8. Modified Bituminous Sealant Primers: 500 g/L.
9. Other Sealant Primers: 750 g/L.

C. Compatibility: Provide joint sealants, joint fillers, and other related materials that are compatible with one another and with joint substrates under service and application conditions.

1.3 MISCELLANEOUS MATERIALS

A. Provide sealant backings of material that are nonstaining; are compatible with joint substrates, sealants, primers, and other joint fillers; and are approved for applications indicated by sealant manufacturer based on field experience and laboratory testing.

B. Cylindrical Sealant Backings: ASTM C 1330, of size and density to control sealant depth and otherwise contribute to producing optimum sealant performance.

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.

D. 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.

PART 2 - EXECUTION

2.1 INSTALLATION

A. Comply with ASTM C 1193.

B. Install sealant backings to support sealants during application and to produce cross-sectional shapes and depths of installed sealants that allow optimum sealant movement capability.

C. Install bond-breaker tape behind sealants where sealant backings are not used between sealants and backs of joints.

END OF SECTION 079200

SECTION 083113 - ACCESS DOORS AND FRAMES

PART 1 - GENERAL

1.1 SECTION REQUIREMENTS

A. Submittals: Product Data.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Fire-Rated Access Doors and Frames: Labeled by a testing and inspecting agency acceptable to authorities having jurisdiction based on testing per the following:

1. Vertical Access Doors: NFPA 252 or UL 10B.
2. Horizontal Access Doors and Frames: NFPA 288.

2.2 ACCESS DOORS AND FRAMES FOR WALLS AND CEILINGS

A. Basis-of-Design Product: Product indicated on Drawings (“Tough Guy Fire Rated Access Door” Mfr Model 2VE77) or an accepted equal:

B. Fire-Rated, Flush Access Doors with Exposed Flanges: Prime-painted steel, self-latching units with automatic closer.

C. Locks: Flush to finished surface.

2.3 MATERIALS

A. 20 ga Galvanized Steel Door, 16 ga Cold Rolled Steel Frame

PART 3 - EXECUTION

3.1 INSTALLATION

A. Install access doors and panels accurately in position. Adjust hardware and door and panels for proper operation.

B. Install per manufacturer’s installation instructions

END OF SECTION 08 31 13

SECTION 092900 - GYPSUM BOARD

PART 1 - GENERAL

1.1 SECTION REQUIREMENTS

A. Submittals: Product Data.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Fire-Resistance-Rated Assemblies: Provide materials and construction identical to those tested in assemblies per ASTM E 119 by an independent testing and inspecting agency acceptable to authorities having jurisdiction.

B. STC-Rated Assemblies: Provide materials and construction identical to those tested in assemblies per ASTM E 90 and classified per ASTM E 413 by a qualified independent testing and inspecting agency.

2.2 PANEL PRODUCTS

A. Provide in maximum lengths available to minimize end-to-end butt joints.

B. Interior Gypsum Board: ASTM C 1396/C 1396M, in thickness indicated, with manufacturer's standard edges. Type X where indicated.

C. Water-Resistant Gypsum Backing Board: ASTM C 1396/C 1396M, in thickness indicated. Type X where indicated.

2.3 ACCESSORIES

A. Trim Accessories: ASTM C 1047, formed from galvanized or aluminum-coated steel sheet, rolled zinc, plastic, or paper-faced galvanized-steel sheet. For exterior trim, use accessories formed from hot-dip galvanized-steel sheet, plastic, or rolled zinc.

1. Provide cornerbead at outside corners unless otherwise indicated.
2. Provide LC-bead (J-bead) at exposed panel edges.
3. Provide control joints where indicated.

B. Joint-Treatment Materials: ASTM C 475/C 475M.

1. Joint Tape: Paper unless otherwise recommended by panel manufacturer.
2. Joint Compounds: Drying-type, ready-mixed, all-purpose compounds.
3. Skim Coat: Use drying-type, all-purpose compound.

C. Acoustical Sealant for Exposed and Concealed Joints: Nonsag, paintable, nonstaining latex sealant complying with ASTM C 834.

1. Sealants shall have a VOC content of 250 g/L or less.
2. Sealants shall comply with the testing and product requirements of the California Department of Health Services' "Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers."

PART 3 - EXECUTION

3.1 INSTALLATION

A. Install gypsum board to comply with ASTM C 840.

1. Isolate gypsum board assemblies from abutting structural and masonry work. Provide edge trim and acoustical sealant.
2. Single-Layer Fastening Methods: Fasten gypsum panels to supports with screws.

B. Fire-Resistance-Rated Assemblies: Comply with requirements of listed assemblies.

C. Finishing Gypsum Board: ASTM C 840.

1. At concealed areas, unless a higher level of finish is required for fire-resistance-rated assemblies, provide Level 1 finish: Embed tape at joints.
2. At substrates for tile, provide Level 2 finish: Embed tape and apply separate first coat of joint compound to tape, fasteners, and trim flanges.
3. Unless otherwise indicated, provide Level 4 finish: Embed tape and apply separate first, fill, and finish coats of joint compound to tape, fasteners, and trim flanges.
4. Where indicated, provide Level 5 finish: Embed tape and apply separate first, fill, and finish coats of joint compound to tape, fasteners, and trim flanges. Apply skim coat to entire surface.

D. Texture Finish Application: Mix and apply finish using powered spray equipment, to produce a uniform texture free of starved spots or other evidence of thin application or of application patterns.

END OF SECTION 09 29 00

# SECTION 097723 - FABRIC-WRAPPED PANELS

## PART 1 - GENERAL

### 1.1 SECTION REQUIREMENTS

A. Submittals:
   1. Product Data, Shop Drawings, and Samples.
   2. Provide documentation verifying that thermal insulation materials meet the pollutant emission limits required in the current California Green Building Standards Code, section 5.504.4.8 “Acoustical ceilings and wall panels.” See section 1.1 (B) below.

B. All acoustical ceilings and wall panels shall comply with the requirements of the California Department of Public Health, “Standard Method for the Testing and Evaluation of volatile Organic Chemical Emissions from Indoor Sources Using Environmental Chambers,” Version 1.2, January 2017 (Emission testing method for California Specification 01350).

## PART 2 - PRODUCTS

### 2.1 FABRIC-WRAPPED PANEL

A. Basis-of-Design Product: Product indicated on Drawings or an approved equal

B. Fabric: As selected from manufacturer's full range.

C. Flammability: Class A fire rated, per ASTM E 84.

D. Edge Profile: Chamfered (beveled).

E. Nominal Core Thickness: 2 inches .

F. Mounting Devices: Adhesive, Impaling clips or Metal "Z" clips concealed on backside of panels.

G. Mounting Adhesives: As recommended by fabric-wrapped, panel manufacturer.

   1. Low-Emitting Materials: Adhesive shall have a VOC content of 70 g/L or less.

### 2.2 FABRICATION

A. Fabricate panels with fabric straight on the grain, without seams, and with patterned or directional weave fabrics matched in adjacent panels.

B. Stretch fabric tight and square without puckers, ripples, sagging, or distortion.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Install panels level and aligned at top and bottom, vertical and plumb, with faces flush.

END OF SECTION 097723

# SECTION 09 90 00 - PAINTING AND COATING

## PART 1 - GENERAL

### 1.1 SECTION REQUIREMENTS

A. Submittals:

1. Product Data.
2. Samples.

B. Mockups: Full-coat finish Sample of each type of coating, color, and substrate, applied where directed.

C. Extra Materials: Deliver to Owner 5 gal. of wall color finish coat paint and 1 gal. of each color and type of trim finish coat paint used on Project, in containers, properly labeled and sealed.

## PART 2 - PRODUCTS

### 2.1 PAINT

A. All materials (primers, paints, coatings, varnishes, stains, lacquers, fillers, thinners, solvents, etc.) shall be products listed in the latest edition of the MPI Approved Product List and shall be from a single manufacturer for each system used.

B. All materials (primers, paints, coatings, varnishes, stains, lacquers, fillers, thinners, solvents, etc.) shall be products that comply with the most current California Green Building Standards Code Table 5.504.4.3 – “VOC Content Limits for Architectural Coatings.”

C. Material Compatibility: Provide materials that are compatible with one another and with substrates.

1. 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.

D. All materials and paints shall be lead and mercury free.

E. Colors: As selected by owner from manufacturer’s full color palate.

### 2.2 FINISH & COLORS:

A. Unless otherwise specified herein, all interior repainting work shall be done in accordance with MPI Budget Grade requirements.

B. Colors shall be as selected by the Consultant from a manufacturer's full range of colors. The color selections will be furnished after award of the Contract, except general requirements shall be as noted herein.

**Generally, and unless otherwise specified herein or noted on the Plans the quantity of colors and finishes shall be based on the following criteria:**

C. Color selection will be based on two (2) base colors and two (2) accent colors. Note that this does not include pre-finished items unless specifically scheduled.

D. Unless otherwise noted, repaint walls within a given area using the same color as selected.

E. Ceilings including those having a spray textured coating, unless otherwise noted, shall be repainted the same color as walls.

F. Corridors shall be repainted the same color throughout with consistent color schemes for doors and trim.

G. Designated rooms / spaces shall be repainted using more than two colors.
   1. Assembly Hall: Shall have a 4-color scheme consisting of:
      a. Lower wall surface
      b. Upper wall and ceiling surface
      c. Trim and wood trusses
      d. Misc. metals at truss and walls.
   2. Heater Room shall have 2 colors:
      a. Doors
      b. Wall and ceiling surfaces

H. Except as noted herein or indicated on the Plans, walls and ceiling surfaces shall be repainted in accordance with the following criteria:
   1. all areas (except as noted): low VOC latex with G3 (eggshell) finish.
   2. public and institutional facility food preparation and sanitary areas: G5 (semi-gloss) low VOC finish for dry surfaces.

I. Doors, frames and trim shall be repainted a different color than walls. Unless otherwise noted or scheduled all doors, frames and trim shall be repainted using a G5 (semi-gloss) finish.

J. Window frames (unless pre-finished) including trim and sills shall be repainted a different color than walls. Unless otherwise noted or scheduled all window frames, trim and sills shall be repainted using a G5 (semi-gloss) finish.

K. Access doors, registers, radiators and covers, exposed piping and electrical panels shall be repainted to match adjacent surfaces (i.e. color, texture and sheen), unless otherwise noted or where pre-finished.

## PART 3 - EXECUTION

### 3.1 PREPARATION

A. Comply with recommendations in MPI's " MPI Maintenance Repainting Manual " applicable to substrates indicated.

B. Remove hardware, lighting fixtures, and similar items that are not to be painted. Mask items that cannot be removed. Reinstall items in each area after painting is complete.

C. Prepare all interior surfaces for repainting in accordance with MPI Repainting Manual requirements. Refer to the MPI Repainting Manual in regard to specific requirements for the following:
   1. rust stain removal.
   2. mildew removal.
   3. vertical and horizontal concrete surfaces.
   4. structural steel and miscellaneous metals.
   5. galvanized and zinc coated metal.
   6. dimension and dressed lumber.
   7. wood doors.
   8. wood paneling and casework.
   9. stucco, plaster and gypsum board.

D. Sand, clean, dry, etch, neutralize and/or test all surfaces under adequate illumination, ventilation and temperature requirements.

E. Clean and prepare surfaces in an area before beginning painting in that area. Schedule painting so cleaning operations will not damage newly painted surfaces.

F. Protect all adjacent interior surfaces and areas, including floors, rating and instruction labels on doors, frames, equipment, piping, etc., from repainting operations and damage by drop cloths, shields, masking, templates, or other suitable protective means and make good any damage caused by failure to provide such protection.

3.2 APPLICATION

A. Comply with recommendations in MPI's "MPI Maintenance Repainting Manual" applicable to substrates indicated.

B. Paint exposed surfaces, new and existing, unless otherwise indicated.

   1. Paint surfaces behind movable equipment and furniture same as similar exposed surfaces.
   2. Paint surfaces behind permanently fixed equipment or furniture with prime coat only.
   3. Paint the back side of access panels.
   4. Do not paint prefinished items, items with an integral finish, operating parts, and labels unless otherwise indicated.

C. Apply paints according to manufacturer's written instructions.

   1. Use brushes only for exterior painting and where the use of other applicators is not practical.
   2. Use rollers for finish coat on interior walls and ceilings.

D. 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.

   1. If undercoats or other conditions show through topcoat, apply additional coats until cured film has a uniform paint finish, color, and appearance.

E. Apply stains and transparent finishes to produce surface films without color irregularity, cloudiness, holidays, lap marks, brush marks, runs, ropiness, or other imperfections. Use multiple coats to produce a smooth surface film of even luster.

F. Do not apply finishes on interior surfaces that are not sufficiently dry. Unless manufacturer's directions state otherwise, each coat shall be sufficiently dry and hard before a following coat is applied.

G. To avoid air entrapment in applied coats, apply materials in strict accordance with manufacturer’s spread rates and application requirements.

## 3.3 EXTERIOR PAINT APPLICATION SCHEDULE

A. Galvanized Metal:
   1. Semigloss, Two coats over primer recommended by topcoat manufacturer for exterior use on galvanized-metal.

B. Wood: Including wood trim, wood siding wood-based panel products.
   1. Latex to match existing adjacent painting: Two coats over latex primer.

## 3.4 INTERIOR PAINT APPLICATION SCHEDULE

A. Concrete, Nontraffic Surfaces:
   1. Flat Institutional Low-Odor/VOC Latex: Two coats over low-odor/VOC acrylic primer/sealer:

B. Steel:
   1. Semigloss Latex: Two coats over alkyd anticorrosive primer.

C. Wood: Including wood trim, architectural woodwork, doors, windows, wood-based panel products, exposed joists, exposed beams & trusses.
   1. Semigloss Low-Odor/VOC Latex: Two coats over acrylic primer for wood.

D. Gypsum Board & Plaster:
   1. Gloss Level 3 (Eggshell) Low-Odor/VOC Latex: Two coats over low-odor/VOC acrylic primer/sealer.

END OF SECTION 09 90 00

## PART 1 – GENERAL

### 1.1 INCLUDED

A. This Specification establishes the required standards for all labor, materials, equipment, and workmanship in connection with the furnishing, fabrication, and installation of "Plumbing." Plumbing work includes, but is not limited to, the following items of work:
   1. A complete system of soil, waste, vent, and sanitary sewer piping and structures, including provisions for mechanical equipment drainage; and connection of same to public sanitary sewers, located as indicated on the Drawings.
   2. Cold water distribution system, complete, from points of contact with site domestic water systems (located approximately as indicated on the Drawings) to all plumbing fixtures, mechanical equipment, building specialties, and Owner supplied equipment scheduled for service on the Drawings.
   3. Hot water distribution system, complete, from serving water heaters and/or points of contact with site domestic hot water, to all plumbing fixtures, mechanical equipment, building specialties, and Owner supplied equipment schedule for service on the Drawings.
   4. All plumbing fixtures and trim as scheduled on the Drawings, inclusive of setting of Fixtures and connections to drainage and water supply systems.
   5. Flashing of all plumbing pipe penetrations through exterior walls, roofs, and foundations. Sheet metal and lead flashings for pipe penetrations through roofs shall be furnished by the Plumbing Contractor and installed by the appropriate Roofing Contractor.
   6. Excavation and backfill as required for the work of this Section in conformity with Earthwork Section of the Specifications.
   7. Rough in and connection of all fixtures and equipment furnished by the Owner and/or Tenant.
   8. Final connection of water and gas to equipment furnished under other Sections.
   9. Protection of all piping specified herein and/or shown on the Drawings, from freezing. Buried piping shall be a minimum 12" below the local front line. Piping above grade in unconditioned areas shall be insulated.
   10. Testing and adjusting of all piping systems and equipment herein specified.
   11. Sterilization of domestic water systems.
   12. Pipe wrapping and insulation.

B. Should any work or material not be included in the Drawings or Specifications but it nevertheless necessary for the proper execution of the stated scope therefore for full compliance with codes, laws, rules, and regulations, the Contractor shall understand such work and material is required, and shall perform all such work.

### 1.2 LICENSES, PERMITS, AND FEES

A. The Contractor shall provide, procure, and pay for all licenses, permits, fees, etc. as required to carry on and complete their work.

### 1.3 CODES AND STANDARDS

A. All work shall be done in code with all applicable local, state, and federal building safety codes, ordinances, and regulations. Additionally, all work shall conform to the latest editions of the following standards:
   1. National Fire Protection Association.
   2. California Mechanical Code.
   3. California Plumbing Code.
   4. 2003 Underwriters Laboratories.
   5. Titles 8, 17, 19, 21, 24 of the California Code of Regulations.
   6. California Electric Code.

B. When the Contract Documents call for materials or construction of a higher standard than is required by the above, the Contract Document requirements shall take precedence over the requirements of the applicable laws, ordinances, rules, or regulations. Nothing in the Contract Documents shall be interpreted as permitting work in violation of said laws, rules, and/or regulations.

C. The Contractor for this work shall furnish, without extra charge, any additional materials and/or labor as may be required for compliance with these laws, rules, and/or regulations though such materials and/or labor are not specially set forth in the Contract Documents.

## 1.4 LICENSING REQUIREMENTS

A. All plumbing systems shall be installed by a C-36 Plumbing Contractor. Plumbing systems include: waste removal and connection of on-site waste disposal systems; piping, storage tanks, and venting for supply of gases and liquids for any purpose; all gas appliances, flues, and gas connections; water and gas piping from the Owner's side of utility meter to the structure or fixed works, installation of any type of equipment to heat water or fluids to a suitable temperature; and maintenance and replacement of the items described above, including health and safety devices.

## 1.5 SUBMITTALS

A. All fixtures, materials, and equipment equal in quality and utility to these herein mentioned will be accepted. When specific names are used in describing fixtures, materials, and equipment they are mentioned as standards only, but this implies no right on the part of the Contractor to use other fixtures, material, and equipment or methods, unless approved as equal in quality and utility by the Architect.

B. Before any fixtures, materials, or equipment are purchased, the Contractor shall submit to the Architect for approval, a complete list of materials, fixtures, and equipment, giving the manufacturer's names, model numbers, and catalog sheets.

C. The Contractor shall submit for the approval of the Architect, shop drawings of proposed material and equipment that differ from the specified materials and equipment, and of any specified materials and equipment with special conditions and/or arrangements. These drawings shall show necessary modifications of owner, plumbing, electrical, and mechanical work required by the proposed materials and equipment.

D. Submittal lists and drawings shall include identifying marks assigned by the Drawings and Specifications.

E. Review of drawings and other material submitted shall not be construed as 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 and utility. This review shall not relieve the Contractor of the responsibility to fit the proposed materials to the spaces provided, and to effect necessary rearrangements or construction of other work.

## 1.6 COOPERATION WITH OTHER TRADES

A. Cooperate fully with other trades doing work on the project as may be necessary for the proper completion of the project. Refer to the Structural, Mechanical, and Electrical Drawings for details of the building structure and equipment installation that will tend to overlap, conflict with or require coordination with the work of this Section, and schedule this work accordingly.

B. Any work done without regard for other trades shall be moved, replaced, or redone as required, without extra charges to Owner.

## 1.7 AS-BUILT DRAWINGS

A. A complete set of Contract Drawings shall be maintained at the work site, and all changes in the work shall be recorded on this set, on a daily basis. The final as-built drawings shall be submitted to the Owner's Representative for approval.

## 1.8 DRAWINGS

A. The drawings indicate diagrammatically the general layout of the plumbing systems and other related work. Field verification of scaled dimensions taken from the Drawings is required.

B. The Contractor shall review and compare the Architectural, Structural, Plumbing, Mechanical, and Electrical Drawings and all Owner supplied equipment Drawings, and adjust their work to be in conformity with the conditions indicated thereon. Discrepancies between drawings, between drawings and actual field conditions, or between Drawings and Specifications, shall promptly be brought to the attention of the Architect for a determination of the modifications to be effected. In the event that a major modification is required, a Change Order will be prepared.

## 1.9 VERIFICATION OF EXISTING CONDITIONS AND DEMOLITION

A. Before installation of any new work, verify the location, size, and other conditions at all points of connection to services or other existing piping, and at all locations where new work will cross or pass near existing piping, electrical, or other facilities.

B. Patch, cap, or repair existing works affected by this demolition in concealed spaces within six (6) inches of a live main or branch.

C. Deliver removed material to the Owner as directed by the Architect. Dispose of all other removed material offsite.

D. Information shown relative to existing services is based upon available records and data during preparation of the Drawings, but shall be verified. Make reasonable deviations found necessary to conform to actual locations and conditions, without extra charge.

E. The data given herein and on the Drawings are as exact as could be reasonably secured, but absolute accuracy is not guaranteed. Exact locations, distances, elevations, etc. will be governed by shop drawings, the building itself, and actual field conditions.

## 1.10 DAMAGE BY LEAKS

A. Contractor shall be responsible for any damage to work of other Contractors that is caused by leaks in any temporary or permanent piping systems due to pipe rupture, disconnected pipes or fittings, or by overflow of equipment.

## 1.11 SEISMIC FORCE RESISTANCE: MECHANICAL, PLUMBING, FIRE PROTECTION SYSTEMS

A. All mechanical systems and plumbing piping systems shall adhere to the SMACNA "Seismic Restraint Manual: Guidelines for Mechanical Systems," Third Edition, dated March 2008.

## 1.12 DELIVERY, STORAGE, AND HANDLING

A. Contractor shall be responsible for delivery, storage, protection, and placing of all equipment and materials.
   1. Contractor shall protect the work and materials from damage during construction. Equipment stored at the job site shall be protected from dust, water, or other damage, and be covered if equipment is exposed to weather. Protect interiors of new equipment and piping systems

against entry of foreign matter. Clean both inside and outside before painting or placing equipment in operation.
2. Any items damaged shall be repaired or replaced, at no additional cost to the Owner.

B. Cleanliness of Piping and Equipment Systems
1. Exercise care in storage and handling of equipment and piping material to be incorporated in the work. Remove debris arising from cutting, threading, and welding of piping.
2. Piping systems shall be flushed, blown, or pigged as necessary to deliver clean systems.
3. Contractor shall be fully responsible for all costs, damage, and delay arising from failure to provide clean systems.

## 1.13 WARRANTIES

A. Equipment warranties shall be provided for all equipment, with all necessary information filled in, except purchase date, in favor of the Owner.

B. The contractor shall guarantee that all work under this Section is free from defects in material and workmanship for a period of one year from the date of filing the Notice of Completion. Replacement of defective work and damage caused to work of other trades as a result of such defective work shall be the responsibility of the Contractor, and shall be made at no cost to the Owner.

## 1.14 ALTERNATIVE MATERIALS AND METHODS

A. These plans and specifications describe the general scope of the mechanical systems. These plans and specifications do not preclude the submittal of alternative methods or materials. Manufacturer’s names and catalog numbers are stated to identify the type and quality of the equipment or materials required for the project.

B. The contractor may submit shop drawings and/or technical information on alternative equipment, materials or installation details to accomplish the intent of the plans and specifications. Approval of the alternative equipment, materials or installation details shall not relieve the contractor of any responsibility for complying with the intent of the plans and specifications. Submit the manufacturers' technical information, shop drawings, and/or written description of alternative methods for each item described by manufacturer's name and catalog number and for each component, equipment, material, or installation detail required.

## 1.15 SITE EXAMINATION

A. Thoroughly examine the site and verify the actual work conditions. No extra compensation will be allowed for expenses due to failure to discover site conditions which affect the work.

# PART 2 – PRODUCTS

## 2.1 GENERAL

A. Only specified material shall be utilized in the work of this Section unless substitutions have been approved in accordance with the General Conditions and Division 1 Sections of the Specifications.

B. All materials shall be new and unused, of the best quality for the intended use, and shall be listed by the ASA, AGA, and UL as meeting their requirements and bearing their label wherever standards have been established and label services are regularly furnished by them.

## 2.2 PIPE AND FITTINGS

A. Sanitary Soil, Waste, and Vent Piping:
   1. Below Ground
      a. Lines 2" and larger shall be service weight, hub-less cast iron soil pipe and fittings, and shall conform to the requirements of ASTM A 888 and CISPI Standard 301. Approved manufacturers: Charlotte, Tyler, or AB&I.
      b. Joints: Couplings shall conform to the requirements of ASTM C1540 and shall be heavy duty type 304 stainless steel shielded, having 4 sealing clamps for pipe sizes 1 ½" thru 4", and 6 sealing clamps for pipe sizes 5" thru 10". Gaskets shall comply with ASTM C-564. Anaco, Tyler, or equal.
   2. Above Ground
      a. Lines 2" and larger shall be standard weight, hub-less cast iron soil pipe and fittings, and shall conform to the requirements of ASTM A 888 and CISPI Standard 301. Approved manufacturers: Charlotte, Tyler, or AB&I.
      b. Joints: Couplings shall conform to the requirements of ASTM C1540 and shall be heavy duty type 304 stainless steel shielded, having 4 sealing clamps for pipe sizes 1 ½" thru 4:, and 6 sealing clamps for pipe sizes 5" thru 10". Gaskets shall comply with ASTM C-564. Anaco, Tyler, or equal.

B. Condensate Piping
   1. Type M, hard temper, copper with wrought copper or cast brass fittings. Joints shall be made up with "Stay-Safe 50" lead free solder.

D. Cold and Hot Water Piping
   1. All domestic cold water piping 3" and smaller shall be Type L, hard temper, copper pipe with wrought copper or cast brass solder joint fittings. All joints shall be made up with "Stay-Safe 50" lead free solder. A suitable non-corrosive flux shall be used at all joints.
   2. Pipes below grade inside buildings shall be soft drawn, Type L or K copper with no joints below slabs. Pipes shall be sleeved with 20-mil plastic sheathing.

## 2.3 UNIONS

A. Steel pipe unions shall be malleable iron, 150lb., ground joint, Grinnell Fig. 463.

B. Copper pipe unions shall be soldered joint, Nibco series 633 or 733, Mueller, or equal.

C. Dielectric unions shall be EPCO or equal.

## 2.4 VALVES, SPECIALTIES

A. Ball Valves: Nibco T-580, bronze body, "Ring Ball," conventional port, two piece, lever handle, 125 lb.

B. Check Valves: Nibco T-480, bronze body, inline lift type, Teflon seat, and discs, spring actuated, 125 lb.

C. Gate Valves: 3" and smaller shall be NIBCO T134 or Stockham B-120 or B-124, bronze body, union bonnet, rising stem, solid wedge, 150 lb. with wheel handle.

D. Check Valves: NIBCO T-413, Stockham B-345, bronze body, Y-pattern lift type, Class 200.

E. Relief Valves: Water heater temperature/pressure relief valve, Watts, M&M, or equal with ASME rating, and AGA certified design. Set at 125 psi and 210°F.

F. Backflow Preventers (where shown on the Drawings or required by local code):
   1. Atmospheric type; Wilkins #35 series.

2. Pressure type: Wilkins #720A series.
3. Reduced pressure type:
   a. ¼" to 2" – Wilkins #975-XLMS series.
   b. 2 ½" to 10" – Wilkins #375 series.

G. Water Pressure Regulating Valves: Wilkins 500 YSBR series. Install where pressure to building exceeds 70 psi.

## 2.5 HANGERS, SUPPORTS

A. Installation of piping shall be such that damage cannot result through loading, expansion, or contraction of piping. Anchors shall be installed to obtain uniformity of pipe movement.

B. Pipe supports shall be spaced sufficiently close to support pipes properly without formation of pockets. Hangers shall be installed at ends of mains and branches and maximum intermediate spacing shall be as follows:

| | MAXIMUM SPACING, (FT.) Pipe Diameter, Inches | | MINIMUM ROD DIAMETER | |
|---|---|---|---|---|
| | 1" &Less | 1-1/4"& More | Pipe Dia. Inches | Rod Dia. Inches |
| Steel | 8 | 10 | 2 & Less | 3/8 |
| Copper | 6 | 8 | 2-1/2 to 3 | ½ |
| Cast Iron | 5 (One min. per length & fitting) | | 4 & Larger | 5/8 |

C. Pipe hangers shall be Superstrut, B-Line, or equivalent Grinnell. All hangers shall be electro-chromate finished. Hanger rods shall have electro-galvanized finish.

D. Steel pipe, cast iron soil pipe: C-711 pipe hangers.

E. Copper tubing: C-711 pipe hanger complete with C-716 isolator.

F. Insulated pipe: C-711 pipe hanger fitted to outside of insulation with C-790 galvanized shields.

G. Trapeze Hangers
1. Grouped pipes may be supported by A-1200 channel bolted to rods.
2. Copper and steel pipe shall be attached to channels with A-716 "Cush-A-Clamp."

H. Cast iron soil pipe shall be supported with C-711 pipe hangers with rods attached to the bottom of channels.

I. Point of Support Connectors
1. Wood Construction
   a. 540 side beam hanger for stationary pipes.
   b. S-541 for pies subject to movement.
2. Vertical Pipe Risers: Vertical pipes risers shall be securely supported with C-720 pipe clamps (C-720P for bare cold water pipe) anchored to construction.

J. Provide resilient mounting for domestic water piping. Thermal insulation may serve as resilient mounting for insulated piping.

K. Suspended water piping shall be anchored with steel struts installed at midpoint of each run.

L. No valve or piece of equipment shall be used to support piping.

## 2.6 CLEANOUTS

A. Cleanouts in membrane damp-proofed floors shall have flashing flange and membrane clamps. Plugs shall be bronze, with cast iron body ferrule for cast iron pipe.

B. Floor Cleanouts (FCO): Zurn ZN 1400-HD, “Level-trol” adjustable cleanouts, dura-coated cast iron with gas and water-tight ABS tapered thread plug, and round scoriated top, adjustable to finished floor .

C. Grade Cleanouts (GCO): Zurn Z-1474-IN or equal JR Smith. Housing to be dura-coated cast iron body with integral anchor flange and scoriated cover with lifting device. Cleanouts in un-paved areas shall be set in 18” x 18” x 4” co

D. Wall Cleanouts (WCO):
1. Copper tubing: Nibco Figure 816 or 817, with Zurn Z-1462, 6” x 6” polished chrome-plated bronze wall plate and frame.
2. Cast iron pipe: Zurn Z-1441, dura-coated with gas and water-tight bronze, taper thread plug and round smooth stainless steel access cover with securing screw.
3. Steel pipe: Zurn Z-1468, round stainless steel wall access cover, complete with securing screw and bronze raised hex head plug for steel pipe.

## 2.7 SLEEVES, WALL PLATES

A. Service pipe through exterior wall, roofs: Crane Style BC wall and ceiling plates; chrome plated at finished rooms.

B. Pipes through, under footings: 18 gauge iron sleeves two diameters larger than pipe, cast in concrete, annular space filled with mastic or plastic bituminous cement.

C. Pipes through fire rated walls shall be protected with fire retardant mastic as detailed on the Drawings. Installation shall be in full accordance with the requirements of the UL system number. Hilti or approved equal.

D. Wall and ceiling plates: Crane Style BC or equal; chrome plated at finished rooms.

E. Pipes through floors, interior concrete walls, and through fire rated wall and smoke stop partitions: 18 gauge iron sleeves, two diameters large than pipe, annular space filled with 3M Brand Fire Barrier CP-25 caulk.

F. Pipes through 1-hour walls shall be protected with fire retardant mastic as detailed on the Drawings. Installation shall be in full accordance with the requirements of the UL system number. Hilti or approved equal.

## 2.8 ACCESS DOORS

A. Where construction is not inherently accessible, provide adequately sized and conveniently located access doors in ceiling, walls, and furring for servicing vales, equipment, etc.

B. Access doors shall be Karp, Milcor, or equal, prime coated steel for all surfaces except ceramic tile, 12” x12” minimum size as required. Locks shall be flush, screwdriver operated.
1. Style KDW for gypsum board surfaces.
2. Style PL for plaster surfaces.
3. Style 210 for acoustic tile surfaces.
4. Style DSC 214-M satin finish stainless steel at ceramic tile surfaces.
5. Style “Fire Rated” at rated ceilings and walls.

## 2.9 PIPE INSULATION

A. Insulate all hot water supply piping, all hot water return piping, all cold water supply piping in exterior walls or unconditioned spaces with Manville “Micro-Lok” 650, Fiberglass, Certainteed, or equal, rigid fiberglass one-piece pipe insulation with and all purpose jacket. Jackets shall be constructed of high density, white kraft bonded to aluminum foil with fiberglass yarn, with a pressure sensitive closure system.

B. All insulation shall have composite (insulation, jacket, and adhesive used to adhere the jacket to the insulation) Fire and Smoke Hazard ratings as tested under procedure ASTM E-84, NFPA 255 or UL 723, not exceeding: Flame Spread – 25, Smoke Developed – 50.

C. Inserts shall be installed at outside hangers. Inserts between the pipe and pipe hangers shall consist of rigid pipe insulation of thickness equal to the adjoining insulation. Inserts shall not be less than 10” long for pipe sizes through 2 ½” and not less than 12” long for pipes larger than 2 ½”.

D. Metal shields shall be applied between hangers or supports and the pipe insulation. Shields shall be formed to fit the insulation and shall extend up to the centerline of the pipe and the length specified for hanger inserts.

E. Insulation thickness shall be as follows:
   1. All piping 1” and smaller: 1”
   2. All piping 1 ¼” and larger: 1 ½”

## 2.10 PIPE LABELS

A. All new domestic cold water, hot water, and hot water recirculation piping shall be clearly labelled.

B. Industrial safety solutions piping labels shall be rated for indoor and outdoor use and be attached with permanent adhesive.

C. Labels shall show the direction of flow and indicate the process media. Pipe labeling color and text size shall conform to ANSI/ASME A13.1-2007. Process piping shall be labeled a minimum of twice per room in locations designated by the Engineer.

## 2.11 FIXTURES

A. The quantity and location of fixtures shall be taken from the Architectural and Plumbing Drawings. Provide adequate supports and all standard trim normally furnished for fixtures. All enamel shall be acid resisting. Traps, unless otherwise noted shall be 17 gauge brass tubing, chrome plated when exposed.

B. Except as otherwise shown, provide ¼” steel backing plates, 36” wide by 12” high minimum size, secured to a minimum of three studs by welding, or with ¼” x 2 ½” lag screws for all wall hung fixtures for which no other means of support is specified.

C. Stops and supplies: Provide stops for all fixtures. Unless otherwise specified, stops exposed at lavatories and similar fixtures shall be Chicago #1016-ABCP, chrome plated, loose key. Concealed stops shall be Chicago #1771.

D. All fixtures shall meet or exceed the requirements of the California Administrative Code, Title 24, Part 5.

## 2.12 SHOCK ABSORBERS

A. Zurn, “Shoktrol,” or equal JR Smith, stainless steel bellows. Install with gate valve shut-off and access door at all flush valves or other automatic valves. A single unit sized in accordance with the manufacturer’s recommendations may serve batteries of valves.

### 2.13 VALVE BOXES

A. Christy #F-08, complete with concrete cover and required extensions. Index all covers “GAS” or “WATER” as required for service use.

## PART 3 – EXECUTION

### 3.1 SURFACE CONDITIONS

A. This Contractor shall be held to have examined the site and compared it with the Contract Documents, and to adequately understand the conditions under which the work is to be performed. In the event of discrepancy, this Contractor shall notify the Architect and proceed as directed. This Contractor shall be held responsible for all existing conditions, whether or not accurately described, and no allowance shall subsequently be made on his behalf for any error, omission, or extra expense due to failure or neglect to make such examination and notification.

B. Prior to commencing the work of this Section, this Contractor shall inspect the installed work of other trades and verify that their work is sufficiently complete to permit the start of work under this Section and that the completed work will be in complete accordance with the original design. In the event of discrepancy immediately notify the Architect and proceed as directed.

### 3.2 ACCESSIBILITY

A. Equipment shall be placed and piping connections made in such a manner that all routine adjustments and maintenance operations may be carried out without inconvenience and so that all code requirements for clearances are maintained.

### 3.3 VIBRATION AND SOUND CONTROL

A. Make all necessary provisions to prevent the transmission of vibration to the building structure, including flexible pipe connections to motor driven equipment, resilient mounting for piping, and sealing off pipe and duct penetrations of walls and roof.

### 3.4 INSULATION

A. Insulation shall be applied in complete accordance with the manufacturer’s published installation instructions. All insulation shall be applied on clean, dry surfaces and shall be continuous through wall and ceiling opening and sleeves. All joints shall be firmly butted together and longitudinal jacket laps and butt strips shall be smoothly secured. Specified adhesives, mastics, and coatings shall be applied at the manufacturer’s recommended minimum coverage per gallon.

### 3.5 PIPING INSTALLATION – GENERAL

A. Rough in shall proceed as rapidly as general construction will permit. All rough-in shall be complete, at locations verified by Architect and Owner, and tested and inspected prior to installation of concrete, lath, plaster, gypsum wallboard, or other finishes.

B. All piping shall be concealed in finished rooms, installed in furred walls and partitions. Where furred or suspended ceilings occur, piping shall be installed in the concealed space at points adjacent to beams and/or other structural members, and coordinated with ductwork and equipment. Where exposed piping occurs, it shall be installed parallel to or at right angles to building walls, unless specifically shown otherwise on the Drawings.

C. Installation of piping shall be such that damage cannot result, through thermal expansion or contraction, to piping, building, or pipe hangers and supports. Anchors shall be installed at midpoints of all runs in main piping for the purpose of localizing pipe expansion or prevention of creepage.

D. All pipe lines shall be installed free from traps and air pockets, true to line and grade, with suitable supports properly space. All piping shall be installed without undue stresses and with provision for expansion and contraction.

E. All piping shall be new and free from foreign substances. American standard pipe threads shall be used for IPS threaded work. Joints in threaded piping shall be made up with Teflon tape applied to the male threads only. No screwed pipe joints shall be caulked or packed with rope or other packing materials. Pipe shall be free from tool marks, threads cut accurately with not more than two (2) threads showing beyond fitting. Friction wrenches shall not be used with plated, polished, or soft metal piping. All changes in pipe size shall be made with reducing fitting. Bushings will not be permitted.

F. Protect unattended openings in piping during construction.

G. No water or drainage piping shall pass over electrical equipment unless adequate protection is provided to prevent damage by leaks or condensation.

H. All copper tubing shall be formed in a workmanlike manner, in accordance with the Pipe and Tube Bending Handbook of the Copper and Brass Research Association. A tube bender giving support to the periphery of the tube shall be used. The tubing shall be protected against flatting or other injury.

I. All copper connections and joints shall be made in accordance with the Copper Tube Handbook, Copper and Brass Research Association. No swaged connections will be permitted. All valves, pumps, and similar equipment shall be connected to copper piping through union or flange adapter fittings.

J. Valves, cocks, etc., shall be installed to allow convenient accessibility and operation.

K. Unions and flanges shall be installed to allow convenient replacement of all equipment and clearing tubes.

L. A union connection shall be installed downstream from all valves, at equipment connections and at other locations as required or directed.

M. Shut off valves shall be provided in all main services, and where required to permit proper servicing of equipment. Valves of one type shall be of one manufacturer.

N. All valves shall be of the same size as the pipelines in which they are installed, unless specifically sized on the Drawings. All hand controlled line valves shall be ball valves, except where throttling control or frequent operation is required, in which case globe or angle valves shall be used. Globe valves in horizontal lines shall be installed with stem in horizontal to permit line draining. All globe and angle valves shall be installed to close against pressure. Disc valves shall have discs suitable for the services for which they are to be used.

O. All valves shall be accessible and shall not be installed with the stems below the horizontal plane. Provide access panels at walls, ceilings, or floors.

P. Provide prime coated escutcheon plates at all points where exposed ping penetrates finished wall ceilings or floors.

Q. Cutting or boring of joists or other structural members shall be done only when alternative routing is impossible and only upon written approval of the Architect or Owner.

## 3.6 INSTALLATION, PIPING

A. Condensate Piping
1. Indirect waste piping shall be installed to a uniform minimum grade of ¼" per foot unless otherwise noted.
2. Changes in direction of indirect waste piping shall be accomplished by the use of appropriate drainage fittings.
3. Drilling and tapping of indirect waste pipes and the use of saddle hubs and bands are prohibited.

B. Flashing
1. All roof and wall penetrations shall be flashed and counterflashed water tight with 26 gauge sheet metal, except as noted.
2. Vents through roof shall be flashed with Semco #1100-4 lead flashing assemblies. Flashing shall extend over top of pipe and shall be turned down inside top of pipe.

C. Soil, Waste, Vent, Drain Piping
1. Soil, waste, and vent piping occurring within the building shall be installed to a uniform minimum grade of ¼" per foot unless otherwise noted. Vent piping shall be graded so that all condensation shall flow directly to a soil or waste line.
2. Changes in direction of drainage piping shall be accomplished by the use of appropriate drainage and sanitary fittings.
3. Protection against breakage of piping passing under or through walls shall be provided using specified sleeves and caulking.
4. Adapters shall be installed between threaded iron and soil pipe.
5. Test tees shall be installed at the foot of all soil, waste, and storm water stacks.
6. Cleanouts shall be located where indicated on the Drawings; at all horizontal offsets; at ends of waste or sewer branches more the 5' in length; at intervals of 100' in straight runs of piping, or at closer intervals if directed or required by local code. Location of cleanouts in finished spaces shall be approved by the Architect prior to installation.

D. Hot and Cold Water Systems
1. Di-electric unions shall be installed where copper pipe is connected to galvanized steel piping or stub outs.
2. Connections from copper pipe to fixture supply fittings shall be made with copper or brass nipples.
3. All domestic water piping shall be kept clear of the building structure. Where it is within 1" of the building structure, it shall be wrapped with felt (3/16" minimum thickness).
4. To the greatest extent possible, domestic cold water piping shall be kept separated from hot piping and where there is a choice shall be run in the coolest portion of the available space.

E. Plumbing Fixtures
1. Space between wall mounted fixtures and wall surface shall be neatly pointed up with silicone rubber compound of color matching fixture.
2. All exposed bolt heads and nuts used to secure fixtures shall be concealed with vitreous china caps.

F. Excavation and Backfill
1. Provide all excavation, trenching, and backfill in connection with the work of this Section.
2. Excavation shall be carried to 4" below the bottom of pipes. Provide a sand bedding for all sloped drainage piping, and provide smooth uniformly graded bedding of firm but yielding material for all other piping, catch basins, and similar structures.

3. Backfill material shall be non-corrosive and free from all foreign material that could damage pipes. Backfill shall be placed in 6" layers, each layer tamped, and compacted to 95% of maximum dry density (ASTM D-1557-64T (c) compaction test procedure).

G. Storm Drainage Piping
1. Roof drains shall be installed where indicated on the Drawings, in conjunction with work specified in "Membrane Waterproofing" Section. This Contractor shall be responsible for a watertight installation.
2. Rain water leaders connected to roof drains and gutter systems shall be standard weight galvanized steel pipe and fittings, except where otherwise noted, and shall be continuous from drain to connection with underground storm water drainage facilities. Provide a cleanout at the base of all vertical to horizontal transitions.
3. Sheet metal downspouts are furnished and installed by others.
4. Downspouts inside building, if shown, shall be continuous from drain to curb or connection with underground storm water drainage facilities. Provide a cleanout at the base of all vertical to horizontal transitions.
5. Insulate storm drain piping where it is located above a ceiling or within a concealed space. Overflow piping is not required to be insulated.

## 3.7 INSTALLATION, HANGERS & SUPPORTS

A. Installation of piping shall be such that damage cannot result through loading, expansion, or contraction of piping. Anchors shall be installed to obtain uniformity of pipe movement.

B. Hanger rod sizes shall be no smaller than 3/8-inch for pipe and tube sizes ½ to 4 inches and ½ inch for sizes 5-8 inches.

C. Pipe supports shall be spaced sufficiently close to support pipes properly without formation of pockets. Hangers shall be installed at ends of mains and branches. Maximum horizontal support spacing shall be as follows:
1. Steel Pipe for Water or DWV: 10 feet for pipe sizes ¾ inch and smaller and 12 feet for sizes 1 inch and larger.
2. Steel and Tinned Copper Pipe for Gas: 6 feet for ½ inch pipe; 8 feet for sizes ¾ to 1 inch, and 10 feet for sizes 1 ¼ inch and larger.
3. Copper Tube and Pipe, soldered or brazed: 6 feet for pipe sizes 1 ½ inches and smaller and 10 feet for sizes 2 inches and larger.
4. Hubless Cast-Iron shall be supported at every other joint, unless over 4 feet, then support each joint. Support adjacent to joint, not to exceed 18 inches, brace at not more than 40 foot intervals to prevent horizontal movement. Support at each horizontal branch connection. Hangers shall not be placed on the coupling.

D. Provide resilient mounting for domestic water piping. Thermal insulation may serve as resilient mounting for insulated piping.

E. Suspended water piping shall be anchored with steel struts installed at midpoint of each run.

F. No valve or piece of equipment shall be used to support piping.

G. Pipes through studs or joists shall be isolated from structure with properly sized Hubbard "Hole-Rite" suspension clamps.

## 3.8 TESTING, INSPECTIONS

A. General
1. This Contractor shall not allow or cause any work of this Section to be covered or enclosed until it has been inspected, tested, and approved by the Architect and the authorities having

jurisdictions over the work. Should any of this work by enclosed or covered up before such inspection, testing, and approval, this Contractor shall uncover the work, have the necessary inspections, tests, and approvals made and, at no expense to the Owner, make all repairs necessary to restore both his work and that of other contractors that may have been damaged, to be in conformity with the Contract Documents.

B. Tests
   1. This Contractor shall make all tests required by all local, state, and federal laws, codes, ordinances, and regulations having jurisdiction over this work.
   2. Furnish all necessary labor, materials, and equipment for conducting tests, and pay all expenses in connection therewith. Should leaks develop while testing, repairs shall be made, and tests shall be repeated until a satisfactory test is obtained.
   3. Water Piping shall by hydrostatically tested for 6 hours at 150 psi. All equipment shall be tested water tight at utility pressure.
   4. Drainage and Vent Piping shall be tested for 1 hour by plugging all outlets and filling the pipes with water to the top of vertical sections of pipes. No loss of water shall be permitted.

## 3.9 DOMESTIC WATER SYSTEM STERILIZATION

A. Upon completion of this work, the domestic water system shall be thoroughly flushed, sterilized, and reflushed. Sterilization and reflushing shall be performed using the following procedure.
   1. All work shall be performed in the presence of the inspector.
   2. Introduce chlorine or a solution of sodium hypochlorite, filling the lines slowly and supplying the sterilization agent at a rate of 50 parts of chlorine per million, as determined by residual chlorine tests at the ends of all branches. Open and close all valves while the system is being chlorinated to insure uniform distribution.
   3. After the sterilizing agent has been applied for 24 hours, test for residual chlorine at the ends of the branches. If less than 5 ppm is indicated, repeat the sterilization procedure.
   4. When tests show at least 5 ppm of residual chlorine, flush out the system until all traces of the chemical are removed.

B. After a period of 48 hours minimum, bacteriological tests, using samples from at least 3 representative points shall be made by recognized testing agency, who shall certify to the Architect that the system is bacteriologically safe and at least equal in safety to that of the principal water supply. The laboratory report and certification shall be transmitted to the Architect and Owner.

## 3.10 ADJUSTING

A. Properly adjust all stops, and controls, and demonstrate safe and satisfactory operation of all equipment.

## 3.11 CLEANING

A. Flush all water piping systems. Remove, clean, and replace all strainer baskets prior to final inspection.

B. Blow out all compressible fluid piping with compressed air before connecting with regulators or equipment.

## 3.12 CLEANUP

A. Upon completion of the work of this Section, remove all surplus material, debris, and equipment associated with or used in the performance of this work.

**END OF SECTION**

## PART 1 GENERAL

### 1.1 INCLUDED

A. This section covers mechanical work, complete. Work includes furnishing, installing, calibrating, adjusting, testing, documenting, and starting up equipment in accordance with these Specifications, the accompanying Plans, and the directions of the Engineer.

### 1.2 LICENSES, PERMITS, AND FEES

A. The Contractor shall provide, procure, and pay for all licenses, permits, fees, etc. as required to carry on and complete their work.

### 1.3 CODES AND STANDARDS

A. All work shall be done in code with all applicable local, state, and federal building safety codes, ordinances, and regulations. Additionally, all work shall conform to the latest editions of the following standards:
1. National Fire Protection Association.
2. California Mechanical Code.
3. California Plumbing Code.
4. Underwriters Laboratories.
5. Titles 8, 17, 19, 21, 24 of the California Code of Regulations.
6. California Electric Code.
7. SMACNA Standards.
8. ASHRAE Standards 55 and 62.1.

B. When the Contract Documents call for materials or construction of a higher standard than is required by the above, the Contract Document requirements shall take precedence over the requirements of the applicable laws, ordinances, rules, or regulations. Nothing in the Contract Documents shall be interpreted as permitting work in violation of said laws, rules, and/or regulations.

C. The Contractor for this work shall furnish, without extra charge, any additional materials and/or labor as may be required for compliance with these laws, rules, and/or regulations though such materials and/or labor are not specially set forth in the Contract Documents.

### 1.4 LICENSING REQUIREMENTS

A. All work of Division 22 and 23 shall be performed by an appropriately licensed contractor. The licenses shall be current, valid through the term of the contract and in the name of the contractor.
1. All HVAC work, which includes warm air heating systems and water heating pumps, ventilating systems, air conditioning systems, and ductwork, registers, flues, humidity, and thermostatic controls in connection with these systems, shall be performed by a C-20 – Warm-Air Heating, Ventilating and Air-Conditioning Contractor.

B. All hydronic piping systems shall be installed by a C-4 – Boiler, Hot Water Heating and Steam Fitting Contractor.

### 1.5 SUBMITTALS

A. General Requirements

1. Submittal lists and drawings shall include identifying marks assigned by the Drawings and Specifications.
2. Review of drawings and other material submitted shall not be construed as 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 and utility. This review shall not relieve the Contractor of the responsibility to fit the proposed materials to the spaces provided, and to effect necessary rearrangements or construction of other work.
3. All fixtures, materials, and equipment equal in quality and utility to these herein mentioned will be accepted. When specific names are used in describing fixtures, materials, and equipment they are mentioned as standards only, but this implies no right on the part of the Contractor to use other fixtures, material, and equipment or methods, unless approved as equal in quality and utility by the Architect.
4. Before any fixtures, materials, or equipment are purchased, the Contractor shall submit to the Architect for approval, a complete list of materials, fixtures, and equipment, giving the manufacturer's names, catalog number, capacity, size, power requirements, etc.
5. The Contractor shall submit for the approval of the Architect, shop drawings of proposed material and equipment that differ from the specified materials and equipment, and of any specified materials and equipment with special conditions and/or arrangements. These drawings shall show necessary modifications of owner, plumbing, electrical, and mechanical work required by the proposed materials and equipment.

B. Submittal – Product Data
1. Submit manufacturer's product data for all HVAC equipment, in compliance with specifications.

## 1.6 COOPERATION WITH OTHER TRADES

A. Cooperate fully with other trades doing work on the project as may be necessary for the proper completion of the project. Refer to the Structural, Plumbing, and Electrical Drawings for details of the building structure and equipment installation that will tend to overlap, conflict with or require coordination with the work of this Section, and schedule this work accordingly.

B. Any work done without regard for other trades shall be moved, replaced, or redone as required, without extra charges to Owner.

## 1.7 DIVISION OF WORK BETWEEN DIVISIONS 23 AND 26

A. Close coordination between the electrical and mechanical trades is a part of the work that is required by this contract. No allowance will be made for omissions based on incorrectly assuming another trade will be performing your work. Confirm your scope of work with the general contractor.

B. The division of responsibilities between trades supplying equipment in other Divisions may be different. For instance, Division 26 contractor may be required to supply disconnect switches and starters for non-HVAC mechanical equipment supplied under other Divisions.

C. Division 23 Responsibilities
1. Assume responsibility for the proper functioning of the HVAC systems in their entirety.
2. Furnish and install all conductors and conduit required for control of HVAC equipment.
3. Make all terminations with the exception of power conductors.
4. Furnish and install all control panels and devices to provide a complete and functional controls system, including all controls transformers.

5. Furnish and install motor starters for all equipment specified in Division 23.
6. Install duct smoke detectors furnished by fire alarm contractor in buildings with fire alarm systems.
7. Furnish and install duct smoke detectors in buildings without fire alarm systems.
8. Furnish and install all control conductors and conduit connecting duct smoke detectors to smoke dampers and fan start controls.
9. All electrical work performed under Division 23 shall conform to the requirements of Division 26.

D. Division 26 Responsibilities
1. Furnish and install all raceways, conduit, disconnect switches, and conductors necessary for electrical power supply.
2. Make all power supply terminations to motors, starters, disconnect switches, control transformers, and other mechanical devices.
3. Fire alarm contractor to furnish duct smoke detectors in buildings with fire alarm systems.
4. Provide power to all duct smoke detectors and smoke dampers.
5. Coordinate all work with mechanical contractors.

## 1.8 AS-BUILT DRAWINGS

A. A complete set of Contract Drawings shall be maintained at the work site, and all changes in the work shall be recorded on this set, on a daily basis. The final as-built drawings shall be submitted to the Architect for approval.

## 1.9 DESIGN DRAWINGS

A. The drawings indicate diagrammatically the general layout of the mechanical systems and other related work. Field verification of scaled dimensions taken from the Drawings is required.

B. The Contractor shall review and compare the Architectural, Structural, Plumbing, Mechanical, and Electrical Drawings and all Owner supplied equipment Drawings, and adjust their work to be in conformity with the conditions indicated thereon. Discrepancies between drawings, between drawings and actual field conditions, or between Drawings and Specifications, shall promptly be brought to the attention of the Architect for a determination of the modifications to be effected. In the event that a major modification is required, a Change Order will be prepared.

## 1.10 VERIFICATION OF EXISTING CONDITIONS AND DEMOLITION

A. Before installation of any new work, verify the location, size, and other conditions at all points of connection to services or other existing piping, and at all locations where new work will cross or pass near existing piping, electrical, or other facilities.

B. Remove ductwork, piping, controls, fixtures, and equipment that is not to remain in service as shown on the Drawings or as required. This included the removal of associated appurtenances and supports.

C. Patch, cap, or repair existing works affected by this demolition in concealed spaces within six (6) inches of a live main or branch.

D. Deliver removed material to the Owner as directed by the Architect. Dispose of all other removed material offsite.

E. Information shown relative to existing services is based upon available records and data during preparation of the Drawings, but shall be verified. Make reasonable deviations found necessary to conform to actual locations and conditions, without extra charge.

## 1.11 OPERATING AND MAINTENANCE INSTRUCTIONS

A. Furnish three sets of typewritten instructions covering maintenance, adjustment, and operation of each piece of apparatus, bound in a hard cover loose-leaf binder. Neatly obscure or cross out inapplicable data from manufacturer's literature. Submit data to the Architect.

B. Operating instructions shall show sequence of operations, lubrication, care, and maintenance requirements of all equipment. Final acceptance of the work will not be made until a satisfactory submission of this material is received and approved by the Architect.

C. The Owner's authorized representative shall be instructed in the operation and servicing of all HVAC & plumbing systems.

## 1.12 ACCURACY OF DATA

A. The data given herein and on the Drawings are as exact as could be reasonably secured, but absolute accuracy is not guaranteed. Exact locations, distances, elevations, etc. will be governed by shop drawings, the building itself, and actual field conditions.

## 1.13 DAMAGE BY LEAKS

A. Contractor shall be responsible for any damage to work of other Contractors that is caused by leaks in any temporary or permanent piping systems due to pipe rupture, disconnected pipes or fittings, or by overflow of equipment.

## 1.14 SEISMIC FORCE RESISTANCE: MECHANICAL, PLUMBING, FIRE PROTECTION SYSTEMS

A. All mechanical systems and plumbing piping systems shall adhere to the applicable OSHPD pre-approval, OPM# 0043.

B. Contractor is required to submit shop drawings to the architect and the Division of State Architects (DSA) for review. The contractor shall proceed with the work only after review and acceptance by the architect and DSA. The contractor shall be responsible for ensuring adequate review time for coordination of the deferred submittal and adequate review time by the architect and DSA.

C. All references to listed items on these drawings shall be used for bidding purposes only and shall not be used for construction. The responsibility for preparing and signing plans and specifications or report for the listed items may be delegated by the architect or structural engineer in general responsible charge, to a professional engineer registered in the appropriate branch of engineering.

## 1.15 DELIVERY, STORAGE, AND HANDLING

A. Contractor shall be responsible for delivery, storage, protection, and placing of all equipment and materials.

1. Contractor shall protect the work and materials from damage during construction. Equipment stored at the job site shall be protected from dust, water, or other damage, and be covered if equipment is exposed to weather. Protect interiors of new equipment and piping systems against entry of foreign matter. Clean both inside and outside before painting or placing equipment in operation.
2. Any items damaged shall be repaired or replaced, at no additional cost to the Owner.

B. Cleanliness of Piping and Equipment Systems
   1. Exercise care in storage and handling of equipment and piping material to be incorporated in the work. Remove debris arising from cutting, threading, and welding of piping.
   2. Piping systems shall be flushed, blown, or pigged as necessary to deliver clean systems.
   3. Contractor shall be fully responsible for all costs, damage, and delay arising from failure to provide clean systems.

### 1.16 WARRANTIES

A. Equipment warranties shall be provided for all equipment, with all necessary information filled in, except purchase date, in favor of the Owner.

B. The contractor shall guarantee that all work under this Section is free from defects in material and workmanship for a period of one year from the date of filing the Notice of Completion. Replacement of defective work and damage caused to work of other trades as a result of such defective work shall be the responsibility of the Contractor, and shall be made at no cost to the Owner.

### 1.17 SITE EXAMINATION

A. Thoroughly examine the site and verify the actual work conditions. No extra compensation will be allowed for expenses due to failure to discover site conditions which affect the work.

## PART 2 PRODUCTS

### 2.1 GENERAL

A. All materials, appliances, and equipment shall be new and best of their respective kinds, free from defects, and of the make, brand, or quality specified or as accepted by the Architect.

B. When two or more units of materials or equipment of the same type or class are required, these units shall be products of one manufacturer.

C. Apply and install all items in accordance with manufacturer’s written instructions. Refer conflicts between manufacturer’s instructions and the contract drawings and specifications to the Architect for resolution.

### 2.2 VARIABLE REFRIGERANT VOLUME (VRV/VRV-S) AIR CONDITIONING

A. General
   1. The units shall be tested by a Nationally Recognized Testing Laboratory (NRTL), in accordance with ANSI/UL 1995/CAN/CSA-C22.2 No. 236-05 (R2009) – Heating and Cooling Equipment and bear the Listed Mark.
   2. All wiring shall be in accordance with the National Electric Code (NEC)/Canadian Electrical Code (CEC).
   3. The system will be produced in an ISO 9001 and ISO 14001 facility, which are standards set by the International Standard Organization (ISO). The system shall be factory tested for safety and function.
   4. The outdoor unit will be factory charged with R-410A.

B. Delivery, Storage and Handling

1. Unit shall be stored and handled according to the manufacturer's recommendations.

C. Standard Limited Warranty
1. Daikin North America LLC warrants original owner of the non-residential building, multi-family residence, or residence in which the Daikin products are installed that under normal use and maintenance for comfort cooling and conditioning applications such products (the "Products") will be free from defects in material and workmanship. This warranty applies to compressor and all parts and is limited in duration to ten (10) years starting from the "installation date" which is one of the two dates below:
   a. The installation date is the date that the unit is originally commissioned, but no later than 18 months after the manufacture date noted on the unit's rating plate.
   b. If the date the unit is originally commissioned cannot be verified, the installation date is three months after the manufacture date.
2. Complete warranty details available from your local Daikin representative or at www.daikincomfort.com.

D. Design Basis
1. The HVAC equipment basis of design is Daikin. All bidders shall furnish the minimum system standards as defined by the base bid model numbers, model families or as otherwise specified herein (see Key General Specifications Alternate Supplier Checklist). In any event the contractor shall be responsible for all specified items and intents of this document without further compensation.

E. FXAQ – Wall Mounted Unit
1. General: Daikin indoor unit FXAQ shall be a wall mounted fan coil unit, operable with refrigerant R-410A, equipped with an electronic expansion valve, for installation onto a wall within a conditioned space. This compact design with finished white casing shall be available in capacities from 7,500 Btu/h to 24,000 Btu/h. Model numbers are FXAQ07PVJU, FXAQ09PVJU, FXAQ12PVJU, FXAQ18PVJU and FXAQ24PVJU to be connected to outdoor unit model RXYQ / RXYMQ / RWEYQ heat pump and REYQ / RWEYQ heat recovery model. Computerized PID control shall be used to control superheat to deliver a comfortable room temperature condition. The unit shall be equipped with a programmed drying mechanism that dehumidifies while limiting changes in room temperature when used with Daikin remote control BRC1E72, BRC1E73 and BRC2A71. A mildew-proof, polystyrene condensate drain pan and resin net mold resistant filter shall be included as standard equipment. The indoor units sound pressure shall range from 31 dB(A) to 41 dB(A) at low speed measured at 3.3 feet below and from the unit.
2. Performance: Each unit's performance is based on nominal operating conditions:

| **Model Number** | **Cooling** (Indoor 80°F DB / 67°F WB, Outdoor 95°F DB, 25 ft pipe length) | **Heating** (Indoor 70°F DB Outdoor 47F / 43F, 25 ft pipe length) |
|---|---|---|
| FXAQ07PVJU | 7,500 | 8,500 |
| FXAQ09PVJU | 9,500 | 10,500 |
| FXAQ12PVJU | 12,000 | 13,500 |
| FXAQ18PVJU | 18,000 | 20,000 |
| FXAQ24PVJU | 24,000 | 26,500 |

3. Indoor Unit
   a. The Daikin indoor unit FXAQ shall be completely factory assembled and tested. Included in the unit is factory wiring, piping, electronic proportional expansion valve, control circuit board, fan motor thermal protector, flare

connections, condensate drain pan, self-diagnostics, auto-restart function, 3-minute fused time delay, and test run switch. The unit shall have an auto-swing louver which ensures efficient air distribution, which closes automatically when the unit stops. The remote controller shall be able to set five (5) steps of discharge angle. The front grille shall be easily removed for washing. The discharge angle shall automatically set at the same angle as the previous operation upon restart. The drain pipe can be fitted to from either left or right sides.

b. Indoor unit and refrigerant pipes will be charged with dehydrated air prior to shipment from the factory.
c. Both refrigerant lines shall be insulated from the outdoor unit.
d. Return air shall be through a resin net mold resistant filter.
e. The indoor units shall be equipped with a condensate pan.
f. The indoor units shall be equipped with a return air thermistor.
g. The indoor unit will be separately powered with 208~230V/1-phase/60Hz.
h. The voltage range will be 253 volts maximum and 187 volts minimum.

4. Unit Cabinet:
   a. The cabinet shall be affixed to a factory-supplied wall mounting template and located in the conditioned space.
   b. The cabinet shall be constructed with sound absorbing foamed polystyrene and polyethylene insulation.
5. Fan:
   a. The fan shall be a direct-drive cross-flow fan, statically and dynamically balanced impeller with high and low fan speeds available.
   b. The fan motor shall operate on 208/230 volts, 1 phase, 60 hertz with a motor output range 0.054 to 0.058 HP.
   c. The airflow rate shall be available in high and low settings.
   d. The fan motor shall be thermally protected.
6. Coil
   a. Coils shall be of the direct expansion type constructed from copper tubes expanded into aluminum fins to form a mechanical bond.
   b. The coil shall be of a waffle louver fin and high heat exchange, rifled bore tube design to ensure highly efficient performance.
   c. The coil shall be a 2-row cross fin copper evaporator coil with 14 fpi design completely factory tested.
   d. The refrigerant connections shall be flare connections and the condensate will be 11/16 inch outside diameter PVC.
   e. A thermistor will be located on the liquid and gas line.
   f. A condensate pan shall be located in the unit.
7. Electrical:
   a. A separate power supply will be required of 208/230 volts, 1 phase, 60 hertz. The acceptable voltage range shall be 187 to 253 volts.
   b. Transmission (control) wiring between the indoor and outdoor unit shall be a maximum of 3,280 feet (total 6,560 feet).
   c. Transmission (control) wiring between the indoor unit and remote controller shall be a maximum distance of 1,640 feet.
8. Control:
   a. The unit shall have controls provided by Daikin to perform input functions necessary to operate the system.
   b. The unit shall be compatible with interfacing with a BMS system via optional LonWorks or BACnet gateways.
   c. The unit shall be compatible with a Daikin Intelligent Touch Manager advanced multi-zone controller.
9. Optional Accessories Available:
   a. Remote “in-room” sensor kit KRCS01-1B.
   b. A condensate pump (DACA-CP3-1)

F. FXTQ_TA – Multi-Position Air Handling Unit

1. General: Daikin indoor unit FXTQ_TA shall be a floor mounted vertical, horizontal left, horizontal right, or downflow air handling unit, operable with refrigerant R-410A, equipped with an electronic expansion valve and direct-drive ECM type fan with constant CFM programming, for installation within a conditioned space. When installed in a vertical configuration it shall have top discharge air and bottom return air. When installed in a horizontal right or horizontal left configuration, it shall have a horizontal discharge air and horizontal return air. When installed in a downflow configuration it shall have bottom discharge and top return air. This compact design with pre-painted heavy-gauge steel casing shall be available in capacities from 9,500 Btu/h to 60,000 Btu/h. Model numbers are FXTQ09TAVJUA, FXTQ12TAVJUA, FXTQ18TAVJUA, FXTQ24TAVJUA, FXTQ30TAVJUA, FXTQ36TAVJUA, FXTQ42TAVJUA, FXTQ48TAVJUA , FXTQ54TAVJUA, and FXTQ60TAVJUA to be connected to outdoor unit model RXYQ / RXYMQ / RWEYQ heat pump and REYQ / RWEYQ heat recovery model. The FXTQ_TA series may also be specified to utilize a factory integral disconnect switch. Model numbers including the factory disconnect are FXTQ09TAVJUD, FXTQ12TAVJUD, FXTQ18TAVJUD, FXTQ24TAVJUD, FXTQ30TAVJUD, FXTQ36TAVJUD, FXTQ42TAVJUD, FXTQ48TAVJUD , FXTQ54TAVJUD, and FXTQ60TAVJUD. A KRCS01-2UA remote temperature sensor kit shall be required for all FXTQ indoor units not utilizing the thermistor in the Daikin remote controller BRC1E73. Computerized PID control shall be used to control superheat to deliver a comfortable room temperature condition. The unit shall be equipped with a programmed drying mechanism that dehumidifies while limiting changes in room temperature when used with Daikin remote control BRC1E73 and BRC2A71.
2. Performance: Each unit's performance is based on nominal operating conditions:

| Model Number | Cooling (Indoor 80°F DB / 67°F WB, Outdoor 95°F DB, 25 ft pipe length) | Heating (Indoor 70°F DB Outdoor 47F / 43F, 25 ft pipe length) |
|---|---|---|
| FXTQ09TAVJUA(D) | 9,500 | 10,500 |
| FXTQ12TAVJUA(D) | 12,000 | 13,500 |
| FXTQ18TAVJUA(D) | 18,000 | 20,000 |
| FXTQ24TAVJUA(D) | 24,000 | 27,000 |
| FXTQ30TAVJUA(D) | 30,000 | 34,000 |
| FXTQ36TAVJUA(D) | 36,000 | 40,000 |
| FXTQ42TAVJUA(D) | 42,000 | 47,500 |
| FXTQ48TAVJUA(D) | 48,000 | 54,000 |
| FXTQ54TAVJUA(D) | 54,000 | 61,000 |
| FXTQ60TAVJUA(D) | 60,000 | 68,000 |

3. Indoor Unit
   a. The Daikin indoor unit FXTQ_TA components shall be completely factory assembled and tested. Included in the unit is factory wiring, piping, electronic proportional expansion valve, control circuit board, fan motor thermal protector, brazed connections, self-diagnostics, auto-restart function, 3-minute fused time delay, and test run switch.
   b. Indoor unit and refrigerant pipes will be charged with dehydrated air prior to shipment from the factory.
   c. Both refrigerant lines shall be insulated from the outdoor unit.
   d. Return air shall be through an optional or field supplied filter.
   e. Condensate draining shall be made via gravity or external condensate pump.
   f. The indoor unit will be separately powered with 208~230V/1-phase/60Hz.

g. The voltage range will be 253 volts maximum and 187 volts minimum.

4. Unit Cabinet:
   a. The cabinet shall be constructed with sound absorbing, foil-faced insulation to control air leakage.
   b. Select an installation location with adequate structural support, space for service access and clearance for air return and supply duct connections.
   c. A field supplied secondary drain pan shall be installed where required by national, state, or local code.
5. Fan:
   a. The fan shall be a direct-drive Sirocco type fan, statically and dynamically balanced impeller with high and low fan speeds available.
   b. The fan motor shall operate on 208/230 volts, 1 phase, 60 hertz with a motor output range 0.2 to 1.0. HP.
   c. The airflow rate shall be available in high setting.
   d. The fan motor shall be thermally protected.
   e. Fan motor external static pressure for nominal airflow:

| Model Number | Fan ESP (in. WG) |
|---|---|
| FXTQ09TAVJUA(D) | Up to 0.9 |
| FXTQ12TAVJUA(D) | Up to 0.9 |
| FXTQ18TAVJUA(D) | Up to 0.9 |
| FXTQ24TAVJUA(D) | Up to 0.9 |
| FXTQ30TAVJUA(D) | Up to 0.9 |
| FXTQ36TAVJUA(D) | Up to 0.9 |
| FXTQ42TAVJUA(D) | Up to 0.9 |
| FXTQ48TAVJUA(D) | Up to 0.9 |
| FXTQ54TAVJUA(D) | Up to 0.9 |
| FXTQ60TAVJUA(D) | Up to 0.9 |

6. Filter:
   a. The return air shall be filtered by means of an optional or field-supplied filter.
7. Coil:
   a. Coils shall be of the direct expansion type constructed from aluminum tubes expanded into aluminum fins to form a mechanical bond.
   b. The coil shall be of a waffle louver fin and high heat exchange, rifled bore tube design to ensure highly efficient performance.
   c. The coils shall be a 2- to 4-row cross fin copper evaporator coil with 14 to 16 fpi design completely factory tested.
   d. The refrigerant connections shall be brazed connections and the condensate will be 3/4 inch outside diameter PVC.
   e. A thermistor will be located on the liquid and gas line.
8. Electrical:
   a. A separate power supply will be required of 208/230 volts, 1 phase, 60 hertz. The acceptable voltage range shall be 187 to 253 volts.
   b. Transmission (control) wiring between the indoor and outdoor unit shall be a maximum of 3,280 feet (total 6,560 feet).
   c. Transmission (control) wiring between the indoor unit and remote controller shall be a maximum distance of 1,640 feet.
9. Control:
   a. The unit shall have controls provided by Daikin to perform input functions necessary to operate the system.
   b. The unit shall be compatible with interfacing with a BMS system via optional LonWorks or BACnet gateways.

c. The unit shall be compatible with a Daikin Intelligent Touch Manager advanced multi-zone controller.

10. Optional Accessories Available
    a. Field installed 3-25kW electric heaters (HKS-03, HKS-05, HKS-06, HKS-08, HKS-10, HKS-15, HKS-19, HKS-20, HKS-25).
    b. Air filter (ALFH1620, ALFH1912201E, ALFH20231E).
    c. Downflow kit: DFK-B, DFK-C, DFK-D.
    d. BRC4C84 wireless controller.

G. HVAC Equipment Alternate

1. The alternate equipment supplier shall provide to the bidding mechanical contractor a complete equipment data package. This package shall include, but is not limited to, equipment capacities at the design condition, power requirements, indoor units CFM/static pressures, fan curves, installation requirements, and physical dimensions. Nominal performance data is not acceptable. The mechanical contractor shall request and receive the equipment data package 15 days prior to bid date and submit this package with the alternate bid. The mechanical contractor shall list the equipment supplier and submit the required data package with the bid detailing a complete comparison of the proposed alternate equipment to the specified equipment and the associated cost reduction of the alternate equipment. The contractor bids an alternate manufacturer with full knowledge that that manufactures product may not be acceptable or approved.
2. The alternate equipment supplier shall furnish a complete drawing package to the mechanical contractor 15 days prior to bid day for bidding and installation. The drawing format shall be .dxf or equivalent, on 30"x42" sheets. The HVAC and electrical series design documents will be made available in electronic format for use by the equipment supplier in preparing their drawings. The alternate equipment supplier shall prepare the following drawings:

   XXX HVAC Floor Plan
   XXX HVAC Refrigerant Piping Plan
   XXX HVAC Refrigerant Piping/Controls Details
   XXX HVAC Details
   XXX HVAC Schedules

   The alternate equipment supplier shall draft all piping circuits, components, overall building control schematic, detailed control wiring diagrams, system details and schedules for their system. The drawings shall convey all requirements to successfully install the alternate equipment suppliers system. Provide (2) drawing package sets plotted on 20 lb. vellum. Provide (1) drawing package in electronic format (.dxf files) on CD. The submitted documents shall be complete system designs and show no less information than the HVAC equipment/controls contract bid documents.
3. The equipment supplier shall submit as part of the equipment data package outdoor unit data sheets. Data sheets to include the following:

   Capacities at project design conditions: Cooling
   Cooling (Btu/h)

   Cooling Input Power
   (kW)

Capacities at project design conditions: Heating
Heating (Btu/h)

Heating Input Power
(kW)

The submitted capacity and efficiency performance must meet or exceed the listed performance on the schedule at the designed outdoor ambient, and indoor space temperature conditions including de-rate factors for defrost and refrigerant piping lengths.

Operating Temperature Range:
Cooling
Heating

Power Supply:
Maximum Circuit Amps (MCA)
Maximum Overcurrent Protection Amps (MOP)
Maximum Starting Current (MSC)
Outdoor Fan Motor

Refrigerant:
Refrigerant Type/Charge
Control

Unit Data:
Max. Number of Indoor Units
Sound Pressure Level at 3ft. (dBA)
Weight (lbs)
Dimensions

4. The equipment supplier shall guarantee the performance of their system and all published data submitted. Performance shall be based on the design criteria below.

    Room Temperature (Cooling): _____
    Room Temperature (Heating): _____
    Ambient Temperature (Summer): _____
    Ambient Temperature (Winter): _____
    Defrost De-rate Factor: _____
    Refrigerant Piping Loss in cooling (correction factor): _____
    Refrigerant Piping Loss in heating (correction factor): _____

5. The alternate equipment supplier shall submit with bid, indoor unit data sheets. Data sheets to include the following:

    Capacities:
    Cooling (Btu/h)
    Heating (Btu/h)
    Air Flow (CFM)

    External Static Pressure (ESP)

Electrical Data (MCA, MOP, MSC)
Weight (lbs)
Dimensions

### 2.3 VRV IV 460V Heat Recovery (REYQ168TYDN)

A. System Description

1. The variable capacity, heat recovery air conditioning system shall be a Daikin Variable Refrigerant Volume Series (heat and cool model) split system as specified. The system shall consist of multiple evaporators, branch selector boxes, REFNET™ joints and headers, a three pipe refrigeration distribution system using PID control and Daikin VRV® condenser unit. The condenser shall be a direct expansion (DX), air-cooled heat recovery, multi-zone air-conditioning system with variable speed inverter driven compressors using R-410A refrigerant. The condensing unit may connect an indoor evaporator capacity up to 200% of the condensing unit capacity. All zones are each capable of operating separately with individual temperature control. A dedicated hot gas pipe shall be required to ensure optimum heating operation performance. Two-pipe, heat recovery systems utilizing a lower temperature mixed liquid/gas refrigerant to perform heat recovery are not acceptable due to reduced heating capabilities. The Daikin condensing unit shall be interconnected to indoor unit models FXFQ, FXHQ, FXMQ, FXLQ, FXNQ, FXTQ, FXDQ, FXZQ, FXAQ, FXMQ_MF and FXUQ and shall range in capacity from 7,500 Btu/h to 96,000 Btu/h in accordance with Daikin's engineering data book detailing each available indoor unit. The indoor units shall be connected to the condensing unit utilizing Daikin's REFNET™ specified piping joints and headers to ensure correct refrigerant flow and balancing. T style joints are not acceptable for a variable refrigerant system. Operation of the system shall permit either individual cooling or heating of each indoor unit simultaneously or all of the indoor units associated with each branch of the cool/heat selector box (BSQ_T / BS_Q54T). Each indoor unit or group of indoor units shall be able to provide set temperature independently via a local remote controller, an Intelligent Controller, an Intelligent Manager or a BMS interface. Branch selector boxes shall be located as shown on the drawing. The branch selector boxes shall have the capacity to control up to 290 MBH (cooling) downstream of the branch selector box. Each branch of the branch selector box shall consist of three electronic expansion valves, refrigerant control piping and electronics to facilitate communications between the box and main processor and between the box and indoor units. The branch selector box shall control the operational mode of the subordinate indoor units. The use of three EEV's ensures continuous heating during defrost (multiple condenser systems), no heating impact during changeover and reduced sound levels. The use of solenoid valves for changeover and pressure equalization shall not be acceptable due to refrigerant noise. The REYQ_T condensing unit model numbers and the associated number of connectable indoor units per REYQ_T condensing unit is indicated in the following table. Each indoor unit or group of indoor units shall be independently controlled.

| Model Number | Nominal Capacity (Tons) | Number of Connectable Indoor Units |
|---|---|---|
| REYQ168TYDN | 14 | 29 |

B. VRV IV Features and Benefits

1. Voltage Platform –Heat recovery condensing units shall be available with a 460V/3/60 power supply.

2. Advanced Zoning – A single system shall provide for up to 64 zones.
3. Independent Control – Each indoor unit shall use a dedicated electronic expansion valve with 2000 positions for independent control.
4. VFD Inverter Control and Variable Refrigerant Temperature – Each condensing unit shall use high efficiency, variable speed all “inverter” compressor(s) coupled with inverter fan motors to optimize part load performance. The system capacity and refrigerant temperatures shall be modulated automatically to set suction and condensing pressures while varying the refrigerant volume for the needs of the cooling or heating loads. The control will be automatic and customizable depending on load and weather conditions. Indoor units shall use PID to control superheat to deliver a comfortable room temperature condition and optimize efficiency.
5. Configurator software – Each system shall be available with configurator software package to allow for remote configuration of operational settings and also for assessment of operational data and error codes. If this software is not provided by an alternate manufacturer, for each individual outdoor unit the contractor shall do the settings manually and keep detailed records for future maintenance purposes.
6. Autocharging – Each system shall have a refrigerant auto-charging function.
7. Defrost Heating – Multiple condenser VRV systems shall maintain continuous heating during defrost operation. Reverse cycle (cooling mode) defrost operation shall not be permitted due to the potential reduction in space temperature.
8. Oil Return Heating – Multiple condenser VRV systems shall maintain continuous heating during oil return operation. Reverse cycle (cooling mode) oil return during heating operation shall not be permitted due to the potential reduction in space temperature.
9. Low Ambient Cooling – Each system shall be capable of low ambient cooling operation to -4°F DB.
10. Independent Control – Each indoor unit shall use a dedicated electronic expansion valve for independent control.
11. Flexible Design –
    a. Systems shall be capable of up to 540ft (623ft equivalent) of linear piping between the condensing unit and furthest located indoor unit.
    b. Systems shall be capable of up to 3,280ft total “one-way” piping in the piping network.
    c. Systems shall have a vertical (height) separation of up to 295ft between the condensing unit and the indoor units.
    d. Systems shall be capable of up to 295ft from the first REFNET™ / branch point.
    e. The condensing unit shall have the ability to connect an indoor unit evaporator capacity of up to 200% of the condensing unit capacity.
    f. Systems shall be capable of 98ft vertical separation between indoor units.
    g. Condensing units shall be supported with a fan motor ESP up to 0.32”. WG as standard to allow connection of discharge ductwork and to prevent discharge air short circuiting.
12. Oil Return – Each system shall be furnished with a centrifugal oil separator and active oil recovery cycle
13. Simple Wiring – Systems shall use 16/18 AWG, 2 wire, multi-stranded, non-shielded and non-polarized daisy chain control wiring.
14. Outside Air – Systems shall provide outside air capability.
15. Space Saving – Each system shall have a condensing unit module footprint as small as 36-5/8’’ x 30-1/8’’.
16. Advanced Diagnostics – Systems shall include a self diagnostic, auto-check function to detect a malfunction and display the type and location.
17. Each condensing unit shall incorporate contacts for electrical demand shedding with optional 3 stage demand control with 12 customizable demand settings.
18. Advanced Controls – Each system shall have at least one remote controller capable of controlling up to 16 indoor units.

19. Each system shall be capable of integrating with open protocol BACnet and LonWorks building management systems.
20. Low Sound Levels – Each system shall use indoor and condensing units with quiet operation as low as 27 dB(A).

C. Quality Assurance
1. The units shall be tested by a Nationally Recognized Testing Laboratory (NRTL), in accordance with ANSI/UL 1995 – Heating and Cooling Equipment and bear the Listed Mark.
2. All wiring shall be in accordance with the National Electric Code (NEC).
3. The system will be produced in an ISO 9001 and ISO 14001 facility, which are standards set by the International Standard Organization (ISO). The system shall be factory tested for safety and function.
4. Mechanical equipment for wind-born debris regions shall be designed in accordance with ASCE 7-2010 and installed to resist the wind pressures on the equipment and the supports.
5. The condensing unit will be factory charged with R-410A.

D. Delivery, Storage and Handling
1. Unit shall be stored and handled according to the manufacturer's recommendations.

E. Warranty
1. Daikin North America LLC warrants original owner of the non-residential building, multifamily residence or residence in which the Daikin products are installed that under normal use and maintenance for comfort cooling and conditioning applications such products (the "Products") will be free from defects in material and workmanship. This warranty applies to compressor and all parts and is limited in duration to ten (10) years starting from the ''installation date'' which is one of the two dates below:
   a. The installation date is the date that the unit is originally commissioned, but no later than 18 months after the manufacture date noted on the unit's rating plate.
   b. If the date the unit is originally commissioned cannot be verified, the installation date is three months after the manufacture date.
2. Complete warranty details available from your local Daikin representative or at www.daikincomfort.com.

F. Performance
1. The VRV IV REYQ_T system shall perform as indicated below:

| Model Number | System IEER* (part load - ducted) | System IEER* (part load – non-ducted) | System IEER* (part load - mixed) |
|---|---|---|---|
| REYQ168TYDN | 19.50 | 22.00 | 20.75 |

| Model Number | System SCHE* (part load - ducted) | System SCHE* (part load – non-ducted) | System SCHE* (part load - mixed) |
|---|---|---|---|
| REYQ168TYDN | 22.80 | 26.60 | 24.70 |

| Model Number | System EER* (full load - ducted) | System EER* (full load – non-ducted) | System EER* (full load - mixed) |
|---|---|---|---|
| REYQ168TYDN | 11.30 | 11.70 | 11.50 |

| Model Number | System COP@17F* (full load - ducted) | System COP@17F* (full load – non-ducted) | System COP@17F* (full load - mixed) |
|---|---|---|---|
| REYQ168TYDN | 2.15 | 2.32 | 2.24 |

| Model Number | System COP@47F* (full load - ducted) | System COP@47F* (full load – non-ducted) | System COP@47F* (full load - mixed) |
|---|---|---|---|
| REYQ168TYDN | 3.33 | 3.77 | 3.55 |

2. Performance Conditions
   Cooling: indoor temp. of 80°F DB, 67°F WB and outdoor temp. of 95°F DB.
   Heating: indoor temp. of 70°F DB and outdoor temp. of 47°F DB, 43°F WB.
   Equivalent piping length: 25ft

G. Operating Range
1. The operating range in cooling or cooling dominant simultaneous cooling/heating will be (-4°F) 23°F DB ~ 122°F DB. Each system as standard shall be capable of onsite reprogramming to allow low ambient cooling operation down to -4°F DB. The operating range in heating or heating dominant simultaneous cooling/heating will be -13°F WB – 60°F WB. If an alternate equipment manufacturer is selected, the mechanical contractor shall provide, at their own risk and cost, all additional material and labor to meet low ambient operating condition and performance. Cooling mode indoor room temperature range will be 57°F-77°F WB. Heating mode indoor room temperature range will be 59°F-80°F DB.

H. Refrigerant Piping
1. The system shall be capable of refrigerant piping up to 540 actual feet or 623 equivalent feet from the condensing unit to the furthest indoor unit, a total combined liquid line length of 3,280 feet of piping between the condensing and indoor units with 295 feet maximum vertical difference, without any oil traps. REFNET™ piping joints and headers shall be used to ensure proper refrigerant balance and flow for optimum system capacity and performance. T style joints shall not be acceptable as this will negatively impact proper refrigerant balance and flow for optimum system capacity and performance.

I. Design Basis
1. The HVAC equipment basis of design is Daikin North America. All bidders shall furnish the minimum system standards as defined by the base bid model numbers, model families or as otherwise specified herein (see Key General Specifications Alternate Supplier Checklist). In any event, the contractor shall be responsible for all specified items and intents of this document without further compensation.

J. Condensing Unit
1. General: The condensing unit is designed specifically for use with VRV IV series components.
   a. The condensing unit shall be factory assembled in the USA and pre-wired with all necessary electronic and refrigerant controls. The refrigeration circuit of the condensing unit shall consist of Daikin inverter scroll compressors, motors, fans, condenser coil, electronic expansion valves, solenoid valves, 4-way valve, distribution headers, capillaries, filters, shut off valves, oil separators, service ports, liquid receiver and suction accumulator.
      High/low pressure gas line, liquid and suction lines must be individually insulated between the condensing and indoor units.
   b. The condensing unit can be wired and piped with access from the left, right, rear or bottom.
   c. The connection ratio of indoor units to condensing unit shall be permitted up to 200%.

d. Each condensing system shall be able to support the connection of up to 64 indoor units dependent on the model of the condensing unit.
e. The sound pressure level standard shall be that value as listed in the Daikin engineering manual for the specified models at 3 feet from the front of the unit. The condensing unit shall be capable of operating automatically at further reduced noise during night time or via an external input.
f. The system will automatically restart operation after a power failure and will not cause any settings to be lost, thus eliminating the need for reprogramming.
g. The unit shall incorporate an auto-charging feature. Manual changing should be support with a minimum of 2 hours of system operation data to ensure correct operation.
h. The condensing unit shall be modular in design and should allow for side-by-side installation with minimum spacing.
i. The following safety devices shall be included on the condensing unit; high pressure sensor and switch, low pressure sensor, control circuit fuses, crankcase heaters, fusible plug, overload relay, inverter overload protector, thermal protectors for compressor and fan motors, over current protection for the inverter and anti-recycling timers.
j. To ensure the liquid refrigerant does not flash when supplying to the various indoor units, the circuit shall be provided with a sub-cooling feature.
k. Oil recovery cycle shall be automatic occurring 2 hours after start of operation and then every 8 hours of operation. Each system shall maintain continuous heating during oil return operation.
l. The condensing unit shall be capable of heating operation at -13°F wet bulb ambient temperature without additional low ambient controls or an auxiliary heat source.
m. The multiple condenser VRV systems shall continue to provide heat to the indoor units in heating operation while in the defrost mode.

2. Unit Cabinet:
   a. The condensing unit shall be completely weatherproof and corrosion resistant. The unit shall be constructed from rust-proofed mild steel panels coated with a baked enamel finish.
3. Fan:
   a. The condensing unit shall consist of one or more propeller type, direct-drive 350 or 750 W fan motors that have multiple speed operation via a DC (digitally commutating) inverter.

| Model Number | Fan Motor Output (kW) & Quantity |
|---|---|
| REYQ168TYDN | 0.60 x 2 |

   b. The condensing unit fan motor shall have multiple speed operation of the DC (digitally commutating) inverter type, and be of high external static pressure and shall be factory set as standard at 0.12 in. WG. A field setting switch to a maximum 0.32 in. WG pressure is available to accommodate field applied duct for indoor mounting of condensing units.
   c. The fan shall be a vertical discharge configuration with a nominal airflow maximum range of 5,544 CFM to 24,684 CFM dependent on model specified.
   d. Nominal sound pressure levels shall be as shown below.

| Model Number | Sound Pressure Level dB(A) |
|---|---|
| REYQ168TYDN | 65 |

e. The fan motor shall have inherent protection and permanently lubricated bearings and be mounted.
f. The fan motor shall be provided with a fan guard to prevent contact with moving parts.
g. Night setback control of the fan motor for low noise operation by way of automatically limiting the maximum speed shall be a standard feature. Operation sound level shall be selectable from 3 steps as shown below.

| Operation Sound dB(A) | Night Mode Sound Pressure Level dB(A) |
|---|---|
| Step 1 max. | 55 |
| Step 2 max. | 50 |
| Step 3 max. | 45 |

4. Condenser Coil:
   a. The condenser coil shall be manufactured from copper tubes expanded into aluminum fins to form a mechanical bond.
   b. The heat exchanger coil shall be of a waffle louver fin and rifled bore tube design to ensure high efficiency performance.
   c. The heat exchanger on the condensing units shall be manufactured from Hi-X seamless copper tube with N-shape internal grooves mechanically bonded on to aluminum fins to an e-Pass Design.
   d. The fins are to be covered with an anti-corrosion Ulta Gold coating as standard with a salt spray test rating of 1000hr (ASTM B117 & Blister Rating:10), Acetic acid salt spray test: 500hr (ASTM G85 & Blister Rating:10)
   e. The pipe plates shall be treated with powdered polyester resin for corrosion prevention. The thickness of the coating must be between 2.0 to 3.0 microns.
   f. The outdoor coil shall have three-circuit heat exchanger design eliminating the need for bottom plate heater. The lower part of the coil shall be used for inverter cooling and be on or off during heating operation enhancing the defrost operation.
   g. The condensing unit shall be factory equipped with condenser coil guards on all sides.
5. Compressor:
   a. The Daikin inverter scroll compressors shall be variable speed (PVM inverter) controlled which is capable of changing the speed to follow the variations in total cooling and heating load as determined by the suction gas pressure as measured in the condensing unit. In addition, samplings of evaporator and condenser temperatures shall be made so that the high/low pressures detected are read every 20 seconds and calculated. With each reading, the compressor capacity (INV frequency) shall be controlled to eliminate deviation from target value. Non inverter-driven compressors, which may cause starting motor current to exceed the nominal motor current (RLA) and require larger wire sizing, shall not be allowed.
   b. The inverter driven compressor in each condensing unit shall be of highly efficient reluctance DC (digitally commutating), hermetically sealed scroll “G-type” or “J-type”.
   c. Neodymium magnets shall be adopted in the rotor construction to yield a higher torque and efficiency in the compressor instead of the normal ferrite magnet type. At complete stop of the compressor, the neodymium magnets will position the rotor into the optimum position for a low torque start.

d. The capacity control range shall be as low as 3% to 100%.
e. The compressors' motors shall have a cooling system using discharge gas, to avoid sudden changes in temperature resulting in significant stresses on winding and bearings.
f. Each compressor shall be equipped with a crankcase heater, high pressure safety switch, and internal thermal overload protector.
g. Oil separators shall be standard with the equipment together with an intelligent oil management system.
h. The compressor shall be spring mounted to avoid the transmission of vibration eliminating the standard need for spring insolation.
i. Compressor configurations

| Tonnage | Number of Compressors | Compressor Types |
|---|---|---|
| 14 | 2 | All inverter controlled |

j. In the event of compressor failure the remaining compressors shall continue to operate and provide heating or cooling as required at a proportionally reduced capacity. The microprocessor and associated controls shall be designed to specifically address this condition.
k. In the case of multiple condenser modules, conjoined operation hours of the compressors shall be balanced by means of the Duty Cycling Function, ensuring sequential starting of each module at each start/stop cycle, completion of oil return, completion of defrost or every 8 hours and extending the operating life of the system. When connected to a central control system, sequential start is activated for all system on each DIII network.

6. Electrical:
a. The power supply to the condensing unit shall be 460 volts, 3-phase, 60 hertz +/- 10%.

| Power Supply Voltage | Voltage Range |
|---|---|
| 460V/3/60 | 416V-508V |

| Model | MCA | MOP | Compressor RLA |
|---|---|---|---|
| REYQ168TYDN | 36.1 | 40 | 7.9 + 11.1 |

b. The control voltage between the indoor and condensing unit shall be 16VDC non-shielded, stranded 2 conductor cable.
c. The control wiring shall be a two-wire multiplex transmission system, making it possible to connect multiple indoor units to one condensing unit with one 2-cable wire, thus simplifying the wiring installation.
d. The control wiring lengths shall be as shown below.

| | Condenser to Indoor Unit | Condenser to Central Controller | Indoor Unit to Remote Control |
|---|---|---|---|
| **Control Wiring Length** | 6,665 ft | 3,330 ft | 1,665 ft |
| **Wire Type** | 16/18 AWG, 2 wire, non-polarity, non-shielded, stranded | | |

K. BS (4/6/8/10/12)Q_T Branch Selector Box for VRV IV Heat Recovery System
1. General: The BSQ36TVJ, BSQ60TVJ, BSQ96TVJ, BS4Q54TVJ, BS6Q54TVJ, BS8Q54TVJ, BS10Q54TVJ and BS12Q54TVJ branch selector boxes are

designed specifically for use with VRV IV series heat recovery system components.

a. These selector boxes shall be factory assembled, wired, and piped.
b. These BSQ_T / BS(4/6/8/10/12)Q54T branch controllers must be run tested at the factory.
c. These selector boxes must be mounted indoors.
d. When simultaneously heating and cooling, the units in heating mode shall energize their subcooling electronic expansion valve.
e. The number of connectable indoor units shall be in accordance with the table below:

| Model Number | Maximum Connectable Cooling Capacity | Maximum Number of Connectable Indoor Units Per Branch |
|---|---|---|
| BS4Q54TVJ | 144,000 Btu/h | 5 |

2. Unit Cabinet:
   a. These units shall have a galvanized steel plate casing.
   b. Each cabinet shall house 3 electronic expansion valves for refrigerant control per branch.
   c. The cabinet shall contain one subcooling heat exchanger per branch.
   d. The unit shall have sound absorption thermal insulation material made of flame and heat resistant foamed polyethylene.
   e. Nominal sound pressure levels must be measured and published on the submittals by the manufacturer. These sound levels must not exceed the values below.

| Model Number | Sound Level dB(A) Operating | Sound Level dB(A) Max |
|---|---|---|
| BS4Q54TVJ | 38 | 45 |

   f. If an alternate manufacturer is selected, the mechanical contractor shall provide, at their own cost and expense, any additional material and labor to meet the published sound levels above.
3. Dimensions:
   a. Each BSQ_T unit shall be no larger than 8-1/8” x 15-1/4” x 12-13/16”.
   b. Each BS4Q_T shall be no larger than 11-3/4” x 14-9/16” x 18-15/16”.
   c. Each BS(6/8)Q_T shall be no larger than 11-3/4” x 22-13/16” x 18-15/16”.
   d. Each BS(10/12)Q_T shall be no larger than 11-3/4” x 32-5/16” x 18-15/16”.
4. Refrigerant Valves:
   a. The unit shall be furnished with 3 electronic expansion valves per branch to control the direction of refrigerant flow. The use of solenoid valves for changeover and pressure equalization shall not be acceptable due to refrigerant noise.
   b. The refrigerant connections must be of the braze type.
   c. In multi-port units, each port shall have its own electronic expansion valves. If common expansion/solenoid valves are used, redundancy must be provided.
   d. Each circuit shall have at least one (36,000 Btu/h indoor unit or smaller for the BSQ36TVJ, 54,000 Btu/h indoor unit or smaller for the BS(4/6/8/10/12)Q54TVJ, 60,000 Btu/h indoor unit or smaller for the BSQ60TVJ and 96,000 Btu/h indoor unit or smaller for the BSQ96TVJ) branch selector box.

e. Multiple indoor units may be connected to a branch selector box with the use of a REFNET™ joint provided they are within the capacity range of the branch selector.

5. Condensate Removal:
   a. The unit shall not require provisions for condensate removal. A safety device or secondary drain pan shall be installed by the mechanical contractor to comply with the applicable mechanical code, if an alternate manufacturer is selected.
6. Electrical:
   a. The unit electrical power shall be 208/230 volts, 1 phase, 60 hertz.
   b. The unit shall be capable of operation within the limits of 187 volts to 255 volts.
   c. The minimum circuit amps (MCA) shall be 0.1 and the maximum overcurrent protection amps (MOP) shall be 15.
   d. The control voltage between the indoor and condensing unit shall be 16VDC non-shielded 2 conductor cable.

## 2.4 INTELLIGENT ITOUCH MANAGER (iTM) MULTI-ZONE CONTROLER

A. The intelligent Touch Manager (version 2.04) shall provide control for all VRV, SkyAir, and Daikin RA and FTXS indoor units with the use of the KRP928BB2S RA Adapter. It shall be capable of controlling a maximum or 64 indoor unit groups and 128 indoor units connected to a maximum of 10 outdoor units. The intelligent Touch Manager shall support operations superseding that of the local remote controller, system configuration, daily/weekly scheduling, monitoring of operation status, and malfunction monitoring.

B. The controller wiring shall consist of a non-polar two-wire connection to the indoor unit at terminals F1F2 (out-out) of the outdoor unit. The intelligent Touch Manager is wall mounted and can be adjusted to maintain the optimal operation of the connected indoor unit(s).

C. The intelligent Touch Manager can be used in conjunction with the BRC1E73 (Navigation Remote Controller), the BRC2A71 (Simplified Remote Controller), or the BRC4C82/7E83/7C812/7E818 (Wireless Remote Controller), BACnet interface, Lonworks interface, and Modbus adapter to control the same indoor unit groups. The remote controller shall require daisy chain wiring for grouping multiple indoor units (up to 16) together. Manual addressing is required of each remote controller group associated with the intelligent Touch Manager. DIII-NET address can be set for one (1) indoor unit or each indoor unit in the remote controller group. No more than 2 remote controllers can be placed in the same group.

D. The intelligent Touch Manager shall be equipped with two RJ-45 Ethernet ports for 100 Mbps network communication to support interconnection with a network PC via the Internet, Local Area Network (LAN), or connection with a non-networked PC after completed installation.

E. Web access functions shall be available so that facility staff can securely log into each Intelligent Touch Manager via the PC's web browser to support monitoring, scheduling, error recognition, and general user functions. Error emails are also sent to designated email addresses. An additional optional software function Power Proportional Distribution (PPD) tenant billing shall also be available. The optional software shall require advanced purchase and can only be activated upon receipt of a license activation key from Daikin AC.

1. Mounting:
   a. The intelligent Touch Manager shall be mounted on the wall or into the mounting fixtures included with the intelligent Touch Manager.
2. Display Features:

a. The intelligent Touch Manager shall be approximately 11.42” x 9.57” x 1.97’ in size with a backlit 10.4” LCD display. Featured backlit LCD with auto off after 30 minutes (default) is adjustable between 1 to 60 minutes, or the choice of 3 different screen savers.
b. An Area is a tiered group where management points (indoor unit, digital input/output, and analog input/output groups) can be monitored and controlled by global settings. Up to 650 Areas can be created. Area hierarchy can have up to 10 tiered levels (ex. top level: 1st floor West, 2nd level: offices, hallways, 3rd level: Office 101, 102, and 103, etc.). Area configuration shall classify levels of monitoring and control for each management point.
c. The Controller shall display On/Off, Operation Mode, Setpoint, Space Temperature, Louver Position, Fan Speed for each Area or Group.
d. The Controller shall display Date (mm/dd/yyyy, yyyy/mm/dd, or dd/mm/yyyy format selectable) and day of the week along with the time of day (12hr or 24hr display selectable).
e. The Controller shall adjust for daylight savings time (DST) automatically.
f. Display information shall be updated every 3 seconds to show the latest status of the indoor unit groups.
g. System status icons shall display On/Off (color coded), Malfunction/Error (color coded), Forced Stop, Setback, Filter, Maintenance, and Screen Lock.
h. The controller shall display the temperature setpoint in one degree increments with a range of 60$^{o}$F – 90$^{o}$F, 1$^{o}$F basis (16$^{o}$C – 32$^{o}$C, 0.1$^{o}$C basis).
    1) Display of temperature setpoint information shall be configurable for Fahrenheit or Celsius
i. Display shall reflect room temperature in one tenth degree increments with a range of-58$^{o}$F – 248$^{o}$F, 0.1$^{o}$F basis (-50$^{o}$C – 120$^{o}$C, 0.1$^{o}$C basis) with 0.1$^{o}$C accuracy.
    1) Display of room temperature information shall be configurable for Fahrenheit or Celsius
j. The Menu List shall be used to configure options and display information for each Area or Group.

3. Basic Operation:
    a. Capable of controlling by Area(s) or Group(s)
    b. Controller shall control the following group operations:
        1) On/Off
        2) Operation Mode (Cool, Heat, Fan, Dry, and Auto)
        3) Independent Cool and Heat dual Setpoints or single Setpoint for current mode in the occupied period
        4) Controller shall be able to limit the user adjustable setpoint ranges individually for cooling and heating based upon the Area or Group configurations
        5) Independent Setup (Cooling) and Setback (Heating) setpoints in the unoccupied mode adjustable to 50 - 95$^{0}$F
            a) Setup and Setback setpoints can only be set outside of the occupied setpoint range
            b) The Setup and Setback setpoints will automatically maintain a 2$^{o}$F fixed differential from the highest possible occupied setpoints
            c) The recovery differential shall be 4$^{0}$F (default) and adjustable between 2 – 10$^{0}$F
            d) Settings shall be applied based upon the Area or Group configurations
        6) Fan Speed
            a) Up to 3 speeds (dependent upon indoor unit type)
        7) Airflow direction (dependent upon indoor unit type)
            a) 5 fixed positions or oscillating
        8) Remote controller permit/prohibit of On/Off, Mode, and Setpoint
        9) Lock out setting for Intelligent Touch Manager display
        10) Indoor unit Group/Area assignment

c. Capable of providing battery backup power for the clock at least 1 year when no AC power is applied.
   1) The battery can last at least 13 years when AC power is applied
   2) Settings stored in non-volatile memory

4. Programmability:
   a. Controller shall support weekly schedule settings.
      1) 7 day weekly pattern (7)
      2) Weekday + Weekend (5 + 2)
      3) Weekday + Saturday + Sunday (5 + 1 + 1)
      4) Everyday (1)
      5) The schedule shall have the capabilities of being enabled or disabled
      6) 100 independent schedules configurable with up to 20 events settable for each days schedule
         a) Each scheduled event shall specify time and target Area or Group
         b) Each scheduled event shall include On/Off, Optimum Start, Operation Mode, Occupied Setpoints, Setback Setpoints, Remote Controller On/Off Prohibit, Remote Controller Mode Prohibit, Remote Controller Setpoint Prohibit, Timer Extension Setting, Fan Speed, and Setpoint Range Limit
         c) Setpoint when unit is On (occupied)
         d) Configurable Setup (Cooling) and Setback (Heating) setpoints when unit is Off (unoccupied)
         e) Time setting in 1-minute increments
         f) Timer Extension shall be used for a timed override (settable from 30 – 180 minutes) to allow indoor unit operation during the unoccupied period
      7) A maximum of 40 exception days can be schedule on the yearly schedule (repeats yearly)
         a) Exception days shall be used to override specified days on the weekly schedule based upon irregular occupied/unoccupied conditions
         b) Exception days can be configured on a set date (Jan 1) or floating date (1st Monday in September)
   b. Controller shall support auto-changeover.
      1) Auto-change shall provide Fixed (default), Individual, Averaging, and Vote changeover methods for both Heat Pump and Heat Recovery systems based upon the changeover group configuration. This will allow for the optimal room temperature to be maintained by automatically switching the indoor unit's mode between Cool and Heat in accordance with the room temperature and setpoint. The following changeover scheme shall be applicable to the Fixed, Individual, and Averaging methods.
         1. Changeover to cooling mode shall occur at cooling setpoint + 1°F (0.5°C) as the primary changeover deadband and takes the guard timer into consideration
         a) Configurable from 1 – 4°F (0.5 – 2°C)
         2. Changeover to cooling mode shall occur at the primary changeover deadband to cooling + 1°F (0.5°C) as the secondary changeover deadband.
         b) Configurable from 1 – 4°F (0.5 – 2°C)
         3. Changeover to heating mode shall occur at heating setpoint - 1°F (0.5°C) as the primary changeover deadband and takes the guard timer into consideration
         c) Configurable from 1 – 4°F (0.5 – 2°C)
         4. Changeover to heating mode shall occur at the primary changeover deadband to heating - 1°F (0.5°C) as the secondary changeover deadband.
         d) Configurable from 1 – 4°F (0.5 – 2°C)
         5. A weighted demand shall be configurable for the Averaging and Vote methods.

## 2.5 DUCTWORK

A. Sheet Metal Ductwork – Rectangular
1. Ducts and plenums shall be fabricated and installed in conformance with the latest editions of: NFPA Pamphlet No. 90A; California Building Code; California Mechanical Code and the SMACNA HVAC Duct Construction Standards (Metal and Flexible). Ducts and plenums shall be constructed of hot dipped galvanized mild steel and shall have airtight Class “B” seals at all transverse joints and longitudinal seams. Tables and figures hereinafter referenced are from the 2005 edition of the SMACNA HVAC Duct Construction Standards (Metal and Flexible).
2. Rectangular duct construction shall conform to Table 2-3. All transverse joints shall be flanged per Table 2-32, with corner closures or “Duct Mate” flanged connections with corner closures per Figure 2-17. Elbows shall be standard radius (Type RE 1) or square throat with vanes (Type RE 2) per Figure 4-2, with double thickness turning vanes per Figures 4-3 and 4-4. Offsets and transitions shall be per Figure 4-7. Supply, return, and exhaust branch connections shall be per Figure 4-5 or 4-6. Splitters shall not be used.
3. Lined ducts shall be fabricated such that the net inside dimensions equals the duct sizes shown on the Drawings.

B. Sheet Metal Ductwork – Spiral
1. Round ducts shall be spiral, United McGill or equal. All transverse joints and longitudinal seams shall have Class “B” seals. All branches in round duct systems shall be made with factory fabricated reducing wye branches. Duct turns shall be made with standard, factory fabricated, three-piece elbows.

C. Flexible Ductwork
1. Flexible ducts shall be Flexmaster “8M” or approved equal. Flexible ducts shall be used only where shown on the Drawings, and maximum length of any given flexible duct shall not exceed 5 ft. Galvanized sheet metal elbows shall be used for turns greater the 45° on flexible ducts 10” and larger. Connections to rectangular ducts shall be made with “spin-in” fittings with air scoops. The installation of flexible ducts shall conform to Figure 3-10, with the exceptions noted herein.

D. Supports
1. Supports for horizontal ducts and plenums shall be fabricated per Figures 5-5 and 5-6 and Tables 5-1, 5-2, and 5-3. The maximum distance between hangers shall be eight feet for rectangular ducts and twelve feet for round ducts. Attachments to the structure shall be made with adequately sized lag bolts for straphangers and adequately sized machine bolts and side beam brackets for rod hangers. Supports for vertical ducts shall be band iron strap or angle bracket type per Figure 5-8 and 5-9.

E. Specialties:
1. Duct Access Doors: Including those for removing filters, duct access doors shall be as detailed in Figure 7-2 with sash locks, piano hinges, and gaskets. Access doors shall have an unobstructed full swing.

## 2.6 DUCTWORK ACCESSORIES

A. Flexible Duct Connections
1. Duro-Dyne “Metal-Fab” with Duroion, Ventfabrics “Ventglass,” or approved equal.
2. Install at each point where a blower unit is connected to a duct. A minimum clearance of three inches between the duct and the source of vibration shall be maintained. Install per Figure 2-17.

B. Screens
1. Install removable bird screens at all outside intakes and exhaust air discharges. Screens shall be fabricated from ½" x 14 gauge mesh secured in full frames. Screens and frames shall be constructed of the same material as the duct, hood, or equipment to which attached.

C. Joints
1. Tape all joints airtight using Hardcast type "DT" pressureless tape and "HD-20" adhesive, per manufacturer's directions.

D. Dampers
1. Provide butterfly or multi-blade dampers where indicated on the Drawings or as required for balancing air quantities to values shown without generating excessive noise. Provide Duro-Dyne "KS-385," or approved equal, locking quadrants on each manual damper. Locate dampers in furred ceilings near access panels where possible.
   a. Butterfly dampers shall be constructed as per Figure 7-4, Figure A, B, and C in the duct manual.
   b. Multi-blade dampers shall conform to Figure 7-5.
   c. Back-draft dampers shall be Air Balance "Air Dynamic" model DY-1002-V, or equal.
   d. Add fire damps and duct detectors at air handlers units over 2000 CFM

## 2.7 INSULATION

A. Exterior of Ductwork:
1. Unless specified to be lined, all sheet metal supply and return ducts in indirectly conditioned spaces shall be insulated on the outside with Johns Manville "Microlite XG" flexible fiberglass blanket-type duct wrap, with factory applied FSK aluminum foil facing, with a composite UL rating of 25/50, 2" thick, minimum R-6 installed.
2. Unless specified to be lined, all sheet metal supply and return ducts in unconditioned spaces shall be insulated on the outside with Johns Manville "Microlite XG" flexible fiberglass blanket-type duct wrap, with factory applied FSK aluminum foil facing, with a composite UL rating of 25/50, 3" thick, minimum R-8 installed.
3. All outside air ductwork between building outside air inlet and HVAC unit shall be insulated on the outside with Johns Manville "Microlite XG" flexible fiberglass blanket-type duct wrap, with factory applied FSK aluminum foil facing, with a composite UL rating of 25/50, 1-1/2" thick, minimum R-4 installed.
4. Exhaust ductwork within 10 feet of termination point shall be insulated on the outside with Johns Manville "Microlite XG" flexible fiberglass blanket-type duct wrap, with factory applied FSK aluminum foil facing, with a composite UL rating of 25/50, 1-1/2" thick, minimum R-4 installed.

B. Interior of Ductwork:
1. Duct lining shall be installed in supply and return ducts and plenums where noted on the Drawings. Lining shall be Johns Manville "PermacoteLinacoustic R" rigid fiberglass board for plenums and "PermacoteLinacoustic HP" fiberglass duct liner for ducts, 1" thick, unless otherwise noted, with fire resistant coating. Duct liner shall meet ASTM C 1071, with air surface coated with acrylic coating treated with EPA registered anti-microbial agent prove to resist microbial growth as determined by ASTM G 21 and G 22. Insulation with torn or broken coating shall be removed and replaced. Loose corners, edges, and butt joints will not be accepted.
2. All exposed exterior supply and return ductwork shall have minimum 2" interior insulation, as specified in this section.
3. Maximum velocity: 5,000 ft/min.
4. Fasteners: duct liner galvanized steel pins, welded or mechanically fastened.
5. Developed smoke density shall not exceed 50. Flame spread rating shall not exceed 25.

## 2.8 REFRIGERATION PIPING AND APPURTENANCES

A. Refrigerant piping shall be Type “ACR” de-oxidized hard temper copper tube, ASTM B280.

B. Mechanical joints on refrigerant piping systems are prohibited. All refrigerant piping joints shall be brazed. Use lead-free, silver solder, minimum 15% silver content.

C. Pipe fittings shall be wrought-copper with soldered joints, ASME B16.22.

D. Flexible connections shall be bronze, double braided, sweat solder ends.

E. Moisture/liquid indicators (sight glasses) shall be color change moisture indication type, replaceable element, filter screen and pad, sweat solder ends; Sporlan “See-All”, Henry, or equal.

F. Charging and purge valves shall be forged brass, diaphragm packless, globe type, angle or straight through, one end solder, one end flare; Henry 623 and 643 series, Sporlan or equal.

G. Solenoid valves shall be forged brass, extended end connections, solder ends, molded coil; Sporlan “E” series or equal. Comply with ARI 760 & UL 429.

H. Filter driers shall be replaceable media, angle type; Henry “Dri-Cor” or equal; ARI 730.

I. Thermsotatic expansion valves shall have forged brass body, stainless steel seats and pins, ODF solder connections, external equalizer,; ARI 750.

J. Outdoor condensing units shall have a flexible piping section at the outdoor unit.

K. Refrigerant piping between the outdoor unit and the individual fan coil (split system) or branch selector box (VRF system) shall be Type “ACR” de-oxidized hard temper copper tube, ASTM B280.

L. Refrigerant piping (exposed) between the indoor branch selector boxes and the individual fan coil in exposed areas shall be Type “ACR” de-oxidized hard temper copper tube, ASTM B280.

M. Refrigerant Piping shall be insulated with 1” wall thickness “Armacell AP Armaflex” black flexible closed-cell elastomeric thermal insulation in tubular form with self-seal system reinforced with lap seal tape.

N. Refrigerant piping (concealed) between the indoor branch selector boxes and the individual air handling units may be pre-insulated line sets, IsoClima or equal. Pre-insulated with expanded polyethylene sheath, closed cell with external LDPE foil. Piping shall be crimped closed for safety. Tested in accordance with UL94 for Surface Burning Characteristics, UL723A for Flame/Smoke Index and UL746A for Ignition Resistance. Copper shall be ASTM B280 approved.

## 2.9 REGISTERS, GRILLES, AND DIFFUSERS

A. Air terminals shall be Titus, equivalent Nailor, or approved equal, as scheduled on the Drawings.

B. All terminals shall be steel and shall be factory painted “off-white,” unless otherwise noted. Air terminals for installation in gypsum board shall have a 1” border for surface mounting.

### 2.10 ACCESS PANELS

A. Where construction is not inherently accessible, provide adequately sized and conveniently located access doors in ceilings, walls, and furring for servicing valves, equipment, etc. Doors shall be delivered to the General Contractor for installation.

B. Fire Rated: Inryco/Milcor, U.L. listed, “B” label, 1 ½ hour rating. Minimum size shall be 12” x 12”. Provide larger sizes where required. Locks shall be flush screwdriver operated.

C. Drywalled Surfaces: Inryco/Milcor, Style DW, prime coated steel. Minimum size shall be 12” x 12”. Provide larger sizes where required. Locks shall be flush screwdriver operated.

D. Concrete and Tiled Surfaces: Inryco/Milcor, Style M, prime coated steel, except access panels installed in tiled surfaces shall be stain finish stainless steel. Minimum size shall be 12” x 12”. Provide larger sizes where required. Locks shall be flush screwdriver operated.

E. Plastered Surfaces: Inryco/Milcor, Style K, prime coated steel. Minimum size shall be 12” x 12”. Provide larger sizes where required. Locks shall be flush screwdriver operated.

## PART 3 EXECUTION

### 3.1 INSTALLATION, GENERAL

A. Provide all necessary cutting in connection with the work of the Section. No cutting shall be done without the approval of the Architect. Comply with requirements specified in Cutting and Patching Section.

B. No structural members shall be drilled, bored, or notched in a manner that will impair their structural capacity.

C. All penetrations of concrete or masonry shall be made with core drills.

### 3.2 EQUIPMENT STARTUP

A. Notify the Owner’s representative a minimum of two weeks prior to equipment startup date to allow for Owner’s personnel to be present during startup.

B. Manufacturer must provide a service technician to supervise rigging of the units to ensure proper fit.

C. Unit must be checked out, tested and placed into operation by the installing contractor under the supervision of an authorized representative of the factory.

D. Controls contractor must be present during startup to ensure that factory-installed controls have been adequately installed, wired, and integrated into the building managements system.

E. Provide minimum eight (8) hours of training time with Owner’s maintenance personnel to thoroughly review new equipment, maintenance requirements, and equipment controls.

F. During startup, the full functionality of the equipment shall be demonstrated to the satisfaction of the Owner's representative, including heating, mechanical cooling, economizer cooling, zone modulation, and all emergency shutdown features.

## 3.3 EQUIPMENT, GENERAL REQUIREMENTS

A. Equipment shall operate quietly and without objectionable vibration. Such problems, other than from equipment operating at optimum conditions, shall be the Contractor's responsibility and shall be eliminated at the direction of the Architect.

B. Install equipment to provide good appearance, easy access, and adequate space to allow replacement and maintenance. Provide bases, supports, anchor bolts, and other items required to achieve this. Installation shall be level, above moisture level, and adequately braced.

C. Thoroughly lubricate equipment before operating. Repair of damage resulting from failure to comply with this requirement shall be the Contractor's responsibility.

D. Connections to piping shall be secured and properly aligned and all utility and control connections shall be properly isolated from the building structure by means of vibration isolators and flexible connections. Any equipment not meeting this requirement will be modified and reinstalled at no expense to the Owner.

E. Move equipment into building through available openings. Dismantle equipment where necessary to accomplish this. After reassembly, test equipment to verify its satisfactory operating condition.

## 3.4 DUCTWORK

A. All ductwork shall be installed within spaces provided where possible. Ducts shall be installed true to line and grade, fully secured to structural faming with specified hangers and supports, insulated, and vibration isolated, where required.

B. Each section of supply air ductwork shall be cleaned at the shop, dust and oil free, using a degreasing agent and detergent and sealed airtight at both ends with visqueen and tape. Supply ducts shall be additionally cleaned with a disinfecting solution. Ends of all supply and internally insulated exhaust dusts shall be kept sealed until the time they are jointed. When duct sections are joined, wipe down all interior surfaces with a clean tack cloth. If tack cloth shows any dust, then re-clean duct as described above. The intent is that no foreign matter be allowed to enter the ductwork at any time after factory cleaning and during construction.

## 3.5 CONTROLS

A. This Contractor shall provide all required control components, including but not limited to thermostats, temperature sensors, static pressure sensors, humidity sensors, damper actuators, valve actuators, unitary controllers, relays, and low-voltage wiring, such that the Owner is provided with a fully functional control system.

B. Where work is performed in an existing building, this Contractor shall integrate all control modifications into the existing building control system, if applicable. Specific requirements shall be coordinated with Owner and approved by Architect prior to installation.

C. Installation of the system shall be made under the supervision of the manufacturer of the equipment, or his factory authorized representative.

D. In addition to the submittals required above, and those set forth in “Submittals,” the following items shall be furnished.
   1. In an existing building, this Contractor shall furnish a document that describes the proposed materials methods for integration into the existing building management system, if applicable.
   2. Prior to final inspection, the system contractor shall furnish a letter stating that the entire control system and all interlock wiring is installed and operating in a satisfactory manner.

## 3.6 INSULATION

A. Exterior Ductwork:
   1. The insulation shall be cut longer than the perimeter of the duct to provide 2” staple lap and minimum compression at the corners. All joints shall be lapped 2’ and stapled with outward clinching staples 2” on center. The insulation shall be mechanically fastened to the underside of all ducts 24” wide or more using cup-head pins, weld pins, or stick pins with speed clips 18” on center. All joints and penetrations of the vapor barrier jacket shall be sealed with a minimum 3” wide matching pressure sensitive tape. Pressure-sensitive tape shall be firmly rubbed in place immediately after application using a “squeegee” type tool.
   2. When a vapor seal is required, two coats of vapor retarder mastic reinforced with one layer of 4” wide, open weave glass fabric may be used in lieu of pressure-sensitive tape. Mastic shall be brushed onto joint and glass fabric until the fabric is filled. Mastics shall be applied in accordance with application instructions on the container.

B. Interior Duct Liner
   1. Apply to the inside face of ducts, coated side facing air stream, fasten using fire retardant adhesive meeting ASTM C 9169, and secure with mechanical liner fasteners at 24” maximum o.c., both directions. Pin length should be such as to limit compression of liner.
   2. Exposed edges must be factory or field coated. For systems operating at 4000 fpm or higher, a metal nosing must be installed on all liner leading edges. Insulation with torn or broken coatings shall be removed or replaced. Loose corners, edges, and butt joints will not be accepted.

C. Refrigerant Piping
   1. The insulation shall be installed in accordance with the manufacturer’s instructions. All joints and seams shall be sealed with waterproof vapor retardant adhesive. All pipes exposed to the weather shall be coated with aluminum jacketing to protect the insulation from ultra-violet radiation in accordance with the manufacturer’s published instructions.

## 3.7 REFRIGERANT PIPING

A. Piping shall be continuously purged with dry nitrogen while soldering. Care shall be taken when soldering near valves or other equipment that may be damaged by extreme heat.

B. Refrigerant piping shall be tested for leaks under 500 psig pressure using an inert gas such as dry nitrogen. Joints shall be tested for leaks using soapsuds. (WARNING! OXYGEN OR ACETYLENE SHALL NOT BE USED IN PLACE OF DRY NITROGEN. A VIOLENT EXPLOSION MAY RESULT!). Be sure that all controls, relief valves, or rupture discs that could be damaged by test pressure are removed before beginning pressure test.

C. Pressure and leak tests on refrigerant piping and equipment shall be done in accordance with local code requirements and the American Standard Safety Code for Mechanical Refrigeration (ASA B9.1).

D. Pressure Testing Requirements:
   1. A three-step pressure test shall be performed per the following:
      a. Step 1 – Leak check at 149 psi for a minimum of 3 minutes.
      b. Step 2- Leak check at 312 psi for a minimum of 5 minutes.
      c. Step 3 – Leak check at 550 psi for a minimum of 24 hours.

E. Evacuation Requirements:
   1. The contractor shall notify the Architect 48 hours prior to the time and date of the evacuation.
   2. A vacuum pump specifically designed for use with R-410A shall be used to triple-evacuate the system per the following procedure:
      a. Step 1 – Evacuate the system to 29” mercury and maintain for 20 minutes.
      b. Step 2 – Break vacuum with dry nitrogen to a pressure of 2-3 psi and maintain for 15 minutes.
      c. Step 3 – Evacuate the system to 29” mercury and maintain for 20 minutes.
      d. Step 4 – Break vacuum with dry nitrogen to a pressure of 2-3 psi and maintain for 15 minutes.
      e. Step 5 - Evacuate the system to 29” mercury and maintain for 20 minutes.

F. The refrigerant charge shall be calculated and weighed into the system.

G. After charging with refrigerant, all joints shall be tested with an electric halide leak detector. Precautions should be taken to keep moisture out of the system, and a drier shall be used.

H. Service technicians shall be certified in the use of CFC and HCFC refrigerant recovery and recycling equipment and he/she shall use UL listed and labeled recovery equipment when discharging refrigerant.

## 3.8 TEST, INSPECTIONS

A. Make all necessary control adjustments and balancing of air and water flows. Operate the entire system for a period of time not less than three (3) working days for the purpose of proving satisfactory performance. During this period, instruct such persons as the Owner and/or Architect may designate in the proper operation of the systems. Should further adjustment prove necessary, operating tests shall be repeated until a satisfactory test is obtained.

B. This Contractor shall not allow or cause any work of this Section to be covered or enclosed until it has been inspected, tested, and approved by the Architect and the authorities having jurisdiction over the work. Should any of this work be enclosed or covered up before such inspection, testing, and approval, this Contractor shall uncover the work, have the necessary inspections, tests, and approvals made and, at no expense to the Owner, make all repairs necessary to restore both his work and that of other contractors which may have been damaged to be in conformity with the Contract Documents.

## 3.9 CLEANUP

A. Upon completion of the work of this Section, remove all material, debris, and equipment associated with or used in the performance of this work.

**END OF SECTION**

## PART 1 GENERAL

### 1.1 SCOPE

A. Provide all supervision, personnel, instruments, calibration, equipment, and all other materials necessary to perform balancing and testing, and compile test data including calculations and services necessary for the heating, ventilating, and air conditioning systems for this project, all in accordance with the project Drawings and Specifications and as specified herein.

### 1.2 GENERAL

A. Mechanical Contractor will employ a Testing, Adjusting, and Balancing (TAB) Agency that is certified by Associated Air Balancing Council (AABC), National Environmental Balancing Bureau (NEBB), or Testing, Adjusting, and Balancing Bureau (TABB).

B. The TAB Agency shall be responsible for inspecting, balancing, adjusting, testing, and logging the data of the performance of fans, all dampers in the duct systems, all air distribution devices, and the flows of water through all coils.

C. Existing equipment, unless specifically mentioned otherwise, shall not in the scope of the TAB work.

D. A completely operable system shall be placed into operation each day during testing and balancing.

E. The TAB Agency shall utilize instrumentation which meets the requirements of ASHRAE 111, Section 5, “Instrumentation”.

F. The Mechanical Contractor shall be responsible for certifying in writing that the system, as scheduled for balancing, is operational and complete. Completeness shall include not only the physical installation, but the Mechanical Contractor’s certification that the prime movers are installed in good working order, and that full load performance has been preliminary tested under the certification of the Mechanical Contractor. Before any testing and balancing is started, a complete report shall be sent to the TAB Agency by the Mechanical Contractor.

G. The Mechanical Contractor shall be responsible for making all modifications to recertify discrepancies reported by the TAB Contractor as indicating non-compliance with the Contract Documents. By completing the work on time, the Mechanical Contractor shall provide sufficient time before the completion date so that balancing can be accomplished.

H. If construction deficiencies are encountered which preclude obtaining optimum conditions, the deficiencies will be recorded and given to the Owner’s representative. The TAB Agency is advised that deficiencies in the HVAC construction are often encountered during final TAB services, and should include in the bid an amount deemed advisable to compensate for time in identifying the deficiencies.

### 1.3 SERVICES

A. The TAB Agency will balance, test, and adjust the systemic components to obtain optimum conditions in each conditioned space in the building. If construction deficiencies are encountered which preclude obtaining optimum conditions, the deficiencies will be recorded and given to the Owner’s representative. The TAB Agency is advised that deficiencies in the HVAC construction are often encountered during final TAB services, and should include in the bid an amount deemed advisable to compensate for time in identifying the deficiencies.

B. The report shall be complete with logs, data, and records as required herein and all logs, data, and records shall be typed, produced, on white bond paper, and bound. Transmit four copies directly to the Owner's Representative to be distributed to the Mechanical Contractor, Controls Contractor, Engineer, and record file.

C. The report shall contain the following general data in a format selected by the TAB Agency for clarity and ease of reference.
   1. Project Title.
   2. Project Location.
   3. Project Architect (Firm name and address).
   4. Project Mechanical Engineer (Name).
   5. TAB Field Test Engineer (Name).
   6. TAB Agency (Firm name and address).
   7. Inclusive dates tests were performed and date of report.
   8. Calibration Certificates of each instrument used along with specific ID numbers (i.e., serial numbers).

## 1.4 SUBMITTALS

A. Submittal No. 15950 (1) – TAB Agenda
   1. The TAB Contractor shall submit a complete agenda, which shall outline in full the testing methods and locations for each HVAC system and/or device that is within the scope of the TAB work. The agenda shall represent the total system balance report, less field test data. Areas of intended field test inputs shall be represented by fully labeled blank spaces.
   2. The TAB Agenda shall also indicate the proposed test methods, instrumentation devices and all applicable calibration certificates.

B. Submittal No 15950 (2) – TAB Report
   1. Provide Test and Balance Report as indicated herein.

## 1.5 AIR SYSTEMS REQUIREMENTS

A. In addition to the above data in its appropriate format, the Test and Balance Report shall include the following data:
   1. Furnaces
      a. Manufacturer and model.
      b. Size.
      c. Motor hp, voltage, phase, cycles, full load amps.
      d. Location and local identification data.
      e. Identification tag listed in schedules on drawings and specifications.
      f. Supply airflow (cfm) and exhaust airflow (cfm), where applicable.
      g. Supply airflow (cfm) at each fan speed setting. See controls sequence.
      h. Fan RPM.
      i. Motor current readings at each fan.
      j. Inlet and outlet static pressure from supply fan and exhaust fan (if applicable). These readings shall be related to the fan curve.
      k. Static pressure differential across each coil and filter section.
      l. Entering air and leaving air temperatures (DB/WB) in 100% cooling mode.
      m. Entering air and leaving air temperatures (DB) in 100% heating mode.
      n. Outdoor air percentage setting.
      o. Outdoor airflow in economizer mode.
      p. Outdoor airflow in demand control ventilation mode (if applicable).
   2. Exhaust Fans
      a. Manufacturer and model.

b. Size.
c. Motor hp, voltage, phase, cycles, full load amps.
d. Location and local identification data.
e. Identification tag listed in schedules on drawings and specifications.
f. Exhaust airflow (cfm).
g. Fan RPM.
h. Motor current readings at each fan.

## PART 2 – PRODUCTS (not used)

## PART 3 – EXECUTION

### 3.1 GENERAL PROCEDURES

A. During the balancing, the temperature regulation shall be adjusted for proper relationship between controlling instruments and calibrated. The correctness of the final setting shall be proved by taking hourly readings for a period of one successive 8-hour day, in a typical room on each separately controlled zone, after tenant moves in. The total variation shall not exceed 2 degrees from the preset medium temperature during the temperature survey period. (This will be done only on systems that are totally operational).

### 3.2 AIR SYSTEMS PROCEDURES

A. The TAB Agency shall perform the following tests and balance the air systems in accordance with the following requirements:
1. Test and adjust blower and motor rpm to design requirements.
2. Test and record motor full load amperes and corresponding voltage.
3. Make pitot tube traverse of main supply ducts and obtain design cfm at fans.
4. Test and record system static pressures, suction and discharge.
5. Test and adjust system for design cfm of outside air.
6. Test and record entering and leaving air dry bulb temperatures of all heating and cooling coils.
7. Test and record entering and leaving wet bulb temperatures of all cooling coils.
8. Adjust all main supply and return air ducts to proper design cfm. System supply airflow, system return airflow, and system outdoor airflow shall be balanced to within 5% of the design requirement.
9. Adjust all zones to proper design cfm, supply and return.
10. Test and adjust each diffuser, grille, and register to within 10% of design requirement.
11. Each grille, diffuser, and register shall be identified as to location and area.
12. Size, type, and manufacturer of diffusers, grilles, registers, and all tested equipment shall be identified and listed. Manufacturer’s ratings on all equipment shall be used to make required calculations.
13. Readings and test of diffusers, grilles, and registers shall include required fpm velocity and test resultant velocity, required cfm and test resultant cfm after adjustments.
14. TAB Agency shall check all controls to ensure they are operating as specified. Provide the control contractor with specific set points.

### 3.3 TEMPERATURE CONTROL SYSTEM

A. In the progress of performing the TAB work, the TAB Agency shall:
1. Work with the Controls Contractor to ensure the most effective total system operation within the design limitations, and to obtain mutual understanding of intended control performance.
2. Verify that all control devices are properly connected.
3. Verify that all dampers, valves, and other controlled devices are operated by the intended controller.

4. Verify that all dampers and valves are in the position indicated by the controller (open, closed, or modulating).
5. Verify that the integrity of valves and dampers in terms of tightness of close-off and full-open position. This includes dampers in multi-zone units.
6. Check that all valves are properly installed in the piping system in relation to direction of flow and location.
7. Verify the calibration of all controllers.
8. Verify the proper application of all normally open and normally closed valves.
9. Check the locations of all thermostats and humidistats for potential erratic operation from outside influences such as sunlight, drafts, or cold walls.
10. Check the locations of all sensors to determine whether their position will allow them to sense only the intended temperatures or pressures of the media. Controls Contractor will relocate as deemed necessary by the TAB Agency.
11. Check the sequence of operation for any control mode is in accordance with approved shop drawings. Verify that only minimum simultaneous heating and cooling occurs. Observe that heating cannot take place until the cooling zone of valve is completely closed.
12. Verify that all controller set points meet the design intent.
13. Check all dampers for free travel.
14. Verify the operation of all interlock systems.
15. Perform all system verification to assure the safety of the system and its components.

B. A systematic check of the above requirements shall be included in the final TAB report.

## 3.4 DUCT LEAKAGE TEST

A. All supply, return, exhaust, and outside air ductwork shall be tested for leaks, using necessary instruments before insulating any ductwork.

B. Ductwork shall be leak-tested in accordance with SMACNA HVAC Air Duct Leakage Test Manual. Representative sections totaling not less than 10 percent of the total installed duct area shall be tested. Where the tested 10 percent fails to comply with the requirements of this section, then 40 percent of the total installed duct area shall be tested. Where the tested 40 percent fails to comply with the requirements of this section, then 100 percent of the total installed duct area shall be tested.

C. The maximum permitted leakage shall be determined in accordance with CMC 603.9.2.

D. The test and balance report shall include the results of the duct leakage test for the engineer's review.

## 3.5 TEST AND BALANCE REPORT

A. The report shall contain the following data:
1. A listing of the measured air quantities at each outlet corresponding to the temperature tabulation specified above.
2. Air quantities at each return and exhaust air handling device (only if ducted return systems).
3. Static pressure readings entering and leaving each supply, return and exhaust fan, filter, and coil of the system. These readings shall be related to fan curves in terms of cfm handled.
4. Water pressure readings at gauge connections. Pressure readings at coils and pumps shall be related to coils and pump curves in terms of gpm handled.
5. Motor current readings at each fan and pump. The voltages at the time of the readings shall be listed.

## 3.6 FINAL ACCEPTANCE

A. At the time of final inspection, the Balancing Agency shall recheck, in the presence of the Owner's Representative, specific and random selections of data, i.e., water and air quantities, recorded in the Certified Report.

B. Points and areas for recheck shall be selected by the Owner's Representative.

C. Measurement and test procedures shall be the same as approved for work forming basis of Certified Report.

D. Selections for recheck, specific plus random, will not normally exceed 25% of the total number tabulated in the report, except that special air systems may require a complete recheck for safety reasons.

E. If random tests elicit a measured flow deviation of 10% or more from that recorded in the Certified Report on 10% or more of the selected recheck stations, the report shall be automatically rejected. In the event the report is rejected, all systems shall be readjusted and tested, new data recorded, new Certified Report submitted, and new inspection tests made, all at no additional cost to the Owner.

F. Following final acceptance of the Certified Report by the Owner's Representative, the settings of all valves, splitter, dampers, and other adjustment devices shall be permanently marked by the TAB Agency, so that adjustment can be restored if disturbed at any time. Devices shall not be marked until after final acceptance.

**END OF SECTION**

## PART 1 GENERAL

### 1.1 WORK INCLUDED

A. Furnish all labor, materials, equipment, and service necessary to modify the existing energy management system (EMS) for a complete and operative new EMS system, utilizing Direct Digital electronic controls as shown on the Drawings and as specified herein.

B. All labor, material, equipment, and software necessary to meet the listed functions of the EMS as specified herein and as shown on the Drawings shall be included.

C. Refer to Section 26 for power wiring to line voltage devices.

D. Control wiring, except for power wiring, necessary for temperature control systems is covered in this Section.

### 1.2 RELATED WORK SPECIFIED ELSEWHERE

A. Section 26 – Electrical

### 1.3 SUBMITTALS REQUIRED FOR THIS SECTION

A. Submittal requirements are set forth in Section 26, ELECTRICAL.

B. The requirements covered in this Section are in addition to requirements of Section 26.

C. Submittals shall be configured to meet or exceed the requirements of both sections.

D. Submittal packages shall be assembled as listed below:
1. Initial submittal.
2. Testing submittals.
3. Operation and maintenance manuals.

E. Initial Submittal:
1. Prior to fabricating or shipping any material, submit the following information and documentation. This package shall be stand-alone and shall be suitable for forwarding by the Contractor to the Fire Marshal following approval by the Engineer. Include the following:
   a. Table of contents.
   b. Description of project. Include location/address; Owner's name and telephone number; and contractor's name, address, and telephone number.
   c. Complete components list showing quantities, descriptions, manufacturers, model numbers, and chose options.
   d. Manufacturer's specification sheets on all equipment.
   e. Building floor plan(s) showing all devices, zoning, and room identification.
   f. Interconnection diagram which shows all components and interconnecting wire and conduit, including links to Local Area etworks and telephone connections. If the submitted configuration departs from the conduit and wire layout on the Plans, review of the configuration shall not obligate the Owner to additional costs.
   g. Point-to-point wiring diagram for all items within panel(s).
   h. Panel layout drawings.
   i. Symbol legend for devices shown on submitted Drawings.
   j. Identification of type of wiring used.
   k. Details on support and anchorage of equipment.
   l. Details on installation of temperature control devices.
   m. Detailed Drawing(s) showing conduit penetrations of fire walls, if any.

n. Manufacturer's installation instructions.

F. Testing Submittals:
1. Testing submittals are required, as specified later in this Section.

G. Operation and Maintenance Manuals
1. Operation and Maintenance Manual submittals are required, as specified later in this Section.

H. Should any item be included which deviates from these Specifications, the deviation shall be clearly indicated and explained at the time of submittal.

I. Submittals shall be complete, neat, orderly, and indexed. The Contractor shall check submittals for number of copies, adequate identification, correctness, and compliance with the Drawings and Specifications, and shall initial all copies.

J. Revise and resubmit all submittal information until acceptable to the Engineer.

## 1.4 STARTUP, OPERATING, AND MAINTENANCE SERVICE

A. The manufacturer's field services representative shall furnish technical direction as required to ensure proper startup, operation, and maintenance of the equipment.

B. Operation and maintenance training of the Owner's staff shall be provided. Not less than 4 hours of training shall be provided at times convenient to the Owner.

## 1.5 SPARE PARTS

A. Provide the following spare equipment:
1. Ten fuses of each type used.

## 1.6 OPERATION AND MAINTENANCE MANUALS

A. Operation and maintenance manuals shall meet the requirements of Section 26, in addition to the requirements below:
1. Provide five copies of operation and maintenance manuals. Including the following:
a. Corrected submittals as required herein.
b. Record (as-built) wiring diagrams and equipment drawings.
c. For all equipment suppliers, list of current names, addresses, telephone numbers of those who should be contacted for service, information, and assistance.
d. Record (as-built) Contract Drawings marked with red pencil to show work revisions and also raceway and cable where different from the original Drawings. Prepare by obtaining new, clean sets of Contract Drawings from the Engineer, and pay all costs for same. Each manual set shall have original red pencil marks (not copies).
e. Test reports.

B. Material shall be clean and filed under dividers with headings in accordance with the specification item title.

## 1.7 WARRANTY

A. The work and materials covered in this Section shall be guaranteed for a period of 1 year from the date of acceptance thereof against defective material, design, and workmanship.

## PART 2 PRODUCTS

### 2.1 SYSTEM, GENERAL

A. All components used shall be serviceable, repairable, and replaceable by qualified temperature control technicians using nonproprietary parts, tools, and instruments.

### 2.2 TEMPERATURE CONTROL MATERIAL

A. Electric Damper Actuators
1. Electric damper actuators shall be gear or hydraulic type as scheduled.
2. Actuators shall be properly sized to provide sufficient torque to position the damper throughout its operating range.
3. Spring return actuators shall be used with outside air and relief air dampers.

B. Motorized Control Dampers
1. Motorized control dampers shall be parallel blade for two-position control and opposed blade for proportional control applications.
2. Dampers shall be black enamel finish, galvanized, with nylon bearings.
3. Blade edge and tip seals shall be included for all dampers.
4. Blades shall be 16 gauge, minimum, and 10 inches wide, maximum the frame shall be welded channel iron.
5. Dampers with both dimensions under 18 inches may have strap iron frames.

C. Temperature Control Panels (TCP)
1. Furnish NEMA 1 (interior) or NEMA 4 (exterior) temperature control panel of code gauge steel, with locking doors, for mounting and devices as shown.
2. They shall meet all applicable requirements of Title 24, California Administrative Code.
3. All controllers, relays, switches, etc., for equipment located in mechanical equipment rooms shall be mounted in a TCP, as shown on the Drawings.
4. Temperature settings, adjustments, and calibration shall be done at the TCP.
5. All electric devices within a control panel shall be factory wired.
6. Provide engraved, laminated plastic nameplates identifying all devices mounted on the face of the control panel.
7. A complete set of related “as-built” control drawings shall be furnished in each control panel.

D. Electronic Thermometers
1. Shall have 2 percent accuracy and 1 ½ degrees repeatability.
2. Shall be mounted on the temperature control panels as shown on the temperature control diagrams.

### 2.3 GENERAL PRODUCT DESCRIPTION

A. The energy management system shall be capable of integrating multiple building functions, including equipment supervision and control, alarm management, energy management, and historical data collection and archiving.

B. The energy management system shall consist of the following:
1. Stand-along DDC panels.
2. Stand-alone application-specific controllers (ASCs).
3. Portable operator’s terminals.

C. The system shall be modular in nature and shall permit expansion of both capacity and functionality through the addition of sensors, actuators, stand-along DDC panels, and operator devices.

D. System architectural design eliminates dependence upon any single device for alarm reporting and control execution.

E. Each DDC panel shall operate independently by performing its own specified control, alarm management, operator I/O, and historical data collection.

F. The failure of any single component or network connection shall not interrupt the execution of control strategies at other operational devices.

G. Stand-alone DDC panels shall be able to access any data from or send control commands and alarm reports directly to any other DDC panel or combination of panels on the network without dependence upon a central processing device.

H. Stand-alone DDC panels shall also be able to send alarm reports to multiple-operator workstations without dependence upon a central processing device.

## 2.4 NETWORKING/COMMUNICATIONS

A. The design of the EMS network operator workstations and stand-alone DDC panels, as shown on the Drawings.

B. Inherent in the system's design shall be the ability to expand or modify the network.

C. Local Area Network:
1. Workstation DDC Panel Support
   a. DDC panels shall directly reside on a local area network such that communications may be executed directly between controllers, directly between workstations, and between controllers and workstations on a peer-to-peer basis.
2. Dynamic Data Access
   a. All operator devices, either network resident or connected via dial-up modems, shall have the ability to access all point status and application report data or execute control functions for any and all other devices via the local area network.
   b. Access to data shall be based upon logical identification of building equipment.
   c. Access to system data shall not be restricted by the hardware configuration of the energy management system.
   d. The hardware configuration of the EMS network shall be totally transparent to the user when accessing data or developing control programs.
3. General network design shall include the following provisions:
   a. High-speed data transfer rates for alarm reporting, quick report generation from multiple controllers, and upload/download efficiency between network devices. The minimum baud rate shall be 2.5 megabaud.
   b. Support of any combination of controllers and operator workstations directly connected to the local area network. A minimum of 50 devices shall be supported on a single local area network.
   c. Detection and accommodation of single or multiple failures of either workstations, DDC panels, or the network media. The network shall include provisions for automatically reconfiguring itself to allow all operational equipment to perform their designated functions as effectively as possible in the event of single or multiple failures.
   d. Message and alarm buffering to prevent information from being lost.
   e. Error detection, correction, and retransmission to guarantee data integrity.
   f. Default device definition to prevent loss of alarms or data, and ensure alarms are reported as quickly as possible in the event an operator device does not respond.
   g. Commonly available, multiple-sourced networking components and protocols shall be used to allow the EMS to coexist with other networking applications, such as

office automation. MAP, ETHERNET, IBM Token Ring, and ARCNET are acceptable technologies.

h. Use of an industry standard IEEE 802.x protocol. Communications must be of a deterministic nature to ensure calculable performance under worst-case network loading.

i. Synchronization of the real-time clocks in all DDC panels shall be provided.

4. Dial-up Communications

a. Auto-dial/Auto-answer communications shall be provided to allow stand-alone DDC panels to communicate with remote operator stations on an intermittent basis via telephone lines.

b. Dial-up Stand-alone DDC Panels

1) Auto-dial panels shall automatically place calls to workstations to report critical alarms or to upload trend and historical information for archiving.

2) Stand-alone DDC panels shall analyze and prioritize all alarms to minimize the initiation of calls. Noncritical alarms shall be buffered in memory and reported as a group of alarms or until an operator manually requests an upload of all alarms.

3) The auto-dial program shall include provisions for handling busy signals, “no answers,” and incomplete data transfers. Default devices shall be called when communications cannot be established with primary devices.

c. Dial-up Workstations

1) Operators at dail-up workstations shall be able to perform all control functions, all report functions, and all database generation and modification functions as described for workstations connected via the local area network.

2) Routines shall be provided to automatically answer calls and either file or display information sent from remote DDC panels.

3) The fact that communications is taking place with remote control system over telephone lines shall be completely transparent to an operator.

d. Modem Characteristics

1) Dial-up communications shall make use of Hayes compatible 9,600-baud modems and voice-grade telephone lines.

2) Each stand-alone DDC panel may have its own modem, or a group of stand-alone DDC panels may share a modem.

## 2.5 STAND-ALONE DDC PANELS

A. General

1. Stand-alone DDC panels shall be microprocessor-based, multitasking, multiuser, real-time, digital control processors.
2. Each stand-alone DDC panel shall consist of modular hardware, with plug0in enclosed processors, communication controllers, power supplies, and input/output modules.
3. A sufficient number of controllers shall be supplied to fully meet the requirements of this specification and the attached point list.

B. Memory

1. Each DDC panel shall have sufficient memory to support its own operating system and databases, including the following:
   a. Control processes
   b. Energy management applications
   c. Alarm management
   d. Historical/trend data for all points
   e. Maintenance support applications
   f. Custom processes
   g. Operator I/O
   h. Dial-up communications
   i. Manual override monitoring

C. Point Types
1. Each DDC panel shall support the following types of point inputs and outputs:
   a. Digital inputs for status/alarm contacts.
   b. Digital outputs for on/off equipment control.
   c. Analog inputs for temperature, pressure, humidity, flow, and position measurements.
   d. Analog outputs for valve and damper position control, and capacity control of primary equipment.
   e. Pulse inputs for pulsed contact monitoring.

D. Expandability
1. The system shall be modular in nature and shall permit easy expansion through the addition of software applications, workstation hardware, field controllers sensors, and actuators.
2. The system architecture shall support 25 percent expansion capacity of all types of DDC panels and all point types included in the initial installation.

E. Serial Communication Ports
1. Stand –alone DDC panels shall provide at least two RS-232C serial data communication ports for simultaneous operation of multiple-operator I/O devices, such as industry standard printers, laptop workstations, PC workstations, and panel-mounted or portable DDC panel operator's terminals.
2. Stand-alone DDC panels shall allow temporary use of portable devices without interrupting the normal operation of permanently connected modems, printers, or networks terminals.

F. Hardware Override Switches
1. As indicated in the point schedule, the operator shall have the ability to manually override automatic or centrally executed commands at the DDC panel via local, point discrete, onboard hard/off/auto operator override switches for binary control points and gradual switches for analog control-type points.
2. These override switches shall be operable whether the panel is powered or not.

G. Hardware Override Monitoring
1. DDC panels shall monitor the status of position of all overrides.
2. This information shall be included in logs and summaries to inform the operator that automatic control has been inhibited.
3. DDC panels shall also collect override activity information for daily and monthly reports.

H. Local Status Indicator Lamps
1. The DDC panel shall provide status indication for each binary input and output for constant, up-to-date verification of all point conditions, without the need for an operator I/O device.

I. Integrated Online Diagnostics
1. Each DDC panel shall continuously perform self-diagnostics, communication diagnosis, and diagnosis of all subsidiary equipment.
2. The DDC panel shall provide both local and remote annunciation of any detected component failures or repeated failure to establish communication.
3. Indication of the diagnostic results shall be provided at each DDC panel and shall not require the connection of an operator I/O device.

J. Surge and Transient Protection

1. Isolation shall be provided at all network terminations, as well as all field point terminations to suppress induced-voltage transients consistent with IEEE Standard 587-1980.
2. Isolation levels shall be sufficiently high as to allow all signal wiring to be run in the same conduit as high-voltage wiring where acceptable by electrical code.

K. Power Fail Restart
1. In the event of the loss of normal power, there shall be an orderly shutdown of all stand-alone DDC panels to prevent the loss of database or operating system software.
2. Nonvolatile memory shall be incorporated for all critical controller configuration data, and battery backup shall be provided to support the real-time clock and all volatile memory for a minimum of 72 hours.
3. Upon restoration of normal power, the DDC panel shall automatically resume full operation without manual intervention.
4. Should DDC panel memory be lost for any reason, the user shall have the capability of reloading the DDC panel via the local area network via the local RD-232C port or via telephone line dial-in.

## 2.6 SYSTEM SOFTWARE FEATURES

A. General
1. All necessary software to form a complete operating system as described in this specification shall be provided.
2. The software programs specified in this Section shall be provided as an integral part of the DDC panel and shall not be dependent upon any higher-level computer for execution.

B. Control Software Description
1. The DDC panels shall have the ability to perform the following pretested control algorithms:
   a. Two-position control
   b. Proportional control
   c. Proportional, plus integral control
   d. Proportional, integral, plus derivative control
   e. Automatic control loop tuning
2. Equipment Cycling Protection
   a. Control software shall include a provision for limiting the number of times each piece of equipment may by cycled within any 1-hour period.
3. Heavy Equipment Delays
   a. The system shall provide protection against excessive demand situations during startup periods by automatically introducing time delays between successive start commands to heavy electrical loads.
4. Power Fail Motor Restart
   a. Upon the resumption of normal power, the DDC panel shall analyze the status of all controlled equipment, compare it with normal occupancy scheduling, and turn equipment on or off as necessary to resume normal operation.

C. Energy Management Applications
1. DDC panels shall have the ability to perform any or all of the following energy management routines:
   a. Time-of-day scheduling
   b. Calendar-based scheduling
   c. Holiday scheduling
   d. Temporary schedule overrides
   e. Optimal start
   f. Optimal stop

g. Night setback control
h. Enthalpy switchover (economizer)
i. Peak-demand limiting
j. Temperature-compensated load rolling
k. Fan speed/CFM control
l. Heating/cooling interlock
m. Cold deck reset
n. Hot deck reset
o. Hot water reset
p. Chilled water reset
q. Condenser water reset
r. Chiller sequencing
s. All programs shall be executed automatically without the need for operator intervention and shall be flexible enough to allow user customization
t. Programs shall be applied to building equipment as described in the Execution portion of this Specification.

D. Custom Process Programming Capability
1. DDC panels shall be able to execute custom, job-specific processes defined by the user, to automatically perform calculations and special control routines.
2. Process inputs and variables
a. It shall be possible to use any of the following in a custom process:
1) Any system-measured point data or status
2) Any calculated data
3) Any results from other processes
4) User-defined constants
5) Arithmetic functions (+, -, *, /, square root, exp., etc.)
6) Boolean logic operators (and, or exclusive or, etc.)
7) On-delay/off-delay/one-shot timers
3. Process Triggers
a. Custom processes may be triggered based on any combination of the following:
1) Time interval
2) Time of day
3) Date
4) Other processes
5) Time programming
6) Events (e.g., point alarms)
4. Dynamic Data Access
a. A single process shall be able to incorporate measured or calculated data from any and all other DDC panels on the local area network.
b. In addition, a single process shall be able to issue command to points in any and all other DDC panels on the local area network.
5. Advisory/Message Generation
a. Processes shall be able to generate cooperator messages and advisories to operator I/O devices.
b. A process shall be able to directly send a message to a specified device, buffer the information in a follow-up file, or cause the execution of a dial-up connection to a remote device, such as a printer or pager.
6. Custom Process Documentation
a. The custom control programming feature shall be self-documenting.
b. All interrelationships defined by this feature shall be documented via graphic flowcharts and English language descriptions.

E. Alarm Management
1. Alarm management shall be provided to monitor, buffer, and direct alarm reports to operator devices and memory files.

2. Each DDC panel shall perform distributed, independent alarm analysis and filtering to minimize network traffic and prevent alarms from being lost.
3. At no time shall the DDC panel's ability to report alarms be affected by either operator activity at a PC workstation or local I/O device, or communications with other panels on the network.
4. Point Change Report Description
    a. All alarm or point change reports shall include the point's English language description and the time and date of occurrence.
5. Prioritization
    a. The user shall be able to define the specific system reaction for each point.
    b. Alarms shall be prioritized to minimize nuisance reporting and to speed operator response to critical alarms.
    c. A minimum of three priority levels shall be provided.
    d. Each DDC panel shall automatically inhibit the reporting of selected alarms during system shutdown and startup.
    e. Users shall have the ability to manually inhibit alarm reporting for each point.
    f. The user shall also be able to define under which conditions point changes need to be acknowledged by an operator and/or sent to follow-up files for retrieval and analysis at a later date.
6. Report Routing
    a. Alarm reports, messages, and files will be directed to a user-defined list of operator devices or PCs used for archiving alarm information.
    b. Alarms shall also be automatically directed to a default device in the event a primary device is found to be offline.
7. Alarm Messages
    a. In addition to the point's descriptor and the time and date, the user shall be able to print, display, or store a 65-character alarm message to fully describe the alarm condition or to direct operator response.
    b. Each stand-alone DDC panel shall be capable of storing a library of at least 250 alarm messages.
    c. Each message may be assignable to any number of points in the panel.
8. Auto-Dial Alarm Management
    a. In dial-up applications, only critical alarms shall initiate a call to a remote operator device.
    b. In all other cases, call activity shall be minimized by time stamping and saving reports until an operator-scheduled time, a manual request, or until the buffer space is full.
    c. The alarm buffer must store a minimum of 50 alarms.

F. Historical Data and Trend Analysis
1. A variety of historical data collection utilities shall be provided to automatically sample, store, and display system data in all of the following ways:
    a. Continuous Point Histories
        1) Stand-alone DDC panels shall store point history files for all analog and binary inputs and outputs.
        2) The point history routine shall continuously and automatically sample the value of all analog inputs at half-hour intervals.
        3) Samples for all points shall be stored for the past 24 hours to allow the user to immediately analyze equipment performance and all problem-related events for the past day.
        4) Point history files for binary input or output points and analog output points shall include a continuous record of the last 10 status changes or commands for each point.
    b. Control Loop Performance Trends

1) Stand-alone DDC panels shall also provide high-resolution sampling capability with an operator-adjustable resolution of 10 to 300 seconds in 1-second increments for verification of control loop performance.

c. Extended Samper Period Trends
   1) Measured and calculated analog and binary data shall also be assignable to user-definable trends for the purpose of collecting operator-specific performance data over extended periods of time.
   2) Samper intervals of 1 minute to 2 hours, in 1-minute intervals, shall be provided. Each stand-alone DDC panel shall have a dedicated buffer for trend data and shall be capable of storing a minimum of 5,000 data samples.

d. Data Storage and Archiving
   1) Trend data shall be stored at the stand-alone DDC panels and uploaded to hard disk storage when archiving is desired.
   2) Uploads shall occur based upon either user-defined intervals, manual command, or when the trend buffers become full.
   3) All trend data shall be available in disk file form for use in third-party personal computer applications.

G. Runtime Totalization
1. Stand-alone DDC panels shall automatically accumulate and store runtime hours for binary input and output points, as specified in the Execution portion of this Specification.
2. The totalization routine shall have a sampling resolution of 1 minute or less.
3. The user shall have the ability to define a warning limit for runtime totalization.
4. Unique, user-specified messages shall be generated when the limit is reached.

H. Analog/Pulse Totalization
1. Stand-alone DDC panels shall automatically sample, calculate, and store consumption totals on a daily, weekly, or monthly basis for user-selected analog and binary pulse input-type points.
2. Totalization shall provide calculation and storage of accumulations of up to 99,999.9 units (e.g., KWH, gallons, KBTU, tons, etc).
3. The totalization routine shall have a sampling resolution of 1 minute or less.
4. The user shall have the ability to define a warning limit.
5. Unique, user-specified messages shall be generated when the limit is reached.

I. Event Totalization
1. Stand-alone DDC panels shall have the ability to count events, such as the number of times a pump or fan system is cycled on and off.
2. Event totalization shall be performed on a daily, weekly, or monthly basis.
3. The event totalization feature shall be able to store the records associated with a minimum of 9,999.9 events, before reset.
4. The user shall have the ability to define a warning limit.
5. Unique, user-specified messages shall be generated when the limit is reached.

## 2.7 APPLICATIONS-SPECIFIC CONTROLLERS, HVAC APPLICATIONS

A. Each stand-alone DDC controller shall be able to extend its performance and capacity through the use of remote application-specific controllers (ASCs).

B. Each ASC shall operate as a stand-alone controller, capable of performing its specified control responsibilities independently of other controllers in the network.

C. Each ASC shall be a microprocessor-based, multitasking, real-time digital control processor.

D. Each ASC shall have sufficient memory to support its own operating system and database, including the following:
1. Control processes.
2. Energy management applications
3. Operator I/O (portable service terminal)

E. The operator interface to any ASC point data or programs shall be through any network-resident PC workstation or any PC or portable operator's terminal that is connected to any DDC panel in the network.

F. Application-specific controllers shall directly support the temporary use of a portable service terminal.

G. The capabilities of the portable service terminal shall include, but not be limited to, the following:
1. Display temperatures.
2. Display status.
3. Display set points.
4. Display control parameters.
5. Override binary output control.
6. Override analog set points.
7. Modification of gain and offset constants.

H. Power Fail Protection
1. All system set points, proportional bands, control algorithms, and any other programmable parameters shall be stored such that a power failure of any duration does not necessitate reprogramming the controller.

2. Unitary Controllers
   a. Unitary controllers shall support, but not be limited to, the following types of systems to address specific applications described in the Execution portion of this Specification, and for future expansion:
      1) Unit vents (ASHRAE cycle I, II, III, or W)
      2) Heat pumps (air-to-air, water-to-air)
      3) Package rooftops
      4) Fan coils (two-pipe, four-pipe)
   b. Unitary controllers shall support the following types of point inputs and outputs:
      1) Economizer switchover inputs
         a) Dry bulb
         b) Outdoor air enthalpy
         c) Differential temperature
         d) Binary input from a separate controller
      2) Economizer outputs
         a) Integrated analog, with minimum position
         b) Binary output to enable self-contained economizer actuator
         c) Heating and cooling outputs
         d) One to three stages
         e) Analog output, with two-pipe logic
         f) Reversing valve logic for heat pumps
      3) Fan Output
         a) On/off logic control
   c. Unitary controllers shall support the following library of control strategies to address the requirements of the sequences described in the Execution portion of this Specification, and for future expansion:
      1) Daily/weekly schedules
      2) Comfort/occupancy mode

3) Economy mode
   a) Standby mode/economizer available
   b) Unoccupied/economizer not available
   c) Shutdown
   d) Lighting logic interlock to economy mode
4) Temporary override mode
   a) Temporary comfort mode (occupancy-based control)
   b) Boost (occupant warmer/cooler control)

d. Occupancy-Base Standby/Comfort Mode Control
   1) Each unitary controller shall have a provision for occupancy-sensing overrides.
   2) Based upon the contact status of either a manual wall switch or an occupancy-sensing device, the unitary controller shall automatically select either standby or comfort mode to minimize the heating and cooling requirements, while satisfying comfort conditions.

e. Continuous Zone Temperature Histories
   1) Each unitary controller shall automatically and continuously maintain a history of the associated zone temperature to allow users to quickly analyze space comfort and equipment performance for the past 24 hours. A minimum of two samples per hour shall be stored.

f. Alarm Management
   1) Each unitary controller shall perform its own limit and status monitoring and analysis to maximize network performance by reducing unnecessary communications.

## PART 3 EXECUTION

### 3.1 GENERAL

A. Electrical work shall be executed in accordance with section 16000, ELECTRICAL.

B. Work shall be performed in a workmanlike manner by craftsman skilled in the particular trade. Work shall be performed in accordance with the Plans, Specifications, manufacturer's recommendations, and the best practice in the trade. Completed work shall present a neat and finished appearance.

C. Coordinate work with the Owner and the work of other trades to avoid conflicts, errors, delays, and unnecessary interference during construction.

D. All thermostats or temperature sensors in the conditioned space shall have blank locking covers. Furnish cast aluminum guards where shown on the Plans.

E. Identify each item mounted on the face of a control panel with an engraved, phenolic label (1/4 –inch high engraved letters, minimum). Identify each item of control equipment (except room sensors and thermostats) with stamped tape firmly attached to equipment.

F. All control adjustments shall be accessible without use of a ladder.

G. Thermostats or sensors mounted on outside walls shall be mounted on 1-inch minimum thickness rigid fiberglass insulating base (or equal).

H. All thermal sensors in water lines hall be the direct-immersion type, installed through a "direct-immersion fitting" consisting of an isolation valve and Teflon packing.

### 3.2 PROTECTION DURING CONSTRUCTION

A. Throughout the Contract, provide protection for materials and equipment against loss or damage and from the effects of weather.

B. Prior to installation, store items to be installed in indoor locations.

C. Items subject to corrosion under damp conditions and items containing insulation, such as transformers, motors, and controls, shall be stored in indoor, heated, dry locations.

D. Following installation, protect materials, equipment, and insulation from corrosion, physical damage, and moisture.

E. Cap conduit runs during construction with manufactured seals.

F. Keep openings in boxes or equipment closed during construction.

G. Provide temporary heating source for electrical equipment in damp locations or locations subject to condensation, including transformers, motors, and controls, until construction is complete and equipment is energized.

## 3.3 MATERIAL AND EQUIPMENT INSTALLATION

A. Follow the manufacturer's installation recommendations unless otherwise indicated.

B. Follow the Engineer's decision, at no additional cost to the Owner, wherever any conflict arises between the manufacturer's instruction, State, or other codes and regulations, and these Contract Documents.

C. Keep copy of the manufacturer's installation instructions available on the jobsite for review at all times.

D. Install freestanding equipment in accordance with the manufacturer's recommendations. Unless noted otherwise, mount freestanding equipment on a 3 ½ inch concrete pad.

E. Secure motor control centers (MCCs) and other freestanding equipment rigidly to floors to mounting pads with anchor bolts, expansion shields, or other approved means.

F. Grout mounting channels provided with MCCs into the floor or mounting pads, unless the MCCs are firmly anchored with the specified concrete anchors, in which case the channels are not required.

## 3.4 CUTTING AND PATCHING

A. Do not cut or notch any structural member or building surface without specific approval of the Engineer.

B. Where possible, avoid any cutting, channeling, chasing, or drilling of floors, walls, partitions, ceilings, paving, or other surfaces.

C. Use clamps and channel where required for the installation, support, or anchorage of conduit, raceways, or other electrical materials and equipment.

D. Following such work, restore surfaces neatly to new condition using skilled craftsmen of the trades involved, at no additional cost to the Owner.

## 3.5 CLEANING AND TOUCHUP PAINTING

A. Keep the premises free from accumulation of waste material or rubbish.

B. Upon completion of work, remove materials, scraps, and debris from the premises and from the interior and exterior of all devices and equipment.

C. Refinish damaged surfaces to new condition using skilled craftsmen of the trades involved, at no additional cost to the Owner.

## 3.6 INSTALLATION

A. Electrical work
1. All temperature control and interlock wiring shall be plenum-rated cable.
2. Power or interlock wiring shall be run in separate conduit form sensor wiring.
3. Wiring shall conform to the National Electrical Code.
4. All wiring of any nature in connection with temperature control system, regardless of voltage, including temperature control wiring, interlocking, and the like, shall be included in the air conditioning work.

**END OF SECTION**

## PART 1 - GENERAL

### 1.1 INCLUDED

A. This section covers electrical work, complete. Work includes furnishing, installing, calibrating, adjusting, testing, documenting, and starting up equipment in accordance with these Specifications, the accompanying Plans, and the directions of the Engineer.

### 1.2 LICENSES, PERMITS, AND FEES

A. The Contractor shall provide, procure, and pay for all licenses, permits, fees, etc. as required to carry on and complete their work.

### 1.3 CODES AND STANDARDS

A. All work shall be done in code with all applicable local, state, and federal building safety codes, ordinances, and regulations. Additionally, all work shall conform to the latest editions of the following standards:
   1. National Fire Protection Association.
   2. Underwriters Laboratories.
   3. Titles 8, 17, 19, 21, 24 of the California Code of Regulations.
   4. California Electric Code.

B. When the Contract Documents call for materials or construction of a higher standard than is required by the above, the Contract Document requirements shall take precedence over the requirements of the applicable laws, ordinances, rules, or regulations. Nothing in the Contract Documents shall be interpreted as permitting work in violation of said laws, rules, and/or regulations.

C. The Contractor for this work shall furnish, without extra charge, any additional materials and/or labor as may be required for compliance with these laws, rules, and/or regulations though such materials and/or labor are not specially set forth in the Contract Documents.

### 1.4 LICENSING REQUIREMENTS

A. All work of Division 26 shall be performed by an appropriately licensed contractor. The licenses shall be current, valid through the term of the contract and in the name of the contractor.

B. The contractor must also be an or hire an approved Acceptance Test Employer with Acceptance Test Technicians (ATT). The ATT will be responsible for performing all required acceptance testing and associated forms.

### 1.5 SUBMITTALS

A. General Requirements

   1. Submittal lists and drawings shall include identifying marks assigned by the Drawings and Specifications.

   2. Review of drawings and other material submitted shall not be construed as 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 and utility. This review shall not relieve the Contractor of the responsibility to fit the proposed

materials to the spaces provided, and to effect necessary rearrangements or construction of other work.

3. All fixtures, materials, and equipment equal in quality and utility to these herein mentioned will be accepted. When specific names are used in describing fixtures, materials, and equipment they are mentioned as standards only, but this implies no right on the part of the Contractor to use other fixtures, material, and equipment or methods, unless approved as equal in quality and utility by the Architect.

4. Before any fixtures, materials, or equipment are purchased, the Contractor shall submit to the Architect for approval, a complete list of materials, fixtures, and equipment, giving the manufacturer's names, catalog number, capacity, size, power requirements, etc.

5. The Contractor shall submit for the approval of the Architect, shop drawings of proposed material and equipment that differ from the specified materials and equipment, and of any specified materials and equipment with special conditions and/or arrangements. These drawings shall show necessary modifications of owner, plumbing, electrical, and mechanical work required by the proposed materials and equipment.

B. Submittal - Product Data

1. Submit manufacturer's product data for all electrical equipment, in compliance with specifications.

C. Coordination/Layout Shop Drawings

1. Prepare complete consolidated layout drawings for all new systems, and for existing systems that are in the same areas. Shop drawings shall be prepared using AutoCAD 2004 or newer and shall be drawn at a minimum ¼" = 1' 0" scale. All drawings shall be fully coordinated with HVAC, Plumbing, Fire Protection, Electrical, Structural, and Architectural work.
2. Clearly identify and dimension the proposed locations of the principal items of equipment and adequate clearance for all equipment, piping, pumps, valves, and other items. Provide detailed layout of all piping systems showing the proposed routes.
3. Show the access means for all items requiring access for operations and maintenance.
4. Submit shop drawings to Architect for approval, prior to fabrication or installation of any work. Do not install equipment or piping until layout drawings have been approved. Any work installed without prior shop drawing approval shall be removed at the Contractor's expense.

## 1.6 COOPERATION WITH OTHER TRADES

A. Cooperate fully with other trades doing work on the project as may be necessary for the proper completion of the project. Refer to the Structural, Plumbing, and Electrical Drawings for details of the building structure and equipment installation that will tend to overlap, conflict with or require coordination with the work of this Section, and schedule this work accordingly.

B. Any work done without regard for other trades shall be moved, replaced, or redone as required, without extra charges to Owner.

## 1.7 DIVISION OF WORK BETWEEN DIVISIONS 23 AND 26

A. Close coordination between the electrical and mechanical trades is a part of the work that is required by this contract. No allowance will be made for omissions based on incorrectly assuming another trade will be performing your work. Confirm your scope of work with the general contractor.

B. The division of responsibilities between trades supplying equipment in other Divisions may be different. For instance, Division 26 contractor may be required to supply disconnect switches and starters for non-HVAC mechanical equipment supplied under other Divisions.

C. Division 23 Responsibilities
1. Assume responsibility for the proper functioning of the HVAC systems in their entirety.
2. Furnish and install all conductors and conduit required for control of HVAC equipment.
3. Make all terminations with the exception of power conductors.
4. Furnish and install all control panels and devices to provide a complete and functional controls system, including all controls transformers.
5. Furnish and install motor starters for all equipment specified in Division 23.
6. Install duct smoke detectors furnished by fire alarm contractor in buildings with fire alarm systems.
7. Furnish and install duct smoke detectors in buildings without fire alarm systems.
8. Furnish and install all control conductors and conduit connecting duct smoke detectors to smoke dampers and fan start controls.
9. All electrical work performed under Division 23 shall conform to the requirements of Division 26.

D. Division 26 Responsibilities
1. Furnish and install all raceways, conduit, disconnect switches, and conductors necessary for electrical power supply.
2. Make all power supply terminations to motors, starters, disconnect switches, control transformers, and other mechanical devices.
3. Fire alarm contractor to furnish duct smoke detectors in buildings with fire alarm systems.
4. Provide power to all duct smoke detectors and smoke dampers.
5. Coordinate all work with mechanical contractors.

## 1.8 AS-BUILT DRAWINGS

A. A complete set of Contract Drawings shall be maintained at the work site, and all changes in the work shall be recorded on this set, on a daily basis. The final as-built drawings shall be submitted to the Architect for approval.

## 1.9 DESIGN DRAWINGS

A. The drawings indicate diagrammatically the general layout of the electrical systems and other related work. Field verification of scaled dimensions taken from the Drawings is required.

B. The Contractor shall review and compare the Architectural, Structural, Plumbing, Mechanical, and Electrical Drawings and all Owner supplied equipment Drawings, and adjust their work to be in conformity with the conditions indicated thereon. Discrepancies between drawings, between drawings and actual field conditions, or between Drawings and Specifications, shall promptly be brought to the attention of the Architect for a determination of the modifications to be effected. In the event that a major modification is required, a Change Order will be prepared.

## 1.10 VERIFICATION OF EXISTING CONDITIONS AND DEMOLITION

A. Before installation of any new work, verify the location, size, and other conditions at all points of connection to services or other existing piping, and at all locations where new work will cross or pass near existing piping, electrical, or other facilities.

B. Remove conduit, conductors, wiring devices, disconnect switches, and other equipment that is not to remain in service as shown on the Drawings or as required. This includes the removal of associated appurtenances and supports.

C. Deliver removed material to the Owner as directed by the Architect. Dispose of all other removed material offsite.

D. Information shown relative to existing services is based upon available records and data during preparation of the Drawings, but shall be verified. Make reasonable deviations found necessary to conform to actual locations and conditions, without extra charge.

## 1.11 OPERATING AND MAINTENANCE INSTRUCTIONS

A. Furnish three sets of typewritten instructions covering maintenance, adjustment, and operation of each piece of apparatus, bound in a hard cover loose-leaf binder. Neatly obscure or cross out inapplicable data from manufacturer's literature. Submit data to the Architect.

B. Operating instructions shall show sequence of operations, lubrication, care, and maintenance requirements of all equipment. Final acceptance of the work will not be made until a satisfactory submission of this material is received and approved by the Architect.

C. The Owner's authorized representative shall be instructed in the operation and servicing of all power & lighting systems.

## 1.12 ACCURACY OF DATA

A. The data given herein and on the Drawings are as exact as could be reasonably secured, but absolute accuracy is not guaranteed. Exact locations, distances, elevations, etc. will be governed by shop drawings, the building itself, and actual field conditions.

## 1.13 DELIVERY, STORAGE, AND HANDLING

A. Contractor shall be responsible for delivery, storage, protection, and placing of all equipment and materials.
   1. Contractor shall protect the work and materials from damage during construction. Equipment stored at the job site shall be protected from dust, water, or other damage, and be covered if equipment is exposed to weather. Protect interiors of new equipment and piping systems against entry of foreign matter. Clean both inside and outside before painting or placing equipment in operation.

   2. Any items damaged shall be repaired or replaced, at no additional cost to the Owner.

## 1.14 WARRANTIES

A. Equipment warranties shall be provided for all equipment, with all necessary information filled in, except purchase date, in favor of the Owner.

B. The contractor shall guarantee that all work under this Section is free from defects in material and workmanship for a period of one year from the date of filing the Notice of Completion. Replacement of defective work and damage caused to work of other trades as a result of

such defective work shall be the responsibility of the Contractor, and shall be made at no cost to the Owner.

### 1.15 ALTERNATIVE MATERIALS AND METHODS

A. These plans and specifications describe the general scope of the electrical systems. These plans and specifications do not preclude the submittal of alternative methods or materials. Manufacturer's names and catalog numbers are stated to identify the type and quality of the equipment or materials required for the project.

B. The contractor may submit shop drawings and/or technical information on alternative equipment, materials or installation details to accomplish the intent of the plans and specifications. Approval of the alternative equipment, materials or installation details shall not relieve the contractor of any responsibility for complying with the intent of the plans and specifications. Submit the manufacturers' technical information, shop drawings, and/or written description of alternative methods for each item described by manufacturer's name and catalog number and for each component, equipment, material, or installation detail required.

### 1.16 SITE EXAMINATION

A. Thoroughly examine the site and verify the actual work conditions. No extra compensation will be allowed for expenses due to failure to discover site conditions which affect the work.

## PART 2 - PRODUCTS

### 2.1 GENERAL

A. Unless otherwise indicated, provide all first-quality new materials, free from any defects, and suitable for the intended use and the space provided. Provide materials approved by UL wherever standards have items not specifically shown or specified which are required to provide the complete systems specified herein. Where two or more units of the same class of material pr equipment are required, provide products of a single manufacturer. Component parts of materials or equipment need not be products of the same manufacturer.

B. Equipment Finish: Unless otherwise indicated, finish for electrical equipment and enclosures shall be manufacturer’s standard gray or ANSI 61 gray over a primer and rust inhibitor.

### 2.2 RACEWAYS AND BOXES FOR ELECTRICAL SYSTEMS

A. Metal Conduits and Fittings
   1. Metal Conduit:
      a. GRC: Comply with ANSI C80.1 and UL 6.
      b. EMT: Comply with ANSI C80.3 and UL 797.
      c. FMC: Comply with UL 1; zinc-coated steel.
      d. LFMC: Flexible steel conduit with PVC jacket and complying with UL 360.

   2. Metal Fittings:
      a. Comply with NEMA FB 1 and UL 514B.
      b. Fittings for EMT: Steel, Setscrew
      c. Expansion Fittings: PVC or steel to match conduit type, complying with UL 651, rated for environmental conditions where installed, and including flexible external bonding jumper.

3. Joint Compound for GRC: Approved, as defined in NFPA 70, by authorities having jurisdiction for use in conduit assemblies, and compounded for use to lubricate and protect threaded conduit joints from corrosion and to enhance their conductivity.

B. Non-metallic Conduits and Fittings
   1. Nonmetallic Conduit:
      a. RNC: Type EPC-40-PVC, complying with NEMA TC 2 and UL 651 unless otherwise indicated.
      b. LFNC: Comply with UL 1660.

   2. Nonmetallic Fittings:
      a. Fittings for ENT and RNC: Comply with NEMA TC 3; match to conduit or tubing type and material.
      b. Solvents and Adhesives: As recommended by conduit manufacturer.

C. Boxes, Enclosures and Cabinets
   1. General Requirements for Boxes, Enclosures, and Cabinets: Boxes, enclosures, and cabinets installed in wet locations shall be listed for use in wet locations.
   2. Sheet Metal Outlet and Device Boxes: Comply with NEMA OS 1 and UL 514A.
   3. Metal Floor Boxes:
      a. Material: Cast metal or sheet metal.
      b. Type: Fully adjustable.
      c. Shape: Rectangular.
      d. Listing and Labeling: Metal floor boxes shall be listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.
   4. Luminaire Outlet Boxes: Nonadjustable, designed for attachment of luminaire weighing 50 lb. Outlet boxes designed for attachment of luminaires weighing more than 50 lb shall be listed and marked for the maximum allowable weight.
   5. Small Sheet Metal Pull and Junction Boxes: NEMA OS 1.
   6. Device Box Dimensions: 4 inches square by 2-1/8 inches deep.

## 2.3 LOW VOLTAGE ELECTRICAL POWER CONDUCTORS AND CABLES

A. Copper Building Wire
   1. Description: Flexible, insulated and uninsulated, drawn copper current-carrying conductor with an overall insulation layer or jacket, or both, rated 600 V or less.
   2. Standards:
      a. Listed and labeled as defined in CEC, by a qualified testing agency, and marked for intended location and use.
      b. RoHS compliant.
      c. Conductor and Cable Marking: Comply with wire and cable marking according to UL's "Wire and Cable Marking and Application Guide."

   3. Conductors: Copper, complying with ASTM B3 for bare annealed copper and with ASTM B8 for stranded conductors.
   4. Conductor Insulation: Type THHN and Type THWN-2: Comply with UL 83, 90ºC dry or 75ºC wet.

B. Connectors and Splices
   1. Description: Factory-fabricated connectors, splices, and lugs of size, ampacity rating, material, type, and class for application and service indicated; listed and labeled as defined in CEC, by a qualified testing agency, and marked for intended location and use.
   2. Jacketed Cable Connectors: For steel and aluminum jacketed cables, zinc die-cast

with set screws, designed to connect conductors specified in this Section.

3. Lugs: One piece, seamless, designed to terminate conductors specified in this Section.
   a. Material: Copper.
   b. Type: Two hole with standard barrels.
   c. Termination: Compression.

## 2.4 IDENTIFICATION FOR ELECTRICAL SYSTEMS

A. Labels
   1. Vinyl Wraparound Labels: Preprinted, flexible labels laminated with a clear, weather- and chemical-resistant coating and matching wraparound clear adhesive tape for securing label ends.
   2. Snap-around Labels: Slit, pre-tensioned, flexible, preprinted, color-coded acrylic sleeves, with diameters sized to suit diameters and that stay in place by gripping action.
   3. Self-adhesive Wraparound Labels: 3-mil-thick, polyester flexible label with acrylic pressure-sensitive adhesive.
      a. Self-Lamination: Clear; UV-, weather- and chemical-resistant; self-laminating, protective shield over the legend. Labels sized such that the clear shield overlaps the entire printed legend.
      b. Marker for Labels: Machine-printed, permanent, waterproof, black ink recommended by printer manufacturer.

   4. Self-Adhesive Labels: Polyester, thermal, transfer-printed, 3-mil-thick, multicolor, weather- and UV-resistant, pressure-sensitive adhesive labels, configured for intended use and location.
      a. Minimum Nominal Size:
         i. 1-1/2 by 6 inches for raceway and conductors.
         ii. 3-1/2 by 5 inches for equipment.
         iii. As required by authorities having jurisdiction.

B. Tape
   1. General purpose, flame retardant: 7 mil, vinyl plastic, rated for 90ºC minimum; complies with requirements of UL 510.
   2. Flame retardant, cold and weather resistant: 8.5 mil, vinyl plastic.

C. Tags
   1. Nonmetallic Preprinted Tags: Polyethylene tags, 0.015 inch thick, color-coded for phase and voltage level, with factory screened permanent designations; punched for use with self-locking cable tie fastener.
   2. Write-on Tags:
      a. Polyester Tags: 0.010 inch thick, with corrosion-resistant grommet and cable tie for attachment.
      b. Marker for Tags: Machine-printed, permanent, waterproof, black ink marker recommended by printer manufacturer.

D. Signs
   1. Baked-Enamel Signs:
      a. Preprinted aluminum signs, high-intensity reflective, punched or drilled for fasteners, with colors, legend, and size required for application.
      b. 1/4-inch grommets in corners for mounting.
      c. Nominal Size: 7 by 10 inches.

   2. Metal-Backed Butyrate Signs:
      a. Weather-resistant, nonfading, preprinted, cellulose-acetate butyrate signs, with 0.0396- inch galvanized-steel backing, punched and drilled for fasteners, and

with colors, legend, and size required for application.
b. 1/4-inch grommets in corners for mounting.
c. Nominal Size: 10 by 14 inches.

3. Laminated Acrylic or Melamine Plastic Signs:
a. Engraved legend.
b. Thickness:
i. For signs up to 20 sq. in., minimum 1/16 inch thick.
ii. For signs larger than 20 sq. in., 1/8 inch thick.
iii. Engraved legend with black letters on white face.
iv. Framed with mitered acrylic molding and arranged for attachment at applicable equipment.

E. Cable Ties
1. Plenum-Rated Cable Ties: Self-extinguishing, UV stabilized, one piece, and self-locking.
a. Minimum Width: 3/16 inch.
b. Tensile Strength at 73 Deg F according to ASTM D 638: 7000 psi.
c. UL 94 Flame Rating: 94V-0.
d. Temperature Range: Minus 50 to plus 284 deg F.
e. Color: Black.

## 2.5 GROUNDING AND BONDING FOR ELECTRICAL SYSTEMS

A. Description
1. Electrical Components, Devices, and Accessories: Listed and labeled as defined in CEC, by a qualified testing agency, and marked for intended location and application.
2. Comply with UL 467 for grounding and bonding materials and equipment.

B. Conductors
1. Insulated Conductors: Copper wire or cable insulated for 600 V unless otherwise required by applicable Code or authorities having jurisdiction.
2. Bare Copper Conductors:
a. Solid Conductors: ASTM B 3.
b. Stranded Conductors: ASTM B 8.
c. Tinned Conductors: ASTM B 33.
d. Bonding Cable: 28 kcmil, 14 strands of No. 17 AWG conductor, 1/4 inch in diameter.
e. Bonding Conductor: No. 4 or No. 6 AWG, stranded conductor.
f. Bonding Jumper: Copper tape, braided conductors terminated with copper ferrules; 1-5/8 inches wide and 1/16 inch thick.
g. Tinned Bonding Jumper: Tinned-copper tape, braided conductors terminated with copper ferrules; 1-5/8 inches wide and 1/16 inch thick.

C. Connectors
1. Listed and labeled by an NRTL acceptable to authorities having jurisdiction for applications in which used and for specific types, sizes, and combinations of conductors and other items connected.
2. Welded Connectors: Exothermic-welding kits of types recommended by kit manufacturer for materials being joined and installation conditions.
3. Bus-Bar Connectors: Mechanical type, cast silicon bronze, solderless compression-type wire terminals, and long-barrel, two-bolt connection to the ground bus bar.
4. Beam Clamps: Mechanical type, terminal, ground wire access from four directions, with dual, tin-plated, or silicon bronze bolts.
5. Cable-to-Cable Connectors: Compression type, copper or copper alloy.
6. Cable Tray Ground Clamp: Mechanical type, zinc-plated malleable iron.

7. Conduit Hubs: Mechanical type, terminal with threaded hub.
8. Ground Rod Clamps: Mechanical type, copper or copper alloy, terminal with hex head bolt.
9. Lay-in Lug Connector: Mechanical type, aluminum terminal with set screw.
10. Service Post Connectors: Mechanical type, bronze alloy terminal, in short- and long-stud lengths, capable of single and double conductor connections.
11. Signal Reference Grid Clamp: Mechanical type, stamped-steel terminal with hex head screw.
12. Straps: Solid copper, cast-bronze clamp. Rated for 600 A.
13. U-Bolt Clamps: Mechanical type, copper or copper alloy, terminal listed for direct burial.
14. Water Pipe Clamps:
    a. Mechanical type, two pieces with stainless-steel bolts.
    b. Material: Tin-plated aluminum.
    c. Listed for direct burial.

15. U-bolt type with malleable-iron clamp and copper ground connector.
16. Lead Content: Less than 300 parts per million.

D. Grounding Electrodes
1. Ground Rods: Copper-clad steel, sectional type; 3/4 inch by 10 feet.
2. Chemical-Enhanced Grounding Electrodes: Copper tube, straight or L-shaped, charged with nonhazardous electrolytic chemical salts.
    a. Termination: Factory-attached No. 4/0 AWG bare conductor at least 48 inches long.
    b. Backfill Material: Electrode manufacturer's recommended material.

3. Ground Plates: 1/4 inch thick, hot-dip galvanized.

## 2.6 WIRING DEVICES

A. General Requirements
1. Comply with NFPA 70.
2. RoHS compliant.
3. Comply with NEMA WD 1.
4. Device Color: White.
5. Wall Plate Color: For plastic covers, match device color.

B. Duplex Receptacles, 125 V, 20 A:
1. Description: Two pole, three wire, and self-grounding.
2. Configuration: NEMA WD 6, Configuration 5-20R.
3. Standards: Comply with UL 498 and FS W-C-596.
4. Tamper-resistant: Provide device listed and labeled as complying with NFPA “Tamper Resistant Receptacles” in locations specified by NFPA 70 406.12.
5. Weather-resistant: Provide device listed and labeled as complying with NFPA 70 “Receptacles in Damp or Wet Locations” in locations as shown on the plans.

C. GFCI Receptacles, 125V, 20A
1. Description: Integral GFCI with "Test" and "Reset" buttons and LED indicator light. Two pole, three wire, and self-grounding.
2. Configuration: NEMA WD 6, Configuration 5-20R.
3. Type: Feed through.
4. Standards: Comply with UL 498, UL 943 Class A, and FS W-C-596.
5. Tamper-resistant: Provide device listed and labeled as complying with NFPA “Tamper Resistant Receptacles” in locations specified by NFPA 70 406.12.
6. Weather-resistant: Provide device listed and labeled as complying with NFPA 70

"Receptacles in Damp or Wet Locations" in locations as shown on the plans.

D. Toggle Switches, 120/277V, 20A
   1. Standards: Comply with UL 20 and FS W-S-896.

E. Occupancy Sensors
   1. Description: Switchbox-mounted, combination lighting-control sensor and conventional switch lighting-control unit using dual (microphonic and passive infrared) technology.
   2. Rated 960 W at 120 V ac for tungsten lighting, 10 A at 120 V ac or 10 A at 277 V ac for fluorescent or LED lighting, and 1/4 HP at 120 V ac.
   3. Adjustable time delay of 20 minutes.
   4. Able to be locked to Automatic-On mode.
   5. Connections: Provisions for connection to BAS.

F. Dimmers
   1. Switchbox-mounted, combination dimming and conventional switch lighting control unit.
   2. Compatibility: Suitable for the luminaire(s) to be controlled.
   3. Connections: Provisions for connection to BAS.

G. Wall Plates
   1. Single and combination types shall match corresponding wiring devices.
      a. Plate-Securing Screws: Metal with head color to match plate finish.
      b. Material for Finished Spaces: Smooth, high-impact thermoplastic.

   2. Wet-Location, Weatherproof Cover Plates: NEMA 250, complying with Type 3R, weather-resistant thermoplastic with lockable cover.

## 2.7 SWITCHBOARDS

A. Product Selection for Restricted Space: Drawings indicate maximum dimensions for switchboards including clearances between switchboards and adjacent surfaces and other items. Comply with indicated maximum dimensions.

B. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

C. Standards: Comply with NEMA PB 2, NFPA 70, and UL 891.

D. Front-Connected, Front-Accessible Switchboards:
   1. Main Devices: Panel mounted.
   2. Branch Devices: Panel mounted.
   3. Sections front and rear aligned.

E. Nominal System Voltage: 240/120 V.

F. Main-Bus Continuous: As shown on Drawings.

G. Indoor Enclosures: Steel, NEMA 250, Type 1.

H. Enclosure Finish for Indoor Units: Factory-applied finish in manufacturer's standard gray finish over a rust-inhibiting primer on treated metal surface.

I. Barriers: Between adjacent switchboard sections.

J. Insulation and isolation for main bus of main section and main and vertical buses of feeder sections.

K. Service Entrance Rating: Switchboards intended for use as service entrance equipment shall contain from one to six service disconnecting means with overcurrent protection, a neutral bus with disconnecting link, a grounding electrode conductor terminal, and a main bonding jumper.

L. Utility Metering Compartment: Barrier compartment and section complying with utility company's requirements; hinged sealable door; buses provisioned for mounting utility company's current transformers and potential transformers or potential taps as required by utility company. If separate vertical section is required for utility metering, match and align with basic switchboard. Provide service entrance label and necessary applicable service entrance features.

M. Bus Transition and Incoming Pull Sections: Matched and aligned with basic switchboard.

N. Removable, Hinged Rear Doors and Compartment Covers: Secured by captive thumb screws, for access to rear interior of switchboard.

O. Hinged Front Panels: Allow access to circuit breaker, metering, accessory, and blank compartments.

P. Buses and Connections: Three phase, four wire unless otherwise indicated.
   1. Provide phase bus arrangement A, B, C from front to back, top to bottom, and left to right when viewed from the front of the switchboard.
   2. Phase- and Neutral-Bus Material: Tin-plated copper feeder circuit-breaker line connections.
   3. Load Terminals: Insulated, rigidly braced, runback bus extensions, of same material as through buses, equipped with mechanical connectors for outgoing circuit conductors. Provide load terminals for future circuit-breaker positions at full-ampere rating of circuit-breaker position.
   4. Ground Bus: 1/4-by-2-inch tin-plated copper, equipped with mechanical connectors for feeder and branch-circuit ground conductors.
   5. Main-Phase Buses and Equipment-Ground Buses: Uniform capacity for entire length of switchboard's main and distribution sections. Provide for future extensions from both ends.
   6. Disconnect Links:
      a. Isolate neutral bus from incoming neutral conductors.
      b. Bond neutral bus to equipment-ground bus for switchboards utilized as service equipment or separately derived systems.
   7. Neutral Buses: 100 percent of the ampacity of phase buses unless otherwise indicated, equipped with mechanical connectors for outgoing circuit neutral cables. Brace bus extensions for busway feeder neutral bus.
   8. Isolation Barrier Access Provisions: Permit checking of bus-bolt tightness.

Q. Future Devices: Equip compartments with mounting brackets, supports, bus connections, and appurtenances at full rating of circuit-breaker compartment.

## 2.8 PANELBOARDS

A. General Requirements
   1. Enclosures: Flush and Surface-mounted, dead-front cabinets.
      a. Rated for environmental conditions at installed location.
         i. Indoor Dry and Clean Locations: NEMA 250, Type 1.

2. Height: 84 inches maximum.
3. Hinged Front Cover: Entire front trim hinged to box and with standard door within hinged trim cover. Trims shall cover all live parts and shall have no exposed hardware.
4. Finishes:
   a. Panels and Trim: Steel and galvanized steel, factory finished immediately after cleaning and pretreating with manufacturer's standard two-coat, baked-on finish consisting of prime coat and thermosetting topcoat.
   b. Back Boxes: Galvanized steel.

5. Incoming Mains:
   a. Location: Convertible between top and bottom.
   b. Main Breaker: Main lug interiors up to 400 amperes shall be field convertible to main breaker.

6. Phase, Neutral, and Ground Buses:
   a. Material: Tin-plated copper.
      i. Plating shall run entire length of bus.
      ii. Bus shall be fully rated the entire length.
   b. Interiors shall be factory assembled into a unit. Replacing switching and protective devices shall not disturb adjacent units or require removing the main bus connectors.
   c. Equipment Ground Bus: Adequate for feeder and branch-circuit equipment grounding conductors; bonded to box.
   d. Full-Sized Neutral: Equipped with full-capacity bonding strap for service entrance applications. Mount electrically isolated from enclosure. Do not mount neutral bus in gutter.

7. Conductor Connectors: Suitable for use with conductor material and sizes.
   a. Material: Tin-plated copper.
   b. Terminations shall allow use of 75 deg C rated conductors without derating.
   c. Size: Lugs suitable for indicated conductor sizes, with additional gutter space, if required, for larger conductors.
   d. Main and Neutral Lugs: Compression type, with a lug on the neutral bar for each pole in the panelboard.
   e. Ground Lugs and Bus-Configured Terminators: Compression type, with a lug on the bar for each pole in the panelboard.

8. Panelboard Short-Circuit Current Rating: Fully rated to interrupt symmetrical short-circuit current available at terminals. Assembly listed by an NRTL for 100 percent interrupting capacity.
   a. Panelboards and overcurrent protective devices rated 240 V or less shall have short- circuit ratings as shown on Drawings, but not less than 10,000 A rms symmetrical.

B. Branch Circuit Panelboards
1. Panelboards: NEMA PB 1, lighting and appliance branch-circuit type.
2. Mains: Circuit breaker or lugs only.
3. Branch Overcurrent Protective Devices: Bolt-on circuit breakers, replaceable without disturbing adjacent units.
4. Doors: Door-in-door construction with concealed hinges; secured with multipoint latch with tumbler lock; keyed alike. Outer door shall permit full access to the panel interior. Inner door shall permit access to breaker operating handles and labeling, but current carrying terminals and bus shall remain concealed.

## 2.9 CIRCUIT BREAKER

A. Comply with UL 489, with interrupting capacity to meet available fault currents.

B. Thermal-Magnetic Circuit Breakers: Inverse time-current element for low-level overloads and instantaneous magnetic trip element for short circuits. Adjustable magnetic trip setting for circuit-breaker frame sizes 250 A and larger.

C. Adjustable Instantaneous-Trip Circuit Breakers: Magnetic trip element with front-mounted, field-adjustable trip setting.

D. MCCB Features and Accessories:
   1. Standard frame sizes, trip ratings, and number of poles.
   2. Lugs: Mechanical style, suitable for number, size, trip ratings, and conductor material.
   3. Application Listing: Appropriate for application.

## 2.10 ENCLOSED SWITCHES AND CIRCUIT BREAKERS

A. Fusible and Non-fusible Switches
   1. Type HD, Heavy Duty, Three Pole, Single Throw, 600-V ac, 1200 A and Smaller: UL 98 and NEMA KS 1, horsepower rated, lockable handle with capability to accept three padlocks, and interlocked with cover in closed position.
   2. Accessories:
      a. Equipment Ground Kit: Internally mounted and labeled for copper and aluminum ground conductors.
      b. Neutral Kit: Internally mounted; insulated, capable of being grounded and bonded; labeled for copper and aluminum neutral conductors.
      c. Class R Fuse Kit: Provides rejection of other fuse types when Class R fuses are specified.
      d. Hook stick Handle: Allows use of a hook stick to operate the handle.
      e. Lugs: Mechanical type, suitable for number, size, and conductor material.

B. Enclosures
   1. Enclosed Switches and Circuit Breakers: UL 489, NEMA KS 1, NEMA 250, and UL 50, to comply with environmental conditions at installed location.
   2. Enclosure Finish: The enclosure shall be finished with gray baked enamel paint, electrodeposited on cleaned, phosphatized steel (NEMA 250) Type 1.
   3. Conduit Entry: NEMA 250 Types 4, 4X, and 12 enclosures shall contain no knockouts. NEMA 250 Types 7 and 9 enclosures shall be provided with threaded conduit openings in both end walls.
   4. Operating Mechanism: The circuit-breaker operating handle shall be externally operable with the operating mechanism being an integral part of the box, not the cover. The cover interlock mechanism shall have an externally operated override. The override shall not permanently disable the interlock mechanism, which shall return to the locked position once the override is released. The tool used to override the cover interlock mechanism shall not be required to enter the enclosure in order to override the interlock.

## 2.11 LUMINAIRES

A. General Requirements:
   1. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.
   2. Recessed luminaires shall comply with NEMA LE 4.
   3. California Title 24 compliant.

B. Fixtures: As shown on the plans.

## 2.12 LIGHTING CONTROLS

A. Wall-mounted Switches
   1. Switch shall include on/off buttons and raise/lower buttons where dimming is indicated.
   2. Lowercase letters may be used to indicate switching configuration.
   3. Multi-zone dimming control shall include master on and off buttons in addition to individual zone control.
   4. Where indicated, provide a locking single-pole switch connected to room controller for on/off control of indicated luminaires. Provide owner with three (3) keys.

B. Wall-Mounted Occupancy Sensors
   1. Occupancy Sensor shall have durable lens, utilize both passive infrared (PIR) and ultrasonic/microphonic technology, and include on/off buttons and raise/lower buttons where dimming is indicated.

C. Ceiling-Mounted Occupancy Sensors
   1. Occupancy Sensor shall have durable lens, utilize both passive infrared (PIR) and ultrasonic/microphonic technology.

D. Daylight Sensors
   1. Daylight sensor shall have durable lens, utilize an integral photodiode to measure ambient light levels and be provided with an adjustable time delay and deadband.
   2. Sensor shall be connected to control unit to continuously dim selected luminaires up and down based on the measured light level in the controlled space.

# PART 3 – EXECUTION

## 3.1 WORKMANSHIP

A. General: The installation of materials and equipment shall be performed in a neat, workmanlike and timely manner by an adequate number of craftsmen knowledgeable of the requirements of the Contract Documents. They shall be skilled in the methods and craftsmanship needed to produce a quality level of workmanship. Personnel who install materials and equipment shall be qualified by training and experience to perform their assigned tasks.

B. Acceptable Workmanship: Acceptable workmanship is characterized by first-quality appearance and function, conforming to applicable standards of building system construction, and exhibiting a high degree of quality and proficiency which is judged by the Architect as equivalent as or better than that ordinarily produced by qualified industry tradesmen.
   1. Comply with NECA 1 and NFPA 70.

C. Performance: Personnel shall not be used in the performance of the installation of material and equipment who, in the opinion of the Architect, are deemed to be careless or unqualified to perform the assigned tasks. Material and equipment installations not in compliance with the Contract Documents, or installed with substandard workmanship and not acceptable to the Architect, shall be removed and reinstalled by qualified craftsmen, at no change in the contract price.

## 3.2 PROTECTION AND CLEAN UP

A. Protection and Restoration: Suitably protect equipment provided under this Division during

construction. Restore damaged surfaces and items to "like new" condition before a request for substantial completion inspection.

B. Handling: Materials shall be properly protected and Raceway openings shall be temporarily closed by the Contractor to prevent obstruction and damage. Post notice prohibiting the use of systems provided under this Contract, prior to completion of work and acceptance of systems by the Owner's representative. The Contractor shall take precautions to protect his materials from damage and theft.

C. Safeguards: The Contractor shall furnish, place and maintain proper safety guards for the prevention of accidents that might be caused by the workmanship, materials, equipment or systems provided under this contract.

D. Cleanup: Keep the job site free from debris and rubbish. Remove debris and rubbish from the site and leave premises in clean condition on a daily basis.

## 3.3 SYSTEMS GUARANTEE

A. General: Provide a one-year guarantee. This guarantee shall be by the Contractor to the Owner for any defective workmanship or material, which has been provided under this Contract at no cost to the Owner for a period of one year from the date of substantial completion of the System. The guarantee shall include lamps, for ninety days after date of Substantial Completion of the System. Explain the provisions of guarantee to the Owner at the "Demonstration of Completed System".

## 3.4 FINAL OBSERVATION

A. General: Work shall be completed, and forms and other information shall be submitted for acceptance one week prior to the request for final observation of the installation.

## 3.5 SPECIAL CONSIDERATIONS

A. Comply with special requirements imposed at site by Owner. This may include badging of employees, prohibition of smoking, special working hours, or special working conditions.

## 3.6 METHODS FOR RACEWAY INSTALLATION

A. Raceway Application
   1. Outdoors: Apply raceway products as specified below unless otherwise indicated:
      a. Exposed Conduit: GRC, RNC, or Type EPC-40-PVC.
      b. Concealed Conduit, Aboveground: GRC.
      c. Underground Conduit: RNC, Type EPC-40-PVC.
      d. Connection to Vibrating Equipment (Including Transformers and Hydraulic, Pneumatic, Electric Solenoid, or Motor-Driven Equipment): LFMC.
      e. Boxes and Enclosures, Aboveground: NEMA 250, Type 4.

   2. Indoors: Apply raceway products as specified below unless otherwise indicated:
      a. Exposed, Not Subject to Physical Damage: EMT.
      b. Exposed, Not Subject to Severe Physical Damage: EMT.
      c. Exposed and Subject to Severe Physical Damage: GRC.
      d. Concealed in Ceilings and Interior Walls and Partitions: EMT.
      e. Connection to Vibrating Equipment (Including Transformers and Hydraulic, Pneumatic, Electric Solenoid, or Motor-Driven Equipment): FMC, except use LFMC in damp or wet locations.
      f. Damp or Wet Locations: GRC.

g. Boxes and Enclosures: NEMA 250, Type 1, except use NEMA 250, Type 4 stainless steel in institutional and commercial kitchens and damp or wet locations.

3. Minimum Raceway Size: 1/2-inch trade size.
4. Raceway Fittings: Compatible with raceways and suitable for use and location.
   a. Rigid and Intermediate Steel Conduit: Use threaded rigid steel conduit fittings unless otherwise indicated. Comply with NEMA FB 2.10.
   b. PVC Externally Coated, Rigid Steel Conduits: Use only fittings listed for use with this type of conduit. Patch and seal all joints, nicks, and scrapes in PVC coating after installing conduits and fittings. Use sealant recommended by fitting manufacturer and apply in thickness and number of coats recommended by manufacturer.
   c. EMT: Use setscrew, steel fittings. Comply with NEMA FB 2.10.
   d. Flexible Conduit: Use only fittings listed for use with flexible conduit. Comply with NEMA FB 2.20.
5. Do not install aluminum conduits, boxes, or fittings in contact with concrete or earth.
6. Do not install nonmetallic conduit where ambient temperature exceeds 120 deg F.

B. Raceway Installation
1. Comply with NECA 1 and NECA 101 for installation requirements except where requirements on Drawings or in this article are stricter. Comply with NECA 102 for aluminum conduits. Comply with NFPA 70 limitations for types of raceways allowed in specific occupancies and number of floors.

2. Do not fasten conduits onto the bottom side of a metal deck roof.

3. 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.

4. Complete raceway installation before starting conductor installation.

5. Arrange stub-ups so curved portions of bends are not visible above finished slab.

6. Install no more than the equivalent of three 90-degree bends in any conduit run except for control wiring conduits, for which fewer bends are allowed. Support within 12 inches of changes in direction.

7. Make bends in raceway using large-radius preformed ells. Field bending shall be according to NFPA 70 minimum radii requirements. Use only equipment specifically designed for material and size involved.

8. Conceal conduit within finished walls, ceilings, and floors unless otherwise indicated. Install conduits parallel or perpendicular to building lines.

9. Support conduit within 12 inches of enclosures to which attached.

10. Raceways Embedded in Slabs:
   a. 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. Secure raceways to reinforcement at maximum 10-foot intervals.
   b. Arrange raceways to cross building expansion joints at right angles with expansion fittings.

c. Arrange raceways to keep a minimum of 1 inch of concrete cover in all directions.
d. Do not embed threadless fittings in concrete unless specifically approved by Architect for each specific location.

11. Stub-ups to Above Recessed Ceilings:
    a. Use EMT or RMC for raceways.
    b. Use a conduit bushing or insulated fitting to terminate stub-ups not terminated in hubs or in an enclosure.

12. Threaded Conduit Joints, Exposed to Wet, Damp, Corrosive, or Outdoor Conditions: Apply listed compound to threads of raceway and fittings before making up joints. Follow compound manufacturer's written instructions.

13. Coat field-cut threads on PVC-coated raceway with a corrosion-preventing conductive compound prior to assembly.

14. Terminate threaded conduits into threaded hubs or with locknuts on inside and outside of boxes or cabinets. Install bushings on conduits up to 1-1/4-inch trade size and insulated throat metal bushings on 1-1/2-inch trade size and larger conduits terminated with locknuts. Install insulated throat metal grounding bushings on service conduits.

15. Install raceways square to the enclosure and terminate at enclosures with locknuts. Install locknuts hand tight plus 1/4 turn more.

16. Do not rely on locknuts to penetrate nonconductive coatings on enclosures. Remove coatings in the locknut area prior to assembling conduit to enclosure to assure a continuous ground path.

17. Cut conduit perpendicular to the length. For conduits 2-inch trade size and larger, use roll cutter or a guide to make cut straight and perpendicular to the length.

18. 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. Cap underground raceways designated as spare above grade alongside raceways in use.

19. Install raceway sealing fittings at accessible locations according to NFPA 70 and fill them with 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 according to NFPA 70.

20. Install devices to seal raceway interiors at accessible locations. Locate seals so no fittings or boxes are between the seal and the following changes of environments. Seal the interior of all raceways at the following points:
    a. Where conduits pass from warm to cold locations, such as boundaries of refrigerated spaces.
    b. Where an underground service raceway enters a building or structure.
    c. Conduit extending from interior to exterior of building.
    d. Conduit extending into pressurized duct and equipment.
    e. Conduit extending into pressurized zones that are automatically controlled to maintain different pressure set points.
    f. Where otherwise required by NFPA 70.

21. Comply with manufacturer's written instructions for solvent welding RNC and fittings.

22. Expansion-Joint Fittings:
    a. Install in each run of aboveground RNC that is located where environmental temperature change may exceed 30 deg F and that has straight-run length that exceeds 25 feet. Install in each run of aboveground RMC and EMT conduit that is located where environmental temperature change may exceed 100 deg F and that has a straight-run length that exceeds 100 feet.
    b. Install type and quantity of fittings that accommodate temperature change listed for each of the following locations:
        i. Outdoor Locations Not Exposed to Direct Sunlight: 125 deg F temperature change.
        ii. Outdoor Locations Exposed to Direct Sunlight: 155 deg F temperature change.
        iii. Indoor Spaces Connected with Outdoors without Physical Separation: 125 deg F temperature change.
        iv. Attics: 135 deg F temperature change.

    c. Install expansion fittings at all locations where conduits cross building or structure expansion joints.
    d. Install each expansion-joint fitting with position, mounting, and piston setting selected according to manufacturer's written instructions for conditions at specific location at time of installation. Install conduit supports to allow for expansion movement.
    e. Provide expansion/deflection fitting per NEC 300.4 (H) where raceway crosses structural joint intended for expansion/contraction/deflection to accommodate horizontal and vertical movement.

23. Flexible Conduit Connections: Comply with NEMA RV 3. Use a maximum of 36 inches of flexible conduit for recessed and semi-recessed luminaires, equipment subject to vibration, noise transmission, or movement; and for transformers and motors.
    a. Use LFMC in damp or wet locations subject to severe physical damage.
    b. Use LFMC or LFNC in damp or wet locations not subject to severe physical damage.

24. Horizontally separate boxes mounted on opposite sides of walls so they are not in the same vertical channel.

25. Locate boxes so that cover or plate will not span different building finishes.

26. Support boxes of three gangs or more from more than one side by spanning two framing members or mounting on brackets specifically designed for the purpose.

27. Fasten junction and pull boxes to or support from building structure. Do not support boxes by conduits.

C. Installation of Underground Conduit
    1. Direct-Buried Conduit
        a. Excavate trench bottom to provide firm and uniform support for conduit.
        b. After installing conduit, backfill and compact. Start at tie-in point, and work toward end of conduit run, leaving conduit at end of run free to move with expansion and contraction as temperature changes during this process. Firmly hand tamp backfill around conduit to provide maximum supporting strength. After placing controlled backfill to within 12 inches of finished grade, make final conduit connection at end of run and complete backfilling with normal compaction.

c. Install manufactured duct elbows for stub-ups at poles and equipment and at building entrances through floor unless otherwise indicated. Encase elbows for stub-up ducts throughout length of elbow.
d. Install manufactured rigid steel conduit elbows for stub-ups at poles and equipment and at building entrances through floor.
   i. Couple steel conduits to ducts with adapters designed for this purpose, and encase coupling with 3 inches of concrete for a minimum of 12 inches on each side of the coupling.
   ii. For stub-ups at equipment mounted on outdoor concrete bases and where conduits penetrate building foundations, extend steel conduit horizontally a minimum of 60 inches from edge of foundation or equipment base. Install insulated grounding bushings on terminations at equipment.

e. Warning Planks: Bury warning planks approximately 12 inches above direct-buried conduits but a minimum of 6 inches below grade. Align planks along centerline of conduit.

D. Installation of Underground Handholes and Boxes
1. Install handholes and boxes level and plumb and with orientation and depth coordinated with connecting conduits to minimize bends and deflections required for proper entrances.

2. Unless otherwise indicated, support units on a level bed of crushed stone or gravel, graded from 1/2-inch sieve to No. 4 sieve and compacted to same density as adjacent undisturbed earth.

3. Elevation: In paved areas, set so cover surface will be flush with finished grade. Set covers of other enclosures 1 inch above finished grade.

4. Install removable hardware, including pulling eyes, cable stanchions, cable arms, and insulators, as required for installation and support of cables and conductors and as indicated. Select arm lengths to be long enough to provide spare space for future cables but short enough to preserve adequate working clearances in enclosure.

5. Field-cut openings for conduits according to enclosure manufacturer's written instructions. Cut wall of enclosure with a tool designed for material to be cut. Size holes for terminating fittings to be used, and seal around penetrations after fittings are installed.

## 3.7 METHODS FOR CONDUCTOR INSTALLATION

A. Materials Applications
1. Feeders: Copper; solid for No. 10 AWG and smaller; stranded for No. 8 AWG and larger.
2. Branch Circuits: Copper. Solid for No. 12 AWG and smaller; stranded for No. 10 AWG and larger.

B. Conductor Insulation and Wiring Methods
1. Service Entrance: Type THHN/THWN-2, single conductors in raceway.
2. Feeders; exposed or concealed: Type THHN/THWN-2, single conductors in raceway.
3. Branch Circuits; exposed or concealed: Type THHN/THWN-2, single conductors in raceway.

C. Installation of Conductors and Cables
1. Conceal cables in finished walls, ceilings, and floors unless otherwise indicated.

2. 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.
3. Use pulling means, including fish tape, cable, rope, and basket-weave wire/cable grips that will not damage cables or raceway.
4. Install exposed cables parallel and perpendicular to surfaces of exposed structural members, and follow surface contours where possible.

D. Connections
1. Tighten electrical connectors and terminals according to manufacturer's published torque- tightening values. If manufacturer's torque values are not indicated, use those specified in UL 486A-486B.
2. Make splices, terminations, and taps that are compatible with conductor material and that possess equivalent or better mechanical strength and insulation ratings than unspliced conductors.
3. Use oxide inhibitor in each splice, termination, and tap for aluminum conductors.
4. Wiring at Outlets: Install conductor at each outlet, with at least 12 inches of slack.

E. Color-Coding for Phase- and Voltage-Level Identification, 600 V or Less: Use colors listed below for ungrounded service feeder and branch-circuit conductors.
1. Color shall be factory applied or field applied for sizes larger than No. 8 AWG if authorities having jurisdiction permit.
2. Colors for 208/120-V Circuits:
   a. Phase A: Black.
   b. Phase B: Red.
   c. Phase C: Blue.
3. Color for Neutral: White.
4. Color for Equipment Grounds: Bare copper.

## 3.8 METHODS FOR ELECTRICAL SYSTEM IDENTIFICATION

A. Installation of Identification Products
1. Verify and coordinate identification names, abbreviations, colors, and other features with requirements in other Sections requiring identification applications, Drawings, Shop Drawings, manufacturer's wiring diagrams, and operation and maintenance manual. Use consistent designations throughout Project.
2. Install signs with approved legend to facilitate proper identification, operation, and maintenance of electrical systems and connected items.
3. Accessible Fittings for Raceways: Identify the covers of each junction and pull box of the following systems with the wiring system legend and system voltage. System legends shall be as follows:
   a. "EMERGENCY POWER."
   b. "POWER."
   c. "UPS."

4. Vinyl Wraparound Labels:
   a. Secure tight to surface of raceway or cable at a location with high visibility and accessibility.
   b. Attach labels that are not self-adhesive type with clear vinyl tape, with adhesive appropriate to the location and substrate.

5. Snap-around Labels: Secure tight to surface at a location with high visibility and accessibility.
6. Self-Adhesive Wraparound Labels: Secure tight to surface at a location with high visibility and accessibility.

7. Self-Adhesive Labels:
   a. On each item, install unique designation label that is consistent with wiring diagrams, schedules, and operation and maintenance manual.
   b. Unless otherwise indicated, provide a single line of text with 1/2-inch-high letters on 1- 1/2-inch-high label; where two lines of text are required, use labels 2 inches high.

8. Snap-around Color-Coding Bands: Secure tight to surface at a location with high visibility and accessibility.
9. Marker Tapes: Secure tight to surface at a location with high visibility and accessibility.
10. Self-Adhesive Vinyl Tape: Secure tight to surface at a location with high visibility and accessibility.
11. Tape and Stencil: Comply with requirements in painting Sections for surface preparation and paint application.
12. Floor Marking Tape: Apply stripes to finished surfaces following manufacturer's written instructions.
13. Underground Line Warning Tape:
   a. During backfilling of trenches, install continuous underground-line warning tape directly above cable or raceway at 6 to 8 inches below finished grade. Use multiple tapes where width of multiple lines installed in a common trench or concrete envelope exceeds 16 inches overall.
   b. Install underground-line warning tape for direct-buried cables and cables in raceways.

14. Metal Tags:
   a. Place in a location with high visibility and accessibility.
   b. Secure using UV-stabilized and plenum-rated cable ties.

15. Nonmetallic Preprinted Tags:
   a. Place in a location with high visibility and accessibility.
   b. Secure using UV-stabilized and plenum-rated cable ties.

16. Write-on Tags:
   a. Place in a location with high visibility and accessibility.
   b. Secure using UV-stabilized and plenum-rated cable ties.

17. Baked-Enamel Signs:
   a. Attach signs that are not self-adhesive type with mechanical fasteners appropriate to the location and substrate.
   b. Unless otherwise indicated, provide a single line of text with 1/2-inch-high letters on minimum 1-1/2-inch-high sign; where two lines of text are required, use signs minimum 2 inches high.

18. Metal-Backed Butyrate Signs:
   a. Attach signs that are not self-adhesive type with mechanical fasteners appropriate to the location and substrate.
   b. Unless otherwise indicated, provide a single line of text with 1/2-inch-high letters on 1- 1/2-inch-high sign; where two lines of text are required, use labels 2 inches high.

19. Laminated Acrylic or Melamine Plastic Signs:
   a. Attach signs that are not self-adhesive type with mechanical fasteners appropriate to the location and substrate.

b. Unless otherwise indicated, provide a single line of text with 1/2-inch-high letters on 1- 1/2-inch-high sign; where two lines of text are required, use labels 2 inches high.

20. Cable Ties: General purpose, for attaching tags, except as listed below:
    a. Outdoors: UV-stabilized nylon.
    b. In Spaces Handling Environmental Air: Plenum rated.

B. Identification Schedule
1. Install identification materials and devices at locations for most convenient viewing without interference with operation and maintenance of equipment. Install access doors or panels to provide view of identifying devices.
2. Identify conductors, cables, and terminals in enclosures and at junctions, terminals, pull points, and locations of high visibility. Identify by system and circuit designation.
3. Accessible Raceways and Metal-Clad Cables, 600 V or Less, for Service, Feeder, and Branch Circuits, More Than 30 A and 120 V to Ground: Identify with self-adhesive raceway labels.
4. Locate identification at changes in direction, at penetrations of walls and floors, at 50-foot maximum intervals in straight runs, and at 25-foot maximum intervals in congested areas.
5. Accessible Fittings for Raceways and Cables within Buildings: Identify the covers of each junction and pull box of the following systems with self-adhesive labels containing the wiring system legend and system voltage. System legends shall be as follows:
    a. "EMERGENCY POWER."
    b. "POWER."
    c. "UPS."

6. Power-Circuit Conductor Identification, 600 V or Less: For conductors in vaults, pull and junction boxes, manholes, and handholes, use vinyl wraparound labels to identify the phase.
    a. Locate identification at changes in direction, at penetrations of walls and floors, at 50-foot maximum intervals in straight runs, and at 25-foot maximum intervals in congested areas.

7. Locations of Underground Lines: Underground-line warning tape for power, lighting, communication, and control wiring and optical-fiber cable.
8. Equipment Identification Labels:
    a. Indoor Equipment: Laminated acrylic or melamine sign.
    b. Outdoor Equipment: Laminated acrylic or melamine sign.
    c. Equipment to Be Labeled:
        i. Panelboards: Typewritten directory of circuits in the location provided by panelboard manufacturer. Panelboard identification shall be in the form of a self- adhesive, engraved, laminated acrylic or melamine label.
        ii. Enclosures and electrical cabinets.
        iii. Access doors and panels for concealed electrical items.
        iv. Switchboards.
        v. Enclosed switches.

9. For equipment labels, follow the convention examples below:

PANEL A
FED FROM MSB
400A, 277/480V, 3Ø 22KAIC

HEAT PUMP HP-1
FED FROM PANEL M

XFMR A
FED FROM PANEL A
480:120/208V, 3Ø, 75KVA

MOTOR CONTACT ENCLOSURE
FED FROM PANEL A

## 3.9 METHODS FOR GROUNDING AND BONDING

A. Applications
   1. Conductors: Install solid conductor for No. 8 AWG and smaller, and stranded conductors for No. 6 AWG and larger unless otherwise indicated.
   2. Underground Grounding Conductors: Install bare tinned-copper conductor, No. 2/0 AWG minimum.
   3. Grounding Bus: Install in electrical equipment rooms, in rooms housing service equipment, and elsewhere as indicated.
      a. Install bus horizontally, on insulated spacers 2 inches minimum from wall, 6 inches above finished floor unless otherwise indicated.
      b. Where indicated on both sides of doorways, route bus up to top of door frame, across top of doorway, and down; connect to horizontal bus.

   4. Conductor Terminations and Connections:
      a. Pipe and Equipment Grounding Conductor Terminations: Bolted connectors.
      b. Underground Connections: Welded connectors except at test wells and as otherwise indicated.

B. Grounding at the Service
   1. Equipment grounding conductors and grounding electrode conductors shall be connected to the ground bus. Install a main bonding jumper between the neutral and ground buses.

C. Equipment Grounding
   1. Install insulated equipment grounding conductors with all feeders and branch circuits.
   2. Install insulated equipment grounding conductors with the following items, in addition to those required by CEC:
      a. Feeders and branch circuits.
      b. Lighting circuits.
      c. Receptacle circuits.
      d. Single-phase motor and appliance branch circuits.
      e. Three-phase motor and appliance branch circuits.
      f. Flexible raceway runs.
      g. Armored and metal-clad cable runs.
      h. Busway Supply Circuits: Install insulated equipment grounding conductor from grounding bus in the switchgear, switchboard, or distribution panel to equipment grounding bar terminal on busway.

   3. Air-Duct Equipment Circuits: Install insulated equipment grounding conductor to duct-mounted electrical devices operating at 120 V and more, including air cleaners, heaters, dampers, humidifiers, and other duct electrical equipment. Bond conductor to each unit and to air duct and connected metallic piping.
   4. Water Heater, Heat-Tracing, and Anti-frost Heating Cables: Install a separate insulated equipment grounding conductor to each electric water heater and heat-tracing cable. Bond conductor to heater units, piping, connected equipment, and components.

D. Installation

1. Grounding Conductors: Route along shortest and straightest paths possible unless otherwise indicated or required by Code. Avoid obstructing access or placing conductors where they may be subjected to strain, impact, or damage.
2. Ground Rods: Drive rods until tops are 2 inches below finished floor or final grade unless otherwise indicated.
   a. Interconnect ground rods with grounding electrode conductor below grade and as otherwise indicated. Make connections without exposing steel or damaging coating if any.
   b. For grounding electrode system, install at least three rods spaced at least one-rod length from each other and located at least the same distance from other grounding electrodes, and connect to the service grounding electrode conductor.

3. Grounding and Bonding for Piping:
   a. Metal Water Service Pipe: Install insulated copper grounding conductors, in conduit, from building's main service equipment, or grounding bus, to main metal water service entrances to building. Connect grounding conductors to main metal water service pipes; use a bolted clamp connector or bolt a lug-type connector to a pipe flange by using one of the lug bolts of the flange. Where a dielectric main water fitting is installed, connect grounding conductor on street side of fitting. Bond metal grounding conductor conduit or sleeve to conductor at each end.
   b. Water Meter Piping: Use braided-type bonding jumpers to electrically bypass water meters. Connect to pipe with a bolted connector.
   c. Bond each aboveground portion of gas piping system downstream from equipment shutoff valve.

4. Bonding Interior Metal Ducts: Bond metal air ducts to equipment grounding conductors of associated fans, blowers, electric heaters, and air cleaners. Install tinned bonding jumper to bond across flexible duct connections to achieve continuity.
5. Concrete-Encased Grounding Electrode (Ufer Ground): Fabricate according to CEC; use a minimum of 20 feet of bare copper conductor not smaller than No. 4 AWG.
   a. If concrete foundation is less than 20 feet long, coil excess conductor within base of foundation.
   b. Bond grounding conductor to reinforcing steel in at least four locations and to anchor bolts. Extend grounding conductor below grade and connect to building's grounding grid or to grounding electrode external to concrete.

## 3.10 METHODS FOR WIRING DEVICE INSTALLATION

A. Installation
1. Comply with NECA 1, including mounting heights listed in that standard, unless otherwise indicated.
2. Coordination with Other Trades:
   a. Protect installed devices and their boxes. Do not place wall finish materials over device boxes, and do not cut holes for boxes with routers that are guided by riding against outside of boxes.
   b. Keep outlet boxes free of plaster, drywall joint compound, mortar, cement, concrete, dust, paint, and other material that may contaminate the raceway system, conductors, and cables.
   c. Install device boxes in brick or block walls so that the cover plate does not cross a joint unless the joint is troweled flush with the face of the wall.
   d. Install wiring devices after all wall preparation, including painting, is complete.

3. Conductors:

a. Do not strip insulation from conductors until right before they are spliced or terminated on devices.
b. Strip insulation evenly around the conductor using tools designed for the purpose. Avoid scoring or nicking of solid wire or cutting strands from stranded wire.
c. The length of free conductors at outlets for devices shall comply with NFPA 70, Article 300, without pigtails.
d. Existing Conductors:
    i. Cut back and pigtail, or replace all damaged conductors.
    ii. Straighten conductors that remain and remove corrosion and foreign matter.
    iii. Pig-tailing existing conductors is permitted, provided the outlet box is large enough.

4. Device Installation:
    a. Replace devices that have been in temporary use during construction and that were installed before building finishing operations were complete.
    b. Keep each wiring device in its package or otherwise protected until it is time to connect conductors.
    c. Do not remove surface protection, such as plastic film and smudge covers, until the last possible moment.
    d. Connect devices to branch circuits using pigtails that are not less than 6 inches in length.
    e. When there is a choice, use side wiring with binding-head screw terminals. Wrap solid conductor tightly clockwise, two-thirds to three-fourths of the way around terminal screw.
    f. Use a torque screwdriver when a torque is recommended or required by manufacturer.
    g. When conductors larger than No. 12 AWG are installed on 15- or 20-A circuits, splice No. 12 AWG pigtails for device connections.
    h. Tighten unused terminal screws on the device.
    i. When mounting into metal boxes, remove the fiber or plastic washers used to hold device-mounting screws in yokes, allowing metal-to-metal contact.

5. Receptacle Orientation:
    a. Install ground pin of vertically mounted receptacles down, and on horizontally mounted receptacles to the right.

6. Device Plates: Do not use oversized or extra-deep plates. Repair wall finishes and remount outlet boxes when standard device plates do not fit flush or do not cover rough wall opening.

7. Dimmers:
    a. Install dimmers within terms of their listing.
    b. Verify that dimmers used for fan-speed control are listed for that application.
    c. Install unshared neutral conductors on line and load side of dimmers according to manufacturers' device, listing conditions in the written instructions.

8. 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, multi-gang wall plates.

B. Identification
    1. Identify each receptacle with panelboard identification and circuit number. Use hot, stamped, or engraved machine printing with white-filled lettering on face of plate, and durable wire markers or tags inside outlet boxes.

## 3.11 METHODS FOR SWITCHBOARD AND PANELBOARD INSTALLATION

A. Coordinate layout and installation of panelboards and components with other construction that penetrates walls or is supported by them, including electrical and other types of equipment, raceways, piping, encumbrances to workspace clearance requirements, and adjacent surfaces. Maintain required workspace clearances and required clearances for equipment access doors and panels.

B. Install panelboards and accessories according to NECA 407 and NEMA PB 1.1.

C. Equipment Mounting: Attach panelboard to the vertical finished or structural surface behind the panelboard.

D. Temporary Lifting Provisions: Remove temporary lifting eyes, channels, and brackets and temporary blocking of moving parts from panelboards.

E. Mount top of trim 90 inches above finished floor unless otherwise indicated.

F. Mount panelboard cabinet plumb and rigid without distortion of box.

G. Install overcurrent protective devices and controllers not already factory installed.
   1. Set field-adjustable, circuit-breaker trip ranges.
   2. Tighten bolted connections and circuit breaker connections using calibrated torque wrench or torque screwdriver per manufacturer's written instructions.

H. Make grounding connections and bond neutral for services and separately derived systems to ground. Make connections to grounding electrodes, separate grounds for isolated ground bars, and connections to separate ground bars.

I. Install filler plates in unused spaces.

## 3.12 METHODS FOR ENCLOSED SWITCHES AND CIRCUIT BREAKERS INSTALLATION

A. Enclosure Environmental Rating Applications: Provide enclosures at installed locations with the following environmental ratings.

B. Installation
   1. Coordinate layout and installation of switches, circuit breakers, and components with equipment served and adjacent surfaces. Maintain required workspace clearances and required clearances for equipment access doors and panels.
   2. Install individual wall-mounted switches and circuit breakers with tops at uniform height unless otherwise indicated.
   3. Temporary Lifting Provisions: Remove temporary lifting of eyes, channels, and brackets and temporary blocking of moving parts from enclosures and components.

## 3.13 METHODS FOR INTERIOR LIGHTING INSTALLATION

A. Install luminaires level, plumb, and square with ceilings and walls unless otherwise indicated.

B. Supports:
   1. Sized and rated for luminaire weight.
   2. Able to maintain luminaire position after cleaning and relamping.
   3. Provide support for luminaire without causing deflection of ceiling or wall.
   4. Luminaire-mounting devices shall be capable of supporting a horizontal force of 100 percent of luminaire weight and a vertical force of 300 percent of luminaire weight.

C. Flush-Mounted Luminaires:
   1. Secured to outlet box.
   2. Attached to ceiling structural members at four points equally spaced around circumference of luminaire.
   3. Trim ring flush with finished surface.

D. Wall-Mounted Luminaires: Attached to structural members in walls.

E. Suspended Luminaires:
   1. Ceiling Mount:
      a. Two 5/32-inch- diameter aircraft cable supports adjustable to 10 feet in length.
      b. Pendant mount with 5/32-inch- diameter aircraft cable supports adjustable to 10 feet in length.
      c. Hook mount.

   2. Pendants and Rods: Where longer than 48 inches, brace to limit swinging.
   3. Continuous Rows of Luminaires: Use tubing or stem for wiring at one point and tubing or rod for suspension for each unit length of luminaire chassis, including one at each end.

## 3.14 SUPPORTS AND HANGERS

A. All hangers, supports, and attachments to the structure must be capable of withstanding three times the anticipated load.

## 3.15 FIELD QUALITY CONTROL

A. Perform tests and inspections with the assistance of a factory-authorized service representative.

B. Perform the following visual and electrical tests:
   1. Conductors and Cables:
      a. After installing conductors and cables and before electrical circuitry has been energized, test feeder conductors and all conductors #6 AWG and larger.
         i. Inspect exposed sections of conductor and cable for physical damage and correct connection according to the single-line diagram.
         ii. Test bolted connections for high resistance using a low-resistance ohmmeter.
         iii. Inspect for correct identification.
         iv. Inspect cable jacket and condition.
         v. Insulation-resistance test on each conductor for ground and adjacent conductors. Apply a potential of 500-V dc for 300-V rated cable and 1000-V dc for 600-V rated cable for a one-minute duration.
         vi. Continuity test on each conductor and cable.
         vii. Uniform resistance of parallel conductors.

   2. Grounding and Bonding
      a. After installing grounding system but before permanent electrical circuits have been energized, test for compliance with requirements.
      b. Inspect physical and mechanical condition. Verify tightness of accessible, bolted, electrical connections with a calibrated torque wrench according to manufacturer's written instructions.
      c. Report measured ground resistances that exceed the following values: 25 Ohms.

d. Excessive Ground Resistance: If resistance to ground exceeds specified values, notify Architect promptly and include recommendations to reduce ground resistance.

3. Wiring Devices
   a. Line Voltage: Acceptable range is 105 to 132 V.
   b. Percent Voltage Drop under 15-A Load: A value of 6 percent or higher is unacceptable.
   c. GFCI Trip: Test for tripping values specified in UL 1436 and UL 943.
   d. Using the test plug, verify that the device and its outlet box are securely mounted.
   e. Tests shall be diagnostic, indicating damaged conductors, high resistance at the circuit breaker, poor connections, inadequate fault-current path, defective devices, or similar problems. Correct circuit conditions, remove malfunctioning units and replace with new and retest as specified above.

4. Switches
   a. Visual and Mechanical Inspection
      i. Inspect physical and mechanical condition.
      ii. Inspect anchorage, alignment, grounding, and clearances.
      iii. Verify that the unit is clean.
      iv. Verify blade alignment, blade penetration, travel stops, and mechanical operation.
      v. Verify that operation and sequencing of interlocking systems is as described in the Specifications and shown on the Drawings.
      vi. Verify correct phase barrier installation.
      vii. Verify lubrication of moving current-carrying parts and moving and sliding surfaces.

   b. Electrical Tests
      i. Perform resistance measurements through bolted connections with a low- resistance ohmmeter. Compare bolted connection resistance values to values of similar connections. Investigate values that deviate from adjacent poles or similar switches by more than 50 percent of the lowest value.
      ii. Perform insulation-resistance tests for one minute on each pole, phase-to-phase and phase-to-ground with switch closed, and across each open pole. Apply voltage in accordance with manufacturer's published data. In the absence of manufacturer's published data, use Table 100.1 from the NETA ATS. Investigate values of insulation resistance less than those published in Table 100.1 or as recommended in manufacturer's published data.
      iii. Perform ground fault test according to NETA ATS 7.14 "Ground Fault Protection Systems, Low-Voltage."

5. Molded Case Circuit Breakers
   a. Visual and Mechanical Inspection
      i. Perform resistance measurements through bolted connections with a low- resistance ohmmeter. Compare bolted connection resistance values to values of similar connections. Investigate values that deviate from adjacent poles or similar switches by more than 50 percent of the lowest value.
      ii. Perform insulation-resistance tests for one minute on each pole, phase-to-phase and phase-to-ground with switch closed, and across each open pole. Apply voltage in accordance with manufacturer's published data. In the absence of manufacturer's published data, use Table 100.1 from the

NETA ATS. Investigate values of insulation resistance less than those published in Table 100.1 or as recommended in manufacturer's published data.

iii. Inspect operating mechanism, contacts, and chutes in unsealed units.

b. Electrical Tests

i. Perform resistance measurements through bolted connections with a low- resistance ohmmeter. Compare bolted connection resistance values to values of similar connections. Investigate values that deviate from adjacent poles or similar switches by more than 50 percent of the lowest value.

ii. Perform insulation-resistance tests for one minute on each pole, phase-to-phase and phase-to-ground with circuit breaker closed, and across each open pole. Apply voltage in accordance with manufacturer's published data. In the absence of manufacturer's published data, use Table 100.1 from the NETA ATS. Investigate values of insulation resistance less than those published in Table 100.1 or as recommended in manufacturer's published data.

iii. Perform a contact/pole resistance test. Drop values shall not exceed the high level of the manufacturer's published data. If manufacturer's published data are not available, investigate values that deviate from adjacent poles or similar switches by more than 50 percent of the lowest value.

6. Interior Lighting

a. Operational Test: After installing luminaires, switches, and accessories, and after electrical circuitry has been energized, test units to confirm proper operation.

b. Test for Emergency Lighting: Interrupt power supply to demonstrate proper operation. Verify transfer from normal power to battery power and retransfer to normal.

C. Devices will be considered defective if they do not pass tests and inspections.

## 3.16 CLEANUP

A. Upon completion of the work of this Section, remove all material, debris, and equipment associated with or used in the performance of this work.

**END OF SECTION**

# APPENDIX A - PROJECT #170250

# SPECIFICATIONS
# FOR ASBESTOS ABATEMENT
# & LEAD RELATED DEMOLITION WORK
# FOR THE HVAC REPLACEMENT PROJECT, AT THE
# FERNDALE VETERANS MEMORIAL BUILDING
# 1100 MAIN STREET
# FERNDALE, CA

June 19, 2022

Project 2200304-B

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**APPENDIX B Revised Integrated Asbestos & Lead Survey Report**

# SPECIFICATIONS
# FOR ASBESTOS ABATEMENT
# & LEAD RELATED DEMOLITION WORK
# FOR THE HVAC REPLACEMENT PROJECT, AT THE
# FERNDALE VETERANS MEMORIAL BUILDING
# 1100 MAIN STREET
# FERNDALE, CA

## 1.0 PROJECT DESCRIPTION

These specifications apply to the asbestos abatement and lead related demolition work that will be required as part of the scheduled HVAC Replacement Project, at the Ferndale Veterans Memorial Building, located at 1100 Main Street, in Ferndale, CA.

### 1.1 Hazardous Materials Surveys

An asbestos and lead survey was completed for the HVAC Replacement Project, in April and May of 2022, by Brunelle & Clark Consulting LLC, with results reported in the *Revised Integrated Asbestos Survey & Lead Paint Sampling, Ferndale Veterans Memorial Building, 1100 Main Street, Ferndale, CA.* (Project #2200304), dated May 15, 2022. The asbestos & lead survey report is contained in Appendix B of this Specification document.

**Asbestos Containing Materials:**

The asbestos survey includes all suspect materials in the Attic space, the Crawl space, the Boiler Room, ceiling and wall finishes throughout the interior, the Transite flue pipes on the exterior of the building, and the chimney cap.

The survey does not include any materials in the Kitchen, any flooring materials in the building, or drilling through wood wall panels.

**Asbestos was found present in ten (10) types of building materials** within the project area. The materials containing asbestos are listed below.

**ACCM**

- Acoustic plaster, textured top coat

**ACM**

- Transite flue pipes, gray
- Tar roof patch, black (all tar roof patch)
- Caulking, black

- Window putty, gray (all window putty)

**RACM**

- Pipe insulation elbow, white compound
- Pipe insulation, block, white compound
- Pipe insulation, Aircell, brown-white cardboard
- Duct Insulation, Aircell, brown & white cardboard
- Gasket, gray fabric

See Figures 5-9 (Integrated Asbestos Locations), and Table 2 (Integrated Asbestos Identifications & Classifications) in Appendix A of these specifications, for detail of types and locations of asbestos identified in the building. For all sampling and analytic data detail, refer to the Project asbestos & lead report in Appendix B of these specifications.

**Lead Containing Materials:**

Sampling for lead in paint was conducted using a portable Heuresis Corporation, Pb200i XRF (X-ray fluorescence) Lead Paint Analyzer. The XRF was used to measure lead content in paint coatings of representative building components within the project area.

The sampled component types identified to contain significant lead content are listed by category below.

**Lead Based Paint (LBP)**

- Window sills (exterior)
- Window trim (exterior)
- Window jambs (exterior)
- Window frames (exterior)
- Doors (exterior)
- Door trim (exterior)
- Fascia trim (exterior)
- Ceramic wall tile (restrooms & Kitchen Storage)

**Lead Containing Surface Coating (LCSC)**

- Metal railings (exterior, north entrance)
- Plaster wall & ceiling finish (throughout interior)
- Window frames (interior)
- Window trim (interior)
- Window jambs (interior)

- Cabinet (Kitchen Storage)
- Siding (exterior patio)

See Table 3 (XRF Paint Sampling Data, 5/3/22), and Table 4 (XRF Paint Sampling Data, 5/7/18), in Appendix A of theses specifications for a description of sample locations, lead content, and paint classification. For all sampling and analytic data detail, refer to the Project asbestos & lead report in Appendix B of these specifications.

## 1.2 Scope of Asbestos Abatement Work

A. The required asbestos abatement work includes the removal of all materials identified to contain any amount of asbestos, that are in the project area, and that are scheduled to be removed or disturbed by the project.

B. It is the responsibility of the General Contractor and the Abatement Contractor to confirm the exact locations, and quantities of asbestos materials to be removed during the "Asbestos Abatement" project.

C. The following materials and areas are included in the "Project Asbestos Abatement" scope of work:

- Abatement of all **RACM Duct Insulation** from the Attic Space and the Boiler Room, including all debris present in both spaces, and a complete cleaning of all surfaces in both spaces. Post asbestos abatement air clearance will be required for both the Attic space and the Boiler Room.

- Abatement of all **RACM Pipe Insulation** on the small section of exposed pipe near the floor at the north-east corner of the Storage Room, located to the north of the Assembly Hall

- Abatement of all three **ACM Transit Flue Pipes** located on the north exterior of the building, including any sections of pipe that extend through the siding into the building.

- Abatement of the **ACM Tar Roof Patch** on the sheet metal chimney cap located on the roof. Abatement includes the complete removal and disposal of the contaminated sheet metal chimney cap.

- Abatement of all **ACM Caulking** on the boiler equipment and ducting in the Boiler Room.

- Abatement of all **RACM Fabric Gaskets** on the doors/hatches on the boiler equipment in the Boiler room.

- Removal of the suspended ceiling metal frame ledge that is attached to the **ACCM Acoustic Plaster** walls in the Assembly Hall. The metal ledge is at ceiling height, and runs along all four walls in the Assembly Hall. The removal task includes cleaning and encapsulation of all locations where the ACCM acoustic wall plaster is damaged during the metal ledge removal. The task must be conducted in as an asbestos abatement project, in proper containment. Post asbestos abatement air clearance will be required for the Assembly Hall following completion of the task.

The **RACM Pipe Insulation in the Crawlspace will not be included in this Project however**, if during the project it becomes necessary to enter the crawlspace, the Humboldt County Project Architect must be informed, and must approve all access to the crawlspace prior to entry.

**The entire crawlspace is contaminated, and is an "Asbestos Hazard Area." Personnel without proper training and personal protective equipment should not be allowed access to the crawlspace. All entries to the crawlspace should be secured to prevent access, and "Asbestos Hazard Warning Signs" should be posted at all entrances.**

D. Any other materials discovered during the Project, which are confirmed or presumed to contain asbestos, and will be disturbed by the project, are included in the "Asbestos Abatement" scope of work. The Abatement Contractor may request additional compensation from the County for abatement of discovered materials not identified in the Project asbestos survey.

E. The Project includes all clean-up, storage, transport, and proper disposal of all friable and non-friable asbestos containing debris, including all contaminated disposable equipment used for the project.

F. Abatement Contractor shall furnish all labor, materials, services, and equipment required to safely execute asbestos abatement operations.

## 1.3 Scope of Lead Related Work

A. The required lead related demolition work includes the removal of all lead containing building components scheduled to be removed by the HVAC Replacement Project.

B. It is the responsibility of the General Contractor and the Abatement Contractor to confirm the exact types, locations, and quantities of building components to be removed during the Lead Related Demolition Work.

C. The Project lead related demolition work includes, but is not limited to, the following tasks:

- Removal of the **damaged ceiling and wall plaster in the Hall** at the north-west corner of the building, near the Woman's Restroom and Kitchen Storage Room.

  It is the responsibility of the General Contractor and the Abatement Contractor to confirm with the Project Architect, the exact location and quantity of plaster to be removed.

D. The Abatement Contractor shall be responsible for conducting lead waste characterization testing, to determine the waste classification (hazardous or non-hazardous), for all lead containing waste generated by this Project.

E. The Project includes clean-up, storage, transport, and proper disposal of all lead containing debris, including all contaminated disposable equipment used for the project.

F. Abatement Contractor shall furnish all labor, materials, services, and equipment required to safely execute the lead related demolition work operations.

## 1.4 Definitions

A. **"Architect"** refers to the Architect for the Project.

B. **"General Contractor"** herein refers to the General Contractor for the Project.

C. **"Project"** refers to asbestos abatement work and demolition of materials lead containing lead.

D. **"Owner"** refers to the site owner.

E. **"Project Manager"** refers to project manager assigned by the Site Owner.

F. **"Environmental Consultant"** refers to the project Certified Asbestos Consultant and Certified Lead Inspector/Assessor.

G. **"Abatement Contractor"** refers to the licensed asbestos abatement and lead material demolition contractor.

H. **"Demolition Contractor"** refers to the Demolition Contractor for this project.

I. **"Competent person"** *means, in addition to one who is capable of identifying existing and predictable hazards in the surroundings or working conditions which are unsanitary, hazardous, or dangerous to employees, and who has authorization to take prompt corrective measures to eliminate them, one who is capable of identifying existing asbestos*

*hazards in the workplace and selecting the appropriate control strategy for asbestos exposure, who has the authority to take prompt corrective measures to eliminate them* (8 CCR 1529).

J. **Asbestos Containing Construction Materials (ACCM):** are materials that contain asbestos in amounts between 0.1% and 1.0%.

K. **Asbestos Containing Materials (ACM)**: are materials that contain >1% asbestos.

L. **Regulated Asbestos Containing Materials (RACM):** are a category of ACM that is subject to EPA NESHAP regulation, which includes friable ACM and ACM that has or will become friable.

M. **"Friable"** asbestos material is defined as material containing >1% asbestos, that when dry, may be crumbled, pulverized, or reduced to powder by hand pressure.

N. **"Lead-related construction work"** *means any construction, alteration, painting, demolition, salvage, renovation, repair, or maintenance of any residential or public building, including preparation and cleanup, that, by using or disturbing lead-containing material or soil, may result in significant exposure of adults or children to lead* (17 CCR 35040).

# 2.0 PROJECT REQUIREMENTS

## 2.1 Regulations

A. **General applicability of all federal, state, and local regulations, standards and codes governing asbestos abatement, lead in construction, hazardous material transport, and hazardous material disposal:** Except to the extent that more explicit or more stringent requirements are written directly into the contract documents or these specifications, all applicable regulations, standards, and codes have the same force and effect and are made a part of the contract documents as if copied directly into the contract documents, or as if published copies are bound herewith.

B. Applicable regulations pertaining to asbestos work include, but are not limited to: the Cal/OSHA Asbestos Construction Standard (8 CCR 1529); the EPA National Emissions Standard For Hazardous Air Pollutants (NESHAP), 40 CFR, Part 61, Subpart M; the EPA Asbestos Hazard Emergency Response Act (AHERA) "The Asbestos-Containing Materials in Schools Rule" (40 CFR Part 763, Subpart E); and the California Code of Regulations (22 CCR 66261- 66263) pertaining to hazardous waste.

C. Applicable regulations pertaining to lead related construction work include, but are not limited to: the Cal/OSHA Construction Safety Orders,

Lead (8 CCR 1532.1), the California Code of Regulations Title 17 (17 CCR 35000-36100), the EPA Lead Renovation, Repair, and Painting Rule (40 CFR Part 745), the US Department of Housing and Urban Development (HUD) "Lead Safe Housing Rule, 24 CFR 35, subparts B through R," the California Code of Regulations (22 CCR 66261- 66263) pertaining to hazardous waste, and the Federal Code of Regulations (40 CFR 260-262) pertaining to hazardous waste.

## 2.2 Owner Responsibilities

A. The Owner reserves the right to stop the Abatement Contractor's work at any time, if failure to comply with safety and regulatory requirements poses an imminent health and safety risk to any employee or individual present at the project site, at no cost to the Owner. If the Abatement Contractor fails to take effective measures to correct noncompliant work practices, the Owner shall contact the appropriate regulatory agency.

B. The Owner assigns full authority to the Environmental Consultant, to stop the Abatement Contractor's work and require corrective action, at no cost to the Owner, at any time, for any failure to comply with any applicable laws, regulations, and these specifications.

C. The Owner is responsible for ensuring that the Abatement Contractor and General Contractor have been provided copies of the original asbestos and lead survey, theses specifications, and any subsequent addendum specifications, if additional work is added to the Project.

## 2.3 General Contractor Responsibilities

A. General Contractor Responsibilities: The General Contractor shall assume full responsibility and liability for the compliance with all applicable federal, state, and local regulations pertaining to work practices; waste transport; waste disposal; and protection of workers, visitors to the site, and persons occupying adjacent areas at the site.

B. The General Contractor is responsible for ensuring receipt of the original asbestos and lead survey, and theses specifications.

C. The General Contractor is responsible for having read the original asbestos and lead survey, and theses specifications, in their entirety, and understanding all Project requirements detailed in the two documents.

D. The General Contractor is responsible for ensuring that all General Contractor personnel, Subcontractors, Subcontractor personnel, and any other individual present during the Project work: have been informed that asbestos and lead related work is being conducted at the site; have been provided orientation as to where the asbestos and lead related work is

being conducted; instruction to not enter or disturb regulated areas, and guidance to avoid accidental exposure.

E. The General Contractor must assign a "Competent Person" who is responsible for exercising general supervisory authority over all work conducted at the site, and ensuring compliance with all applicable laws, regulations, and these specifications.

F. The General Contractor shall be responsible for obtaining any permits required to fully execute the General Contract.

## 2.4 Abatement Contractor Responsibilities

A. Abatement Contractor shall perform all asbestos and lead related work in compliance with the most recent edition of all applicable federal, state, and local regulations, standards, codes, and these specifications.

B. The Abatement Contractor is responsible for ensuring receipt of the original asbestos and lead survey, and theses specifications.

C. The Abatement Contractor is responsible for having read all original asbestos and lead survey documents, and theses specifications, in their entirety, and understanding all Project requirements detailed in the Survey and Specification documents.

D. By signing the Project Agreement that incorporates this Specification document, the Abatement Contractor agrees to follow all requirements detailed in this Specification document.

E. The Abatement Contractor is responsible for providing training and medical examinations for all employees, and maintaining records of asbestos and lead training/medical examinations for all abatement personnel, as required by the applicable federal, state, and local regulations for asbestos and lead related work.

F. The Abatement Contractor shall indemnify and hold the Owner harmless for failure to comply with any applicable federal, state, and local regulations for asbestos and lead related work, on the part of himself, his employees, or his sub- contractors.

G. The Abatement Contractor will be held responsible for any delays, and associated monetary loss, created by failure to comply with any applicable law or regulation, or these Project Specifications.

## 2.5 Environmental Consultant Responsibilities

A. The Environmental Consultant is responsible for conducting general Project oversight per requirements detailed in an executed service agreement between the Owner and the Environmental Consulting Firm.

## 2.6 Required Licensure

A. The Abatement Contractor shall be licensed by the State of California, Contractors State License Board for the type of work required by the Project, which includes asbestos abatement and lead related demolition work. The Abatement Contractor shall have a valid Asbestos Endorsement to that license, and a C-22 endorsement for asbestos abatement.

B. The Abatement Contractor must successfully complete the "Cal/OSHA Employer Registration" process, and have a current "Certificate of Registration for Asbestos-related Work," issued by the Division of Occupational Safety and Health (8 CCR 341.6).

C. The Abatement Contractor must be certified by the Environmental Protection Agency (EPA), as a "Lead Safe Certified firm," per the requirements of the EPA Lead Renovation, Repair, and Painting Rule (40 CFR Part 745).

## 2.7 Required Asbestos Abatement Training

A. All Abatement Contractors providing asbestos abatement services that disturbs materials containing any amount of asbestos, must satisfy all Cal/OSHA training requirements in compliance with Title 8 CCR 1529, and any other applicable State and Federal regulation pertaining to asbestos abatement training.

B. All Project work that disturbs or contacts materials containing any amount of asbestos shall be supervised by an individual trained and certified as an Asbestos Supervisor, in accordance with the requirements of the EPA Model Accreditation Plan (40 CFR 763, Subpart E, Appendix C), and who has been designated as the "Competent Person."

C. All employees (workers) who conduct asbestos abatement, or any other activity that disturbs or contacts materials containing any amount of asbestos shall be trained and certified as an Asbestos Worker, in accordance with the requirements of the EPA Model Accreditation Plan (40 CFR 763, Subpart E, Appendix C).

## 2.8 Required Lead Related Work Training

A. All contractors and subcontractors providing any lead related work must satisfy all requirements of the Cal/OSHA Construction Safety Orders,

Lead Section (8 CCR 1532.1), the California Code of Regulations Title 17 (17 CCR 35000-36100), the EPA Lead Renovation, Repair, and Painting Rule (40 CFR Part 745), and any other applicable State and Federal regulations pertaining to lead related work training.

B. The Abatement Contractor's supervisor shall have received training as required by the Cal/OSHA Construction Safety Orders, Lead Section (8 CCR 1532.1), the California Code of Regulations Title 17 (17 CCR 35000-36100) the EPA Lead Renovation, Repair, the Painting Rule (40 CFR Part 745), and any other applicable State and Federal regulation pertaining to asbestos abatement training, and must be certified by the California Department of Public Health (CDPH) as a "Lead Supervisor."

C. All employees (workers) who conduct lead related construction work shall have received training and CDPH certification as required by the Cal/OSHA Construction Safety Orders, Lead Section (8 CCR 1532.1), the California Code of Regulations Title 17 (17 CCR 35000-36100), the EPA Lead Renovation, Repair, and Painting Rule (40 CFR Part 745), and any other applicable State and Federal regulation pertaining to lead related construction work training.

## 2.9 Insurance Requirements

. Provide as per "Contract."

## 2.10 Bonding Requirements

A. Provide as per "Contract."

## 2.11 Project Schedule

A. Project asbestos abatement and lead related demolition work will be scheduled by the General Contractor, if asbestos abatement and lead related demolition work is included in the "General Contract."

B. Project asbestos abatement and lead related demolition work will be scheduled by the Project Manager, if the asbestos abatement and lead related demolition work will be contracted directly with the building Owner.

C. All work shall be performed in accordance with the schedule requirements established by the General Contractor or Project Manager, and these specifications.

D. The Abatement Contractor must agree to the time frame required by the General Contractor or Project Manager, and must present a detailed project schedule showing the start time and completion time for each project task.

E. The detailed project schedule must be submitted to the Project Manager, General Contractor, and the Environmental Consultant, at least 30 days prior to the desired project start date.

F. Any changes to the schedule must be approved by the Project Manager and General Contractor, and the Environmental Consultant must be informed of all changes to the schedule at least 3 weeks prior to any project work that will be conducted following the revised schedule.

G. During the Project, the Abatement Contractor must inform the Environmental Consultant weekly, as to the work progress, and any changes to the Project schedule. The Abatement Contractor must report to the Owner, any significant changes to the agreed-on Project schedule, immediately, and in writing.

## 2.12 Notifications

A. The Abatement Contractor shall be responsible for filing the EPA National Emission Standards for Hazardous Air Pollutants (NESHAP) notification for abatement of Regulated Asbestos Containing Materials (RACM).

B. Siskiyou County requires the NESHAP Notification be filed whether or not any regulated or non-regulated asbestos is to be disturbed by the project.

C. The NESHAP Notification for abatement of ACM/RACM must be submitted to the Siskiyou County Air Pollution Control District, at least 10 working days prior to abatement of ACM/RACM. The Abatement Contractor is responsible for all costs associated with filing the notification fee.

D. The Abatement Contractor shall be responsible for filing a "Report of Use of Regulated Carcinogens," notification with the Division of Occupational Safety and Health, which must be submitted a minimum of 24-hours prior to asbestos abatement activities.

E. The Abatement Contractor shall be responsible for filing a Cal/OSHA "Lead-Work Pre-Job Notification," with Cal/OSHA at least 24 hours prior to performing any lead related demolition work.

## 2.13 Submittals

A. Prior to commencement of work, the Abatement Contractor shall submit to the Owners Environmental Consultant, the following documents:

1. A detailed project schedule showing the start time and completion time for each project task.

2. Copies of the Abatement Contractor's licenses and registrations required by Section 2.6 of these specifications, including copies of any sub contractor's licenses and registrations.

3. Copies of all required agency notifications, showing proof of submittal, as required by Section 2.12 of these specifications.

4. Documentation of training and certification for all Abatement Contractor employees, supervisor, and any other company personnel, who will be conducting any asbestos abatement and lead related demolition activities, as required by Sections 2.7 & 2.8 of these specifications.

5. Documentation from a Physician that all employees who may be exposed to airborne asbestos fibers, or lead dust, have received medical evaluation, and are physically capable of working while wearing the respirator without suffering adverse health effects.

6. Documentation of respirator fit testing for all Abatement Contractor employees who will enter any regulated work area. The fit testing shall be in accordance with qualitative procedures as required by OSHA regulations, and must be for the specific respirator types required for the specific OSHA work classifications of this project.

7. Certification that all HEPA negative air machines used on this project have passed a "challenge test," conducted by a certified third party, prior to use on this site. The challenge test must have been conducted within the last 6 months for negative air machines to be exhausted to the outside air. For negative air machines to be exhausted anywhere on the interior of the building, the challenge test must be conducted onsite, immediate before use, and must be re-tested if the negative air machine leaves the site and returns.

8. Manufacturer's certification that HEPA vacuums and air filtration devices conform to ANSI Z9.2-79.

9. Copies of Material Safety Data Sheets (MSDS) for any solvents, encapsulants, paints, wetting agents, chemicals, and replacement materials to be used for this project.

B. During work activities, the Abatement Contractor shall submit to the Owners Environmental Consultant, the following documents:

1. Copies of each work area entry/exit log book. Log books must record name, affiliation, time in, time out, and respirator type for each entry into the work area.

2. Copies of daily logs indicating work locations, type of materials removed, quantity of materials removed, and number of personnel conducting each task.

3. Lab reports showing the results of all required OSHA personal air monitoring. Results shall be submitted to the Environmental Consultant within two days of the time of sampling. Failure to provide personal air monitoring lab report within the required time, will result in a stop work order, and work shall not resume until the required personal air monitoring lab reports are received by the Environmental Consultant. The Abatement Contractor will be fully responsible for any monetary loss due to any stop work order for failure to provide the required asbestos or lead personal air monitoring lab reports within the required timeframe.

4. Copies of all revised agency notifications, if required to report changes to the asbestos abatement or lead related work schedule or description, showing proof of submittal.

5. Copies of all lead waste characterization lab reports, for all lead waste sampling conducted for this project by the Abatement Contractor.

6. Copies of all accident/incident reports where injury or damage has occurred on or to the Owner's property.

## 2.14 Notice Postings

A. An Entry/Exit Log must be posted at the entry points of all regulated areas.

B. OSHA “Regulated Area” warning signs must be posted at all entries to regulated areas.

C. Cal/OSHA Contractor Asbestos Registration must be posted at the site.

D. Cal/OSHA “Report of Use of Regulated Carcinogens” must be posted at the site.

E. Cal/OSHA “Lead-Work Pre-Job Notification” must be posted at the site.

F. The NESHAP Abatement Notification (if applicable) must be posted at the site.

G. On-site records shall include, but not be limited to the following:

1. A written Hazard Communication Program, including all required topics, and documentation of training.

2. Emergency Action and Fire Prevention Plan.

3. Respiratory Protection Program (Include documentation of training).

4. Material safety data sheets for products at the site (MSDS warnings).

## 2.15 Site Use and Security

A. Confine operations at the site to the areas required for Project activities under the Contract, and as allowed by the General Contractor and Project Manager. Areas not required to be entered for the project work are not to be entered or disturbed by the Abatement Contractor or employees.

B. Access to Regulated Areas shall be restricted to authorized and properly trained personnel with adequate respirator protection, which includes the Abatement Contractor, Abatement Contractor's employees, the Owner's Environmental Consultants, and State and Local inspectors.

C. Entry into the Regulated Areas by unauthorized individuals shall be reported immediately to the Environmental Consultant and the Project Manager.

D. The Abatement Contractor shall be responsible for site security measures throughout the duration of the Project. All Regulated Areas must be secured at the end of each work day, before the Abatement Contractor's Supervisor leaves the site.

## 2.16 Emergency Planning

A. Emergency planning and procedures shall be developed by Abatement Contractor prior to commencement of Project work activities.

B. Emergency planning shall include, but are not limited to, considerations of accidental asbestos fiber release, fire, explosion, electrical hazards, slips, trips and falls, and heat related injury.

C. Abatement Contractor shall ensure that all persons entering the work area understand the Project site layout and emergency procedures.

D. Employees shall be trained in evacuation procedures in the event of work place emergencies.

1. For non-life-threatening injury or illness, employees shall decontaminate following normal procedures, with assistance from fellow workers, if necessary, before exiting the Regulated Area to obtain proper medical treatment.

2. For life-threatening injury or illness, worker decontamination shall take least priority. After measures to stabilize the injured worker,

remove him or her from the work place, and obtain immediate medical treatment.

### 2.17 Fire Protection

A. The Abatement Contractor is responsible for developing and implementing an effective fire prevention program (8 CCR 1920).

B. The Abatement Contractor shall conduct all activities in accordance with Cal OSHA fire protection and prevention regulations for construction (8 CCR 1920, 8 CCR 1922, 8 CCR 6151).

C. A minimum of two 4A/60BC dry-chemical extinguisher shall be maintained in each work area, and shall be placed in locations in accordance with Cal OSHA Regulation 8 CCR 1922.

D. All fire extinguishers must be kept fully charged, inspected monthly, and serviced annually (8 CCR 1922).

E. The Abatement Contractor shall ensure that all personnel are aware of the locations and proper use of all fire extinguishers and other fire-fighting equipment, and receive fire extinguisher training annually (8 CCR 6151).

F. All plastic sheeting (Poly) used for creating containments or any other purpose during the Project must be "Fire-Retardant."

G. Material Safety Data Sheets (MSDS) for fire retardant materials shall be made available upon request.

H. All combustible chemicals and debris shall be properly stored or disposed of at the end of each working day.

## 3.0 GENERAL EXECUTION

### 3.1 Worksite Preparation

A. If electrical power is available at the site, the Abatement Contractor shall have access to site electrical power, at the Owner's expense.

B. If electrical power is not available at the site, the Abatement Contractor shall be responsible for providing a temporary power source sufficient to properly complete the Project work.

C. The Abatement Contractor is responsible for the safe installation and use of all temporary electrical equipment, in compliance with all applicable electrical code requirements and Cal/OSHA requirements for temporary electrical systems.

D. Abatement Contractor shall be responsible for providing electrical lines and other electrical related equipment required to safely complete the abatement work.

E. If water is available at the site, the Abatement Contractor shall have access to site water, at the Owner's expense.

F. If water is not available at the site, the Abatement Contractor shall be responsible for providing a temporary water source sufficient to properly complete the Project work.

G. Abatement Contractor shall be responsible for providing all hoses and other water related equipment required to safely complete abatement work.

H. Abatement Contractor shall be responsible for providing exterior waste bins for storage of all project asbestos and lead containing waste. "Hazardous" (Friable) asbestos waste, and "Hazardous" lead waste, must be stored separately. All bins must be secured with a lock.

I. The Abatement Contractor must provide a portable toilet and wash station for his employees, unless the Owner or General Contractor agree to provide them for the Project.

## 3.2 General Project Procedures

A. The Abatement Contractor shall provide a minimum of a 30-day notification to the Project Manager, General Contractor, and the Project Environmental Consultant prior to commencement of any Project work activities.

B. Prior to commencement of asbestos abatement and lead related demolition work, the Abatement Contractor shall coordinate all project logistics with the Project Manager, the General Contractor, and the Environmental Consultant.

C. No asbestos abatement or lead related demolition work shall be conducted until all pre-project submittals have been received, reviewed, and approved by the Environmental Consultant.

D. The Abatement Contractor must ensure that all electrical outlets and lines, throughout all areas being disturbed by asbestos abatement and demolition activities, are safely de-activated.

E. The Abatement Contractor must ensure that all electrically powered equipment used for the Project are plugged into sources equipped with ground-fault circuit interrupters (GFCI).

F. For all regulated areas where asbestos or lead related work is to be conducted, the Abatement Contractor must ensure that all HVAC systems have been shut-down and will remain shut down throughout the duration of the work, and until clearances have been issued by the Environmental Consultant.

G. All entrances to all asbestos and lead regulated areas and containments must be secured to prevent entry by unauthorized personnel.

### 3.3 Alternative Procedures

A. If specified procedures cannot be utilized, a request shall be made in writing to the Owner, providing details of the problem encountered and recommended alternatives.

B. Alternative procedures shall provide equivalent or greater protection than procedures that are replaced.

C. Any alternative procedures must be approved in writing by the Owner and the Owner's Environmental Consultant prior to implementation.

### 3.4 Regulated Areas For Asbestos

A. A "Regulated Area" must be established for all asbestos abatement work. The Regulated Area, including the "Containment," must meet all requirements of the Cal/OSHA Asbestos Regulation 8 CCR 1529.

B. Warning signs, meeting the specifications of Cal/OSHA Asbestos Regulation 8 CCR 1529, must be posted at the perimeter and entry points of "Regulated Areas" for asbestos abatement. Signs shall be posted at a distance sufficiently far enough away from work areas to permit a person to read the sign and take necessary protective measures to avoid exposure.

C. In all asbestos "Regulated Areas" and "Containments," all personnel shall wear personnel protective equipment as required in Section 3.9 of these specifications.

D. Negative air containments will be required for all interior asbestos abatement work.

E. All HEPA negative air machines to be used on this Project must have passed a "challenge test," conducted by a certified third party, prior to use at this site.

F. Any HEPA negative air machines used on this Project, and vented to interior spaces, shall pass an "on-site challenge test," conducted by a certified third party, prior to use at this site. Tested machines must remain

onsite for the duration of the project, if a machine is removed and returned, it must again pass an "on-site challenge test," prior to use.

G. Two layers of 6-mil poly sheeting must be installed as "critical barriers" over all doors, windows, vents, and other openings of all interior asbestos abatement "Containments."

H. For exterior asbestos abatement "regulated areas," two layers of 6-mil poly sheeting must be installed as "critical barriers" over all doors, windows, vents, and other openings within 20 feet of work.

I. The Environmental Consultant will conduct a pre-abatement inspection of all regulated areas, containments, and negative air conditions, prior to commencement of asbestos abatement work.

J. The Abatement Contractor must notify the Environmental Consultant at the completion of set up for each regulated area and containment, and shall not start abatement or demolition activities until the regulated area and containment have passed inspection by the Environmental Consultant.

### 3.5 Regulated Areas For Lead

A. A "Regulated Area" must be established for all lead related work. The Regulated Area, including the "Containment," must meet all requirements of the Cal/OSHA Lead in Construction Standard Title 8 CCR 1532.1, the California Code of Regulations Title 17 (17 CCR 35000-36100), and the EPA Lead Renovation, Repair, and Painting Rule (40 CFR Part 745).

B. Warning signs, meeting the specifications of Cal/OSHA Lead in Construction Standard Title 8 CCR 1532.1, must be posted at the perimeter and entry points to "Regulated Areas" for lead related work. Signs shall be posted at a distance sufficiently far enough away from work areas to permit a person to read the sign and take necessary protective measures to avoid exposure.

C. In all lead "Regulated Areas" and "Containments," all personnel shall wear personnel protective equipment as required in Section 3.9 of these specifications.

D. For interior containments: all objects must be removed or covered and sealed with plastic and duct tape; all ducts or other openings must be sealed with plastic and duct tape; all windows and doors within the work area must be closed; all door openings must be sealed with plastic, including the door used for entry; and floors must be covered with plastic out 10 feet from the work, or greater, if necessary to contain the dust and debris.

E. For all exterior work areas: close all doors and windows within 20 feet of the work area; all door openings within the work area must be sealed with plastic; and the ground must be covered with plastic out 10 feet from the building, or greater, if necessary to contain the dust and debris. The plastic drop sheet must be secured to the wall and ground, and sealed with duct tape along the wall.

F. Vertical containment will be required, if it necessary to contain the work, and prevent dust and debris migration beyond drop cloths to adjacent areas.

G. The Environmental Consultant will conduct a pre-abatement inspection of all regulated areas, containments, and negative air conditions, prior to commencing lead related demolition work.

H. The Abatement Contractor must notify the Environmental Consultant at the completion of set up for each regulated area and containment, and shall not start demolition activities until the regulated area and containment have passed inspection by the Environmental Consultant.

### 3.6 Personnel Air Monitoring For Asbestos & Lead

A. The Abatement Contractor must provide daily employee personal air monitoring for asbestos exposure, required by Cal OSHA 8 CCR 1529 and Federal OSHA 29 CFR 1926.1101, unless a Negative Exposure Assessment (NEA) is submitted to, and approved by, the Environmental Consultant.

Abatement Contractor shall conduct representative breathing zone personal air monitoring of its employees (at a minimum, ¼ of employees) once each shift, for one 8-hour TWA & 30-minute short term exposure analysis. Personal air sampling shall be required during each and all work shifts involving the disturbance of ACM & ACCM, in all "Regulated Areas."

Air monitoring laboratory analysis reports shall be submitted to the Owner's Environmental Consultant within 2 days of the monitoring work. Any results in excess of the Permissible Exposure Limit (PEL) of (0.1 f/cc) shall be brought to the immediate attention of the Owner's Environmental Consultant, and all work shall cease until cleared to proceed by the Owner's Environmental Consultant.

B. The Abatement Contractor is responsible for providing daily OSHA compliance employee personal air monitoring for airborne lead exposure, per Cal/OSHA 8 CCR 1532.1, unless a Negative Exposure Assessment (NEA) is submitted to, and approved by, the Environmental Consultant.

Contractor shall conduct representative breathing zone personal air monitoring of its employees (at a minimum, ¼ of employees) once each shift, for both the lead Action Level (AL) and the lead Permissible Exposure Limit (PEL) analyses. Personal air sampling shall be required during each and all work shifts involving the disturbance of lead containing material.

Air monitoring laboratory analysis reports shall be submitted to the Owner's Environmental Consultant within 2 days of the monitoring work. Any results in excess of the lead PEL shall be brought to the immediate attention of the Owner's Environmental Consultant, and all work shall cease until cleared to proceed by the Owner's Environmental Consultant.

### 3.7 Post Abatement Clearance For Asbestos

A. Inform the Environmental Consultant upon completion of abatement work, and worksite clean-up, prior to removal of each containment and demobilization of the abatement crew. The Environmental Consultant will perform a visual clearance of the abatement area prior to air clearance sampling.

B. Abatement contractor shall maintain negative air conditions in all negative air containments, until the Environmental Consultant has cleared the contained area.

C. Post-asbestos abatement air clearance testing is required for all interior spaces, and shall be performed by the Project Environmental Consultant using either the AHERA TEM protocols or, where permitted by AHERA, PCM sampling.

D. In the event of a clearance failure, either visual or air sampling, the Abatement Contractor shall, at his expense, re-clean the inspected area and pay all re-testing costs.

### 3.8 Clearance For Lead Related Work

A. The Environmental Consultant will perform a visual clearance of each area where lead related demolition work is conducted.

B. Areas where lead containing materials are disturbed or abated must be free of any visible dust and/or debris for clearance to be achieved.

C. In the event of a visual clearance failure, the Abatement Contractor shall, at his expense, re-clean the inspected area prior to any additional visual clearance.

## 3.9 Equipment

A. Disposable protective clothing, including head, body, and foot coverings shall be furnished to all employees and visitors who will enter a "Regulated" work area.

B. Respirators shall be furnished to the abatement workers by Abatement Contractor. The respirators shall have been tested and approved by National Institute of Occupational Safety and Health (NIOSH) for use in asbestos and lead contaminated atmospheres.

C. ½ face air purifying respirators with P-100 filters will be required when disturbing non-friable ACM, ACCM, and lead containing material unless an adequate "negative exposure assessment" is submitted to, and approved by, the Project Environmental Consultant.

D. Full face PAPR respirators with P-100 filters will be required when disturbing friable ACM and/or performing Class I abatement work.

E. When necessary, additional safety equipment (e.g. hard hats meeting the requirements of ANSI Standard Z89.1-1981, eye protection meeting the requirements of ANSI Standard Z87.1-1979, safety shoes meeting the requirements of ANSI Standard Z41.1-1967, disposable gloves) shall be furnished to all workers and authorized visitors.

F. All HEPA negative air machines to be used on this Project must have passed a "challenge test," conducted by a certified third party, prior to use at this site.

G. Any HEPA negative air machines used on this Project, and vented to interior spaces, shall pass an "on-site challenge test," conducted by a certified third party, prior to use at this site. Tested machines must remain onsite for the duration of the project, if a machine is removed and returned, it must again pass an "on-site challenge test," prior to use.

H. All vacuums must be equipment with HEPA filtration. If power tools are used, provide power tools with HEPA assisted exhaust control.

I. All high-speed abrasive disc saws, or other high-speed abrasive equipment, must be equipped with a point-of-contact HEPA dust collection attachment.

J. All scaffolding and ladders must be used in conformance with Cal/OSHA Standards.

### 3.10 Materials

A. Deliver all materials in the original packages, containers, or bundles bearing the name of the manufacturer and brand name (where applicable).

B. Polyethylene sheeting utilized for drop sheets and containment barriers shall be a minimum of 6 mil. thickness, and be "Fire-retardant."

C. Disposal bags for ACM and ACCM shall be of 6-mil. minimum polyethylene, and must have the required label if used for "friable" asbestos waste.

D. Spray adhesive for sealing polyethylene to polyethylene shall not contain methylene chloride compounds.

E. "Amended water" may be required for abatement of certain types of asbestos containing material.

## 4.0 ASBESTOS ABATEMENT PROCEDURES

### 4.1 General Abatement Procedures

A. All asbestos abatement must be conducted following all requirements of the Cal/OSHA Asbestos Regulation, 8 CCR 1529, and these specifications.

B. A "Containment" must be established for each work area, following all Cal/OSHA Asbestos Regulation (8 CCR 1529) requirements for the specific Cal/OSHA work type classification, and these specifications.

C. Negative air containments will be required for all interior asbestos abatement work.

D. Wet methods must be used for all asbestos abatement.

E. If high speed abrasive disc saws, or other high-speed abrasive equipment, are used, they must be equipped with a point-of-contact HEPA dust collection attachment.

F. All abated ACM and ACCM debris must be placed in double 6-mil polyethylene waste bags or double wrapped in leak-tight in 6-mil poly sheeting, Goosenecked, and secured with duct tape.

G. All asbestos debris in bags or wrappings must be visibly wet when sealed, and remain visibly wet throughout storage, transportation, and disposal at the waste facility.

H. All bags or wraps containing asbestos debris must be damp wiped clean just prior to removal from containments.

I. When abatement work is finished in any work area, clean up all debris, clean and remove waste bags, clean and remove tools and equipment, and thoroughly HEPA vacuum and wet wipe the entire containment.

J. Inform the Environmental Consultant upon completion of work. The Environmental Consultant will perform a visual clearance of the work area prior to demobilization of the Abatement Contractors work crew.

K. Encapsulating paints, enclosures, or any other application that will cover up and prevent a complete visual inspection may not be applied until after the Environmental Consultant has completed the visual inspection.

L. Post asbestos abatement air clearance sampling will be conducted for all interior abatement containments.

M. The Regulated Area and negative air conditions must be maintained until final air clearance has been achieved.

## 4.2 Abatement of ACCM Acoustic Plaster

A. Cal/OSHA defined Class II abatement methods and containment are required.

B. Negative air containments will be required.

C. All "Project Requirements" (Section 2.0), "General Execution" requirements (Section 3.0), and "General Abatement Procedures" requirement (Section 4.1) of these specifications must be followed.

## 4.3 Abatement of ACM Transite Pipes

A. Cal/OSHA defined Class II abatement methods and containment are required.

B. Negative air containments will be required.

C. All "Project Requirements" (Section 2.0), "General Execution" requirements (Section 3.0), and "General Abatement Procedures" requirement (Section 4.1) of these specifications must be followed.

## 4.4 Abatement of ACM Tar Roof Patch

A. Cal/OSHA defined Class II abatement methods and containment are required.

B. All “Project Requirements” (Section 2.0), “General Execution” requirements (Section 3.0), and “General Abatement Procedures” requirement (Section 4.1) of these specifications must be followed.

## 4.5 Abatement of ACM Caulking

A. Cal/OSHA defined Class II abatement methods and containment are required.

B. Negative air containments will be required.

C. All “Project Requirements” (Section 2.0), “General Execution” requirements (Section 3.0), and “General Abatement Procedures” requirement (Section 4.1) of these specifications must be followed.

## 4.6 Abatement of RACM Pipe Insulation (TSI)

A. Cal/OSHA defined Class I abatement methods and containment are required.

B. Negative air containments will be required.

C. All “Project Requirements” (Section 2.0), “General Execution” requirements (Section 3.0), and “General Abatement Procedures” requirement (Section 4.1) of these specifications must be followed.

## 4.7 Abatement of RACM Duct Insulation (TSI)

A. Cal/OSHA defined Class I abatement methods and containment are required.

B. Negative air containments will be required.

C. All “Project Requirements” (Section 2.0), “General Execution” requirements (Section 3.0), and “General Abatement Procedures” requirement (Section 4.1) of these specifications must be followed.

## 4.8 Abatement of RACM Fabric Gasket (TSI)

A. Cal/OSHA defined Class I abatement methods and containment are required.

B. Negative air containments will be required.

C. All “Project Requirements” (Section 2.0), “General Execution” requirements (Section 3.0), and “General Abatement Procedures” requirement (Section 4.1) of these specifications must be followed.

# 5.0 LEAD DEMOLITION PROCEDURES

## 5.1 General Procedures For Lead Related Work

A. All lead related demolition work must be conducted following all requirements of the Cal/OSHA Lead in Construction Standard Title 8 CCR 1532.1, the California Code of Regulations Title 17 (17 CCR 35000-36100), and the EPA Lead Renovation, Repair, and Painting Rule (40 CFR Part 745).

B. A "Containment" must be established for each work area, following all requirements of the Cal/OSHA Lead in Construction Standard Title 8 CCR 1532.1, the California Code of Regulations Title 17 (17 CCR 35000-36100), and the EPA Lead Renovation, Repair, and Painting Rule (40 CFR Part 745).

C. Exterior lead related work will not be conducted if wind speeds are greater than 20 miles per hour, or wind causes dust or debris to escape the containment.

D. Prior to demolition of painted components, all loose or flacking paint must be stabilized, by scraping and encapsulating with a sufficient encapsulating paint.

E. For "Paint Stabilization," all loose and flacking paint present must be stabilized. Paint stabilization requires scaping of the gross loose and flaking paint, and encapsulation with a sufficiently thick coat of encapsulating paint.

F. Mechanical ventilation equipped with HEPA filtration will be required for demolition of materials have a high probability of producing significant dust.

G. If high speed abrasive disc saws, or other high-speed abrasive equipment, are used, they must be equipped with a point-of-contact HEPA dust collection attachment.

H. All bags or wraps containing lead debris must be damp wiped clean just prior to removal from containments.

I. All concentrated paint chip debris must be properly sealed in approved lead waste containers.

J. The Abatement Contractor will assume any wastewater generated during the project contains some amount of lead, and is responsible for capturing, collecting, proper filtration, and proper disposal of all waste water.

K. When demolition work is finished in any work area, clean up all debris, clean and remove waste bags, clean and remove tools and equipment, and thoroughly HEPA vacuum and wet wipe the entire containment.

L. Inform the Environmental Consultant upon completion of work. The Environmental Consultant will perform a visual clearance of the work area prior to demobilization of the Abatement Contractors work crew.

M. Areas where lead containing materials are disturbed or abated must be free of any visible dust and/or debris for clearance to be achieved.

# 6.0 ASBESTOS AND LEAD WASTE

## 6.1 Hazardous Waste

A. Asbestos waste meeting the definition of "friable" is considered a California state "hazardous waste." The California code of Regulations, 22 CCR 66261- 66263 apply to hazardous waste generation, transportation, and disposal in California, which is enforced by the Department of Toxic Substance Control (DTSC).

B. Lead containing waste, meeting the state and federal definition of "hazardous wastes," is regulated in the state of California by the Department of Toxic Substance Control. Both the California code of Regulations, 22 CCR 66261- 66263, and the Resource Conservation and Recovery Act (RCRA) Federal Code of Regulations, 40 CFR 260-262, apply to generation, transportation, and disposal of hazardous waste in California.

C. The Abatement Contractor shall be responsible for compliance with all applicable federal, state, and local regulations regarding safe handling, transportation, and disposal of all "hazardous" and non-hazardous asbestos and lead waste generated by the Project.

D. A "Uniform Hazardous Waste Manifest" must accompany all shipments of hazardous waste generated by this Project. The hazardous waste manifest must be signed by the Owner's Project Manager prior to leaving the Project site. No individual other than the Owners Project Manager is authorized to sign the hazardous waste manifest, or release the hazardous waste to the transporter for shipment.

E. The Abatement Contractor is responsible for ensuring that the receiving waste facility returns to the Owner's Project Manager, a copy of the hazardous waste manifest signed by the accepting waste facility.

## 6.2 Transport of Hazardous And Non-Hazardous Waste

A. Abatement Contractor and Transporter shall defend, indemnify, and hold harmless, the Owner, the owners' representatives, and Project Environmental Consultant, from any and all claims, damages, losses, and expenses, including attorney's fees, arising out of or resulting from asbestos or lead spills during transport, other accidental transport events, any legal action due to negligence, or legal action due willful violation of regulatory requirements or laws.

B. The Abatement Contractor will be held financially responsible for any penalties assessed as a result of violations cited by regulatory agencies where the violations are a direct result of the Abatement Contractor's or Transporter's negligence, or willful violation of regulatory requirements or laws.

C. Transporters of hazardous friable asbestos waste, and hazardous lead waste, must be registered for hazardous waste transport with the Department of Toxic Substance Control (DTSC), and must be in compliance with all state and federal regulatory requirements for hazardous waste transporters.

D. The Abatement Contractor shall be responsible for the "transporter" compliance with all applicable DTSC requirements, all applicable Federal Resource Recovery and Conservation Act (RCRA) requirements, all applicable Department of Transportation (DOT) requirements, and all other state or local requirements, pertaining to the transport and disposal of hazardous and non-hazardous materials.

E. The Abatement Contractor must notify the Owners Project Manager and the Environmental Consultant when a load of hazardous waste is ready to be shipped. The notice must be given in advance, with sufficient time for the Owner's Project Manager and the Environmental Consultant to conduct an inspection, and accommodate the desired shipment schedule.

F. All hazardous waste loads must be inspected by the Environmental Consultant, and approved for shipment, prior to obtaining signature of the hazardous waste manifest by the Owner's Project Manager, and prior to being released for shipment.

G. Hazardous waste must be shipped separately from non-hazardous waste. If non-hazardous waste is loaded into the hazardous waste shipping container, the entire load must be classified as hazardous waste. The Abatement Contractor will be responsible for all additional costs associated with transport and disposal of the otherwise non-hazardous waste being transported and disposed of as hazardous waste.

H. Waste from other sites may not be combined with, or transported with, waste from this Project.

I. All hazardous and non-hazardous Asbestos Containing Material (ACM), and all Asbestos Containing Construction Material (ACCM) debris must be sealed in double 6-mil polyethylene waste bags, or double wrapped in leak-tight 6-mil poly sheeting, during transport from the Project site to the accepting waste facility.

J. The Environmental Consultant must be notified prior to shipment of all non-hazardous asbestos and lead waste, with sufficient time for the Environmental Consultant to conduct an inspection prior to the waste leaving the site.

K. All shipments of waste containing Asbestos Containing Construction Material (ACCM), regardless if the waste is classified as Construction Debris, must be accompanied by a shipping document that clearly identifies that the waste contains materials that contains asbestos. Copies of all shipping documents must be sent to the Owner's Project Manager.

L. Waste facilities must be informed, in writing, when a shipment of waste contains Asbestos Containing Construction Material (ACCM), regardless if the waste is classified as Construction Debris. Copies of all waste facility notification documents must be sent to the Owner's Project Manager.

M. The Abatement Contractor must obtain waste disposal tickets from the accepting waste facility, confirming proper disposal of all hazardous and non-hazardous asbestos or lead waste generated by the Project, and the Abatement Contractor must send copies of all waste disposal tickets to the Owner's Project Manager.

## 6.3 Disposal of Asbestos Waste

A. The Abatement Contractor is responsible for ensuring proper handling and disposal of all "Hazardous" and non-hazardous asbestos waste, in accordance with all applicable federal, state, and local regulations.

B. A "Regulated Area" must be established when loading asbestos waste into waste containers and transport vehicles, and must include the containment loadout area, the entire pathway to the waste container or transport vehicle, and the waste container or transport vehicle.

C. All waste containers used for storage of asbestos waste must have the proper OSHA asbestos warning signs.

D. All friable ACM waste must be handled, contained at the jobsite, transported, and disposed of as "hazardous friable asbestos waste."

E. Friable asbestos waste must be transported by a registered hazardous waste transporter, accompanied by a hazardous waste manifest, disposed of at an approved Class I landfill.

F. All non-friable ACM waste must be handled, contained at the jobsite, transported, and disposed of as "non-friable" asbestos waste.

G. Non-friable asbestos waste shall not be mixed with "friable" hazardous asbestos waste.

H. All ACCM waste, must be handled, contained at the jobsite, and transported as non-friable "ACM," up to the point of actual disposal at an accepting waste facility.

I. ACCM can be disposed of as "General Construction Debris," however, waste facilities must be informed, in writing, when a shipment of waste contains Asbestos Containing Construction Material (ACCM), regardless if the waste is classified as Construction Debris. Copies of all waste facility notification documents must be sent to the Owner's Project Manager.

## 6.4 Disposal of Lead Waste

A. The Abatement Contractor is responsible for ensuring proper handling and disposal of all "Hazardous" and non-hazardous lead containing waste, in accordance with all applicable federal, state, and local regulations.

B. The Abatement Contractor is responsible for conducting lead waste characterization sampling for the lead containing waste generated by the Project.

C. All lead containing waste must be properly disposed of according to the waste classification determined by the lead waste characterization analysis results.

D. All painted metal components must be properly disposed of through a licensed recycling facility. Recycling facilities must be notified when recycle components have lead containing surface coatings.

E. All "Hazardous" lead waste must be transported by a registered hazardous waste transporter, accompanied by a hazardous waste manifest, and disposed of at an approved Class I landfill.

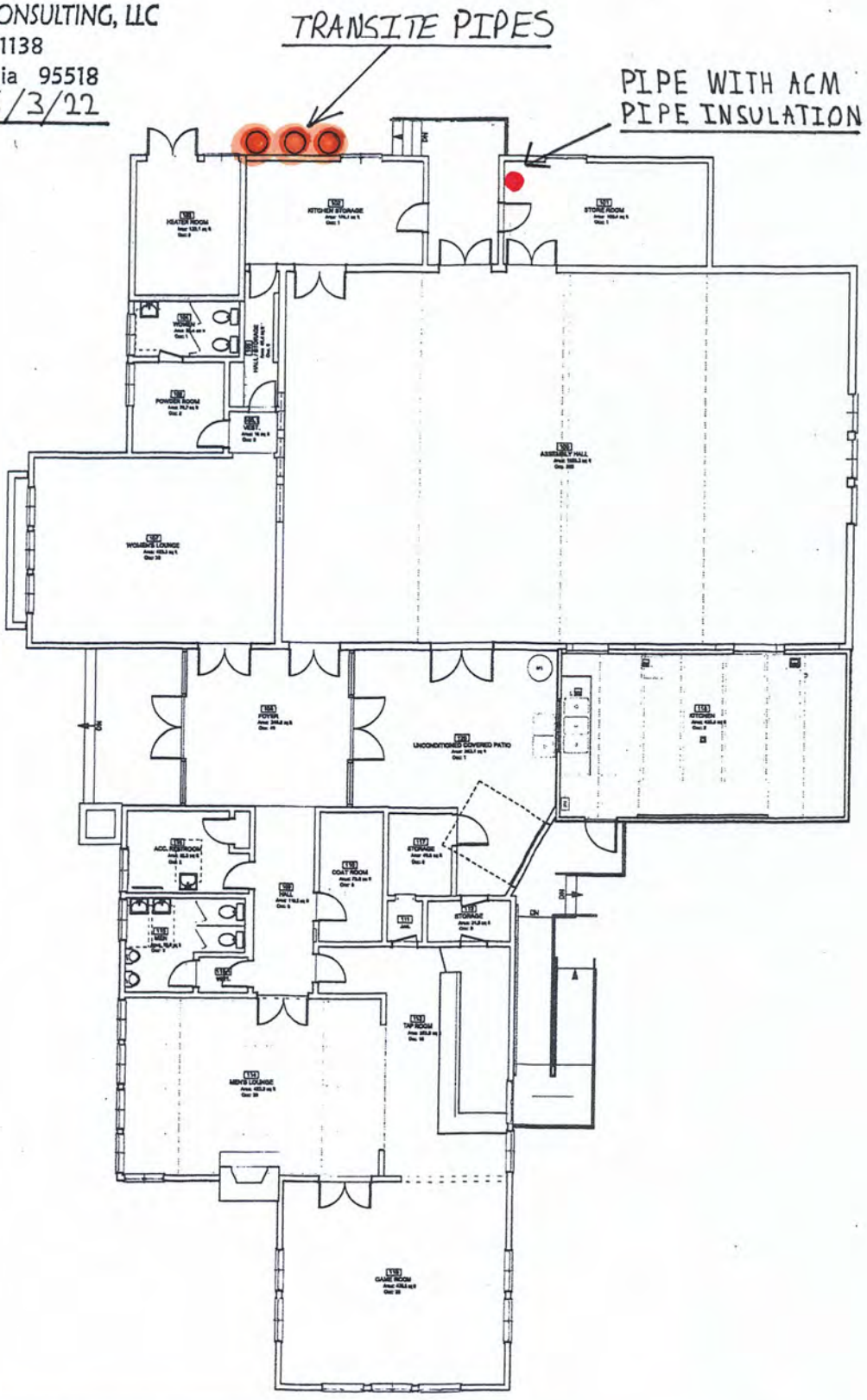
F. A "Regulated Area" must be established when loading lead containing waste into waste containers and transport vehicles, and must include the containment loadout area, the entire pathway to the waste container or transport vehicle, and the waste container or transport vehicle.

G. All waste containers used for storage of lead containing waste must have the proper OSHA lead warning signs.

-end of text-

# APPENDIX A
## Figures & Tables

BRUNELLE & CLARK CONSULTING, LLC
P. O. Box 1138
Arcata, California 95518
2200304 5/3/22




**ASBESTOS LOCATIONS**

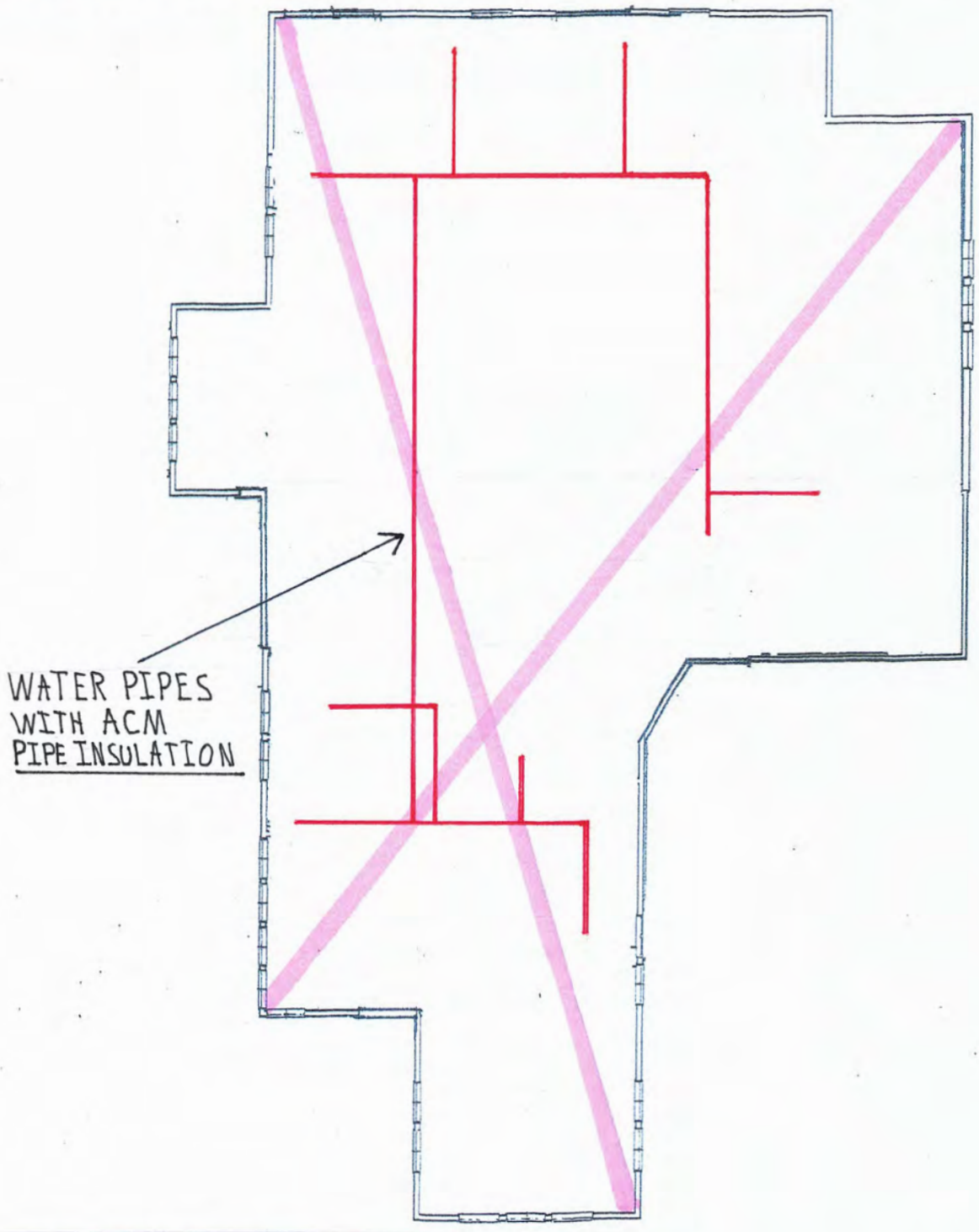
- ACM Transite flue pipe, gray
- ACM Pipe insulation elbow, white compound

**Note: see Table 2 for material & location details**

**Interior/Exterior**
1100 Main St.
Ferndale, CA

FIG. 5

BRUNELLE & CLARK CONSULTING, LLC
P. O. Box 1138
Arcata, California 95518
2200304 5/3/22




**ASBESTOS LOCATIONS**

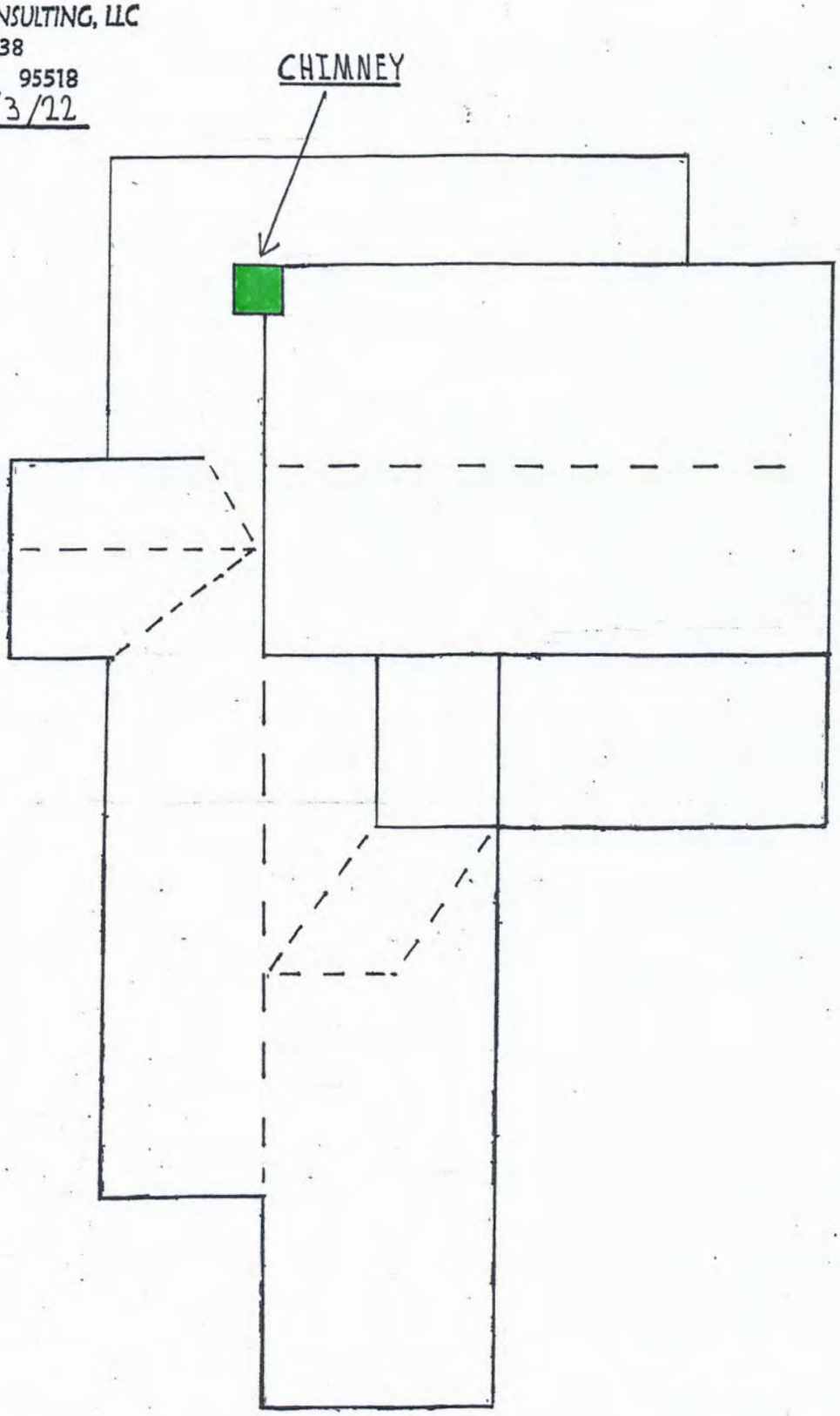
- ACM Pipe insulation, block, Aircell & contaminated fiberglass
- ACM Pipe insulation debris on dirt throughout crawl space

**Note: see Table 2 for material & location details**

**Crawl Space**
1100 Main St.
Ferndale, CA

FIG. 6

BRUNELLE & CLARK CONSULTING, LLC
P. O. Box 1138
Arcata, California 95518
2200304 5/3/22



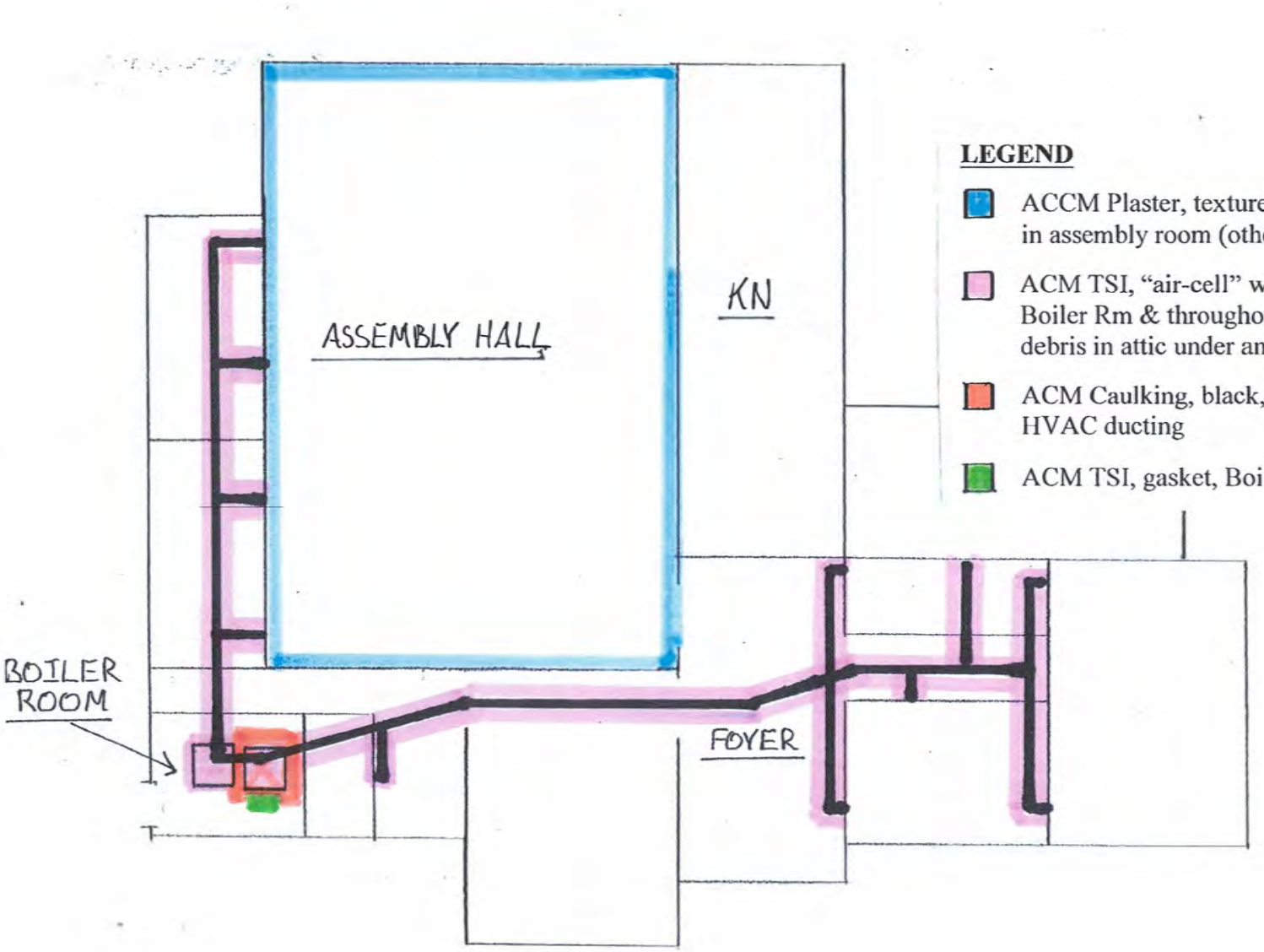

**ASBESTOS LOCATIONS**

ACM Tar roof patch, black

**Note: see Table 2 for material & location details**

**Roof**
1100 Main St.
Ferndale, CA

FIG. 7



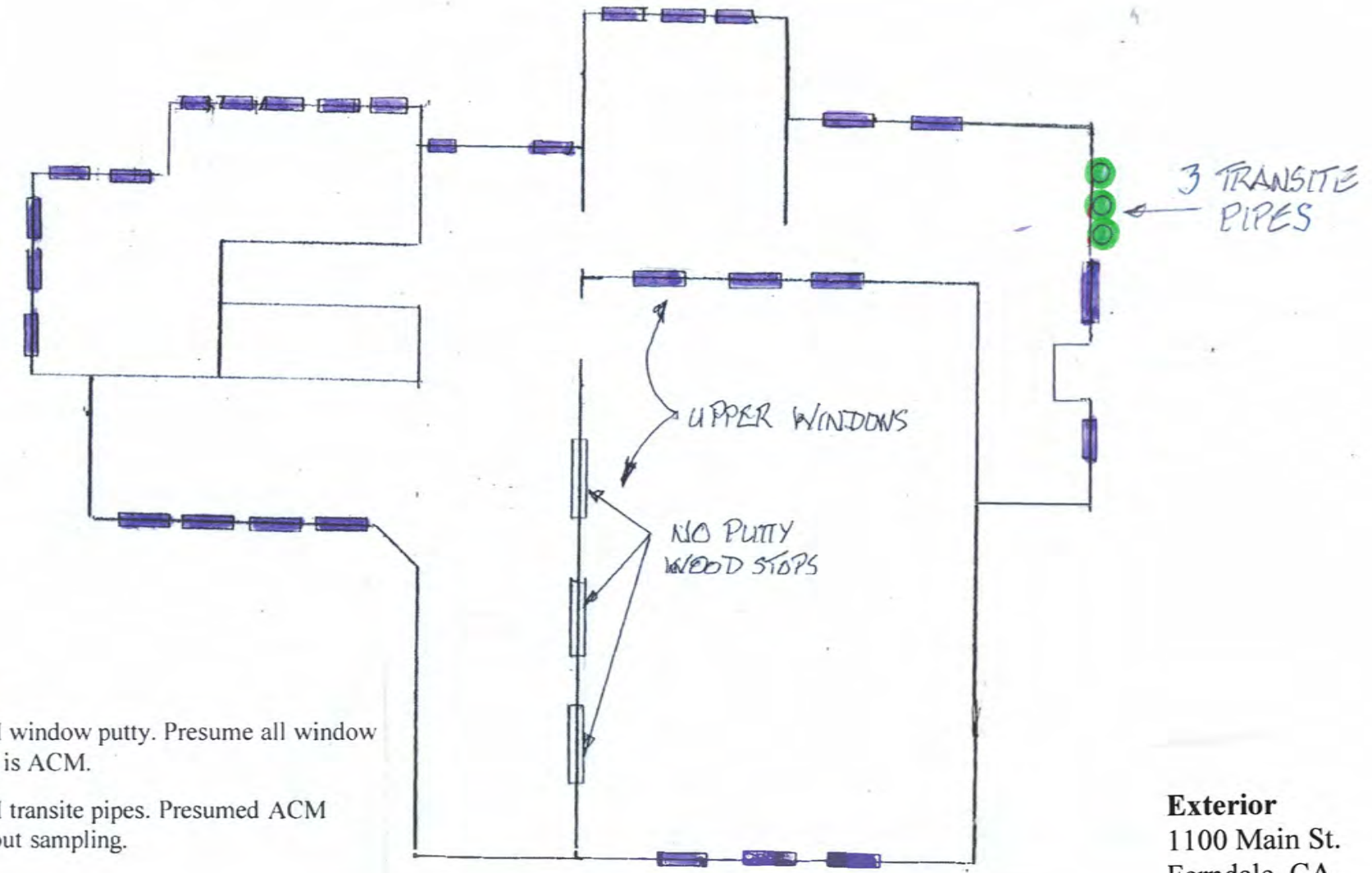

BRUNELLE & CLARK CONSULTING, LLC
2640 McDowell Court
Arcata, California 95521

1600304 8/18/16

**Attic/Interior**
1100 Main St.
Ferndale, CA

FIG. 8

BRUNELLE & CLARK CONSULTING, LLC
P. O. Box 1138
Arcata, California 95518
1800316 5/7/18




**LEGEND**

- ACM window putty. Presume all window putty is ACM.
- ACM transite pipes. Presumed ACM without sampling.

**Exterior**
1100 Main St.
Ferndale, CA

FIG. 9

# TABLE 2
# ASBESTOS IDENTIFICATIONS & CLASSIFICATIONS
## (Integrated Current & Previous Surveys)

**Ferndale Veterans Memorial Bldg.**
**1100 Main St., Ferndale, CA**

| MATERIAL | LOCATION | QUANTITY | ASBESTOS CONTENT & TYPE | OSHA CLASSIFICATION | NESHAP CATEGORY | WASTE DISPOSAL CLASSIFICATION |
|---|---|---|---|---|---|---|
| **Current Survey (Project #2200304)** | | | | | | |
| **Transite Flue Pipe, gray (10"x 2" oval)** | **Exterior,** on the north side, 3 pipes penetrating the siding, and running up the Sid of the building (See Fig. 5) | Approx. 25 LF | 4% CR & 12% CH | ACM, Class II abatement required where disturbed | Category II Non-Friable ACM<br>Not RACM* | Non-friable asbestos waste |
| **Tar Roof Patch, black**<br>Note: all tar roof patch is ACM | **Roof,** on top of the metal chimney cap (See Fig. 7) | Approx. 15 SF | 5% CH | ACM, Class II abatement required where disturbed | Category I Non-Friable ACM<br>Not RACM* | Non-friable asbestos waste |
| **Pipe Insulation Elbow, white compound** | **Storage Room,** coming up through the floor in the north-east corner of the room (See Fig. 5)<br>**Note:** there is potential for asbestos pipe insulation to be present in walls associated with restrooms, kitchens, and other water outlet areas | Approx. 1 LF visibly identifiable, potential for more in inaccessible areas | 20% AM & 10% CH | ACM, Class I abatement required where disturbed | "Friable"<br>RACM | "Friable" asbestos waste |

# TABLE 2
# ASBESTOS IDENTIFICATIONS & CLASSIFICATIONS
## (Integrated Current & Previous Surveys)

**Ferndale Veterans Memorial Bldg.**
**1100 Main St., Ferndale, CA**

| MATERIAL | LOCATION | QUANTITY | ASBESTOS CONTENT & TYPE | OSHA CLASSIFICATION | NESHAP CATEGORY | WASTE DISPOSAL CLASSIFICATION |
|---|---|---|---|---|---|---|
| **Pipe Insulation, Block, white compound**<br>Note: all associated fiberglass pipe insulation in the crawlspace is contaminated by contact with the asbestos pipe insulation | **Crawlspace,**<br>on insulated water pipes, and as debris in the dirt, throughout the crawlspace (See Fig. 6) | Approx.<br>300 LF<br>&<br>debris in the dirt | 25% AM<br>&<br>5% CH | ACM, Class I abatement required where disturbed | "Friable"<br><br>RACM | "Friable" asbestos waste |
| **Pipe Insulation, Aircell, brown-white cardboard**<br>Note: all associated fiberglass pipe insulation in the crawlspace is contaminated by contact with the asbestos pipe insulation | **Crawlspace,**<br>on insulated water pipes, and as debris in the dirt, throughout the crawlspace (See Fig. 6) | Quantity included as part of the block insulation quantity above | 65% CH | ACM, Class I abatement required where disturbed | "Friable"<br><br>RACM | "Friable" asbestos waste |

# TABLE 2
# ASBESTOS IDENTIFICATIONS & CLASSIFICATIONS
## (Integrated Current & Previous Surveys)

**Ferndale Veterans Memorial Bldg.**
**1100 Main St., Ferndale, CA**

| MATERIAL | LOCATION | QUANTITY | ASBESTOS CONTENT & TYPE | OSHA CLASSIFICATION | NESHAP CATEGORY | WASTE DISPOSAL CLASSIFICATION |
|---|---|---|---|---|---|---|
| **Previous Survey (Project #1600304)** | | | | | | |
| **Acoustic Plaster, textured top coat** | **Assembly Hall,** wall finish on upper half of walls (See Fig. 8) | Approx. 1,500 SF | <1% CH by initial PLM<br>0.3% by 400 Point Count | ACCM, Class II abatement required where disturbed | ACCM<br>Not RACM* | Non-Friable asbestos waste |
| **Caulking, black** | **Boiler Room,** on HVAC ducting (See Fig. 8) | 10 SF Approx. | 13% CH | ACM, Class II abatement required where disturbed | ACM<br>Not RACM* | Non-Friable asbestos waste |
| **Duct Insulation, Aircell, brown-white cardboard**<br>Note: the duct insulation is significantly damaged, and the entire attic space is contaminated | **Attic & Boiler Room,** on HVAC ducting in Boiler Rm. & throughout attic spaces, including debris in attic under & around HVAC ducting (See Fig. 8) | 1800 SF Approx. | 35% CH | ACM, Class I abatement required where disturbed | "Friable"<br>RACM | "Friable" asbestos waste |
| **Gasket, gray fabric** | **Boiler Room,** on boiler door (See Fig. 8) | 2 SF Approx. | 15% CH<br>5% AM | ACM, Class I abatement required where disturbed | "Friable"<br>RACM | "Friable" asbestos waste |

# TABLE 2
# ASBESTOS IDENTIFICATIONS & CLASSIFICATIONS
## (Integrated Current & Previous Surveys)

**Ferndale Veterans Memorial Bldg.**
**1100 Main St., Ferndale, CA**

| MATERIAL | LOCATION | QUANTITY | ASBESTOS CONTENT & TYPE | OSHA CLASSIFICATION | NESHAP CATEGORY | WASTE DISPOSAL CLASSIFICATION |
|---|---|---|---|---|---|---|
| **Previous Survey (Project #1800316)** | | | | | | |
| **Window Putty, gray** | **Exterior,** all windows (See Fig. 9) | 29 Windows, Quantity TBD for repair and re-painting | <1% CH | PACM, Class II abatement required where disturbed | Category II Non-friable Not RACM* | Non-friable asbestos waste |

**ACCM** = Asbestos Containing Construction Materials, asbestos content of 0.1% to 1.0%

**ACM** = Asbestos Containing Materials, containing >1% asbestos

**AM** = Amosite Asbestos

**CH** = Chrysotile Asbestos

**CR** = Crocidolite Asbestos

**Friable** = asbestos material containing >1% asbestos, that when dry, may be crumbled, pulverized, or reduced to powder by hand pressure

**LF =** Linear Feet

**NAD** = No asbestos detected

**PACM** = Presumed ACM

**RACM** = Regulated ACM under NESHAP regulations

**RACM*** = Not considered RACM if asbestos content is 1% or less, or if not made friable by disturbance

**SF** = Square Feet

**TBD** = To be determined

# TABLE 3
# XRF PAINT SAMPLING DATA

**Ferndale Veterans Memorial Bldg.**
**1100 Main St., Ferndale, CA**
**(Current Sampling)**

**XRF Lead Paint Analyzer:**

Heuresis Corp.

Model: Pb200i

Serial# 1566

**Calibration:**

Standard Reference Material: lead content of 1.04 mg/cm$^2$ ±0.0643

Response Verification Check Range: 0.8 mg/cm$^2$ to 1.2 mg/cm$^2$

Note: for Performance Characteristic Sheet (PCS) compliance, the average of three calibration readings must fall within the "Response Verification Check Range."

| Reading # | Sample Location | Component Description | Lead Concentration (mg/cm$^2$) | Paint Classification | Surface Coating Material | Color | Substrate |
|---|---|---|---|---|---|---|---|
| 1 | Calibration | Standard Reference Material | 1.0 | -- | -- | -- | -- |
| 2 | Calibration | Standard Reference Material | 1.1 | -- | -- | -- | -- |
| 3 | Calibration | Standard Reference Material | 1.1 | -- | -- | -- | -- |
| 4 | Assembly Hall | Wall panel | 0 | NEG | Paint | White | Plywood |
| 5 | Assembly Hall | Acoustic wall plaster | 0.1 | LCSC | Paint | White | Plaster |
| 6 | Assembly Hall | Window trim | 0 | NEG | Paint | White | Wood |

NEG = Negative (<0.1 mg/cm$^2$)
LCSC = Lead Containing Surface Coating (≥ 0.1 mg/cm$^2$ & <1.0 mg/cm$^2$)
LBP=Lead Based Paint (≥1.0 mg/cm$^2$)

# TABLE 3
# XRF PAINT SAMPLING DATA

**Ferndale Veterans Memorial Bldg.**
**1100 Main St., Ferndale, CA**
**(Current Sampling)**

| Reading # | Sample Location | Component Description | Lead Concentration ($mg/cm^{2)}$ | Paint Classification | Surface Coating Material | Color | Substrate |
|---|---|---|---|---|---|---|---|
| 7 | Assembly Hall | Window jamb | 0.2 | LCSC | Paint | White | Wood |
| 8 | Assembly Hall | Window frame | 0 | NEG | Paint | White | Wood |
| 9 | Assembly Hall | Baseboard | 0 | NEG | Paint | Tan | Wood |
| 10 | Assembly Hall | Hardwood floor | 0.1 | LCSC | Glaze | Clear | Wood |
| 11 | Assembly Hall | Door trim | 0.1 | LCSC | Paint | Tan | Wood |
| 12 | Assembly Hall | Door | 0.1 | LCSC | Paint | White | Wood |
| 13 | Store Rm | Wall | 0.3 | LCSC | Paint | White | Plaster |
| 14 | Store Rm | Windowsill | 0.1 | LCSC | Paint | White | Wood |
| 15 | Store Rm | Window frame | 0 | NEG | Paint | White | Wood |
| 16 | Store Rm | Ceiling | 0.3 | LCSC | Paint | White | Plaster |
| 17 | KN storage | Wall | 0.4 | LCSC | Paint | White | Plaster |
| 18 | KN storage | Window trim | 0.4 | LCSC | Paint | White | Wood |
| 19 | KN storage | Window frame | 0.3 | LCSC | Paint | White | Wood |
| 20 | KN storage | Cabinet door | 0.2 | LCSC | Paint | White | Wood |

NEG = Negative ($<0.1$ mg/cm$^2$)
LCSC = Lead Containing Surface Coating ($\geq 0.1$ mg/cm$^2$ & $<1.0$ mg/cm$^2$)
LBP=Lead Based Paint ($\geq 1.0$ mg/cm$^2$)

# TABLE 3
# XRF PAINT SAMPLING DATA

**Ferndale Veterans Memorial Bldg.**
**1100 Main St., Ferndale, CA**
**(Current Sampling)**

| Reading # | Sample Location | Component Description | Lead Concentration ($mg/cm^{2)}$ | Paint Classification | Surface Coating Material | Color | Substrate |
|---|---|---|---|---|---|---|---|
| **21** | **KN storage** | **Ceramic tile Backsplash (6"x 6")** | **19.7** | **LBP** | **Glaze** | **Yellow** | **Ceramic** |
| 22 | Hall/storage | Wall | 0.3 | LCSC | Paint | White | Plaster |
| 23 | Hall/storage | Door | 0 | NEG | Paint | White | Wood |
| 24 | W. RR | Wall | 0.3 | LCSC | Paint | White | Plaster |
| **25** | **W. RR** | **Ceramic wall tile (6"x 6")** | **11.7** | **LBP** | **Glaze** | **Tan with brown specks** | **Ceramic** |
| 26 | W. RR | Window trim | 0.5 | LCSC | Paint | Brown | Wood |
| 27 | W. RR | Window frame | 0.2 | LCSC | Paint | Brown | Wood |
| 28 | W. Lounge | Wall | 0.3 | LCSC | Paint | White | Plaster |
| 29 | W. Lounge | Chair rail trim | -0.2 | NEG | Paint | White | Wood |
| 30 | W. Lounge | Door trim | -0.1 | NEG | Paint | White | Wood |
| 31 | W. Lounge | Baseboard | -0.1 | NEG | Paint | White | Wood |
| 32 | W. Lounge | Door | 0 | NEG | Paint | White | Wood |
| 33 | Foyer | Ceiling | 0.3 | LCSC | Paint | White | Plaster |

NEG = Negative ($<0.1$ mg/cm$^2$)
LCSC = Lead Containing Surface Coating ($\geq 0.1$ mg/cm$^2$ & $<1.0$ mg/cm$^2$)
LBP=Lead Based Paint ($\geq 1.0$ mg/cm$^2$)

# TABLE 3
# XRF PAINT SAMPLING DATA

**Ferndale Veterans Memorial Bldg.**
**1100 Main St., Ferndale, CA**
**(Current Sampling)**

| Reading # | Sample Location | Component Description | Lead Concentration ($mg/cm^{2)}$ | Paint Classification | Surface Coating Material | Color | Substrate |
|---|---|---|---|---|---|---|---|
| 34 | Hall | Wall | 0.6 | LCSC | Paint | White | Plaster |
| 35 | Hall | Door trim | 0 | NEG | Paint | White | Plaster |
| 36 | Game Rm | Ceiling | 0.2 | LCSC | Paint | White | Plaster |
| 37 | Game Rm | Window trim | 0.2 | LCSC | Paint | White | Wood |
| 38 | Game Rm | Window frame | 0.9 | LCSC | Paint | White | Wood |
| 39 | Game Rm | Window frame | 0.5 | LCSC | Paint | White | Wood |
| 40 | M. Lounge | Wall | 0.5 | LCSC | Paint | White | Plaster |
| 41 | M. Lounge | Door trim | 0.1 | LCSC | Paint | White | Wood |
| 42 | M. Lounge | Baseboard | 0 | NEG | Paint | White | Wood |
| 43 | M. Lounge | Door | 0 | NEG | Paint | White | Wood |
| 44 | Tap Room | Ceiling | 0.1 | LCSC | Paint | White | Plaster |
| 45 | Tap Room | Windowsill | 0 | NEG | Paint | White | Wood |
| 46 | Tap Room | Window frame | 0.8 | LCSC | Paint | White | Wood |
| 47 | M. RR | Ceiling | 0.4 | LCSC | Paint | White | Plaster |

NEG = Negative ($<0.1$ mg/cm$^2$)
LCSC = Lead Containing Surface Coating ($\geq 0.1$ mg/cm$^2$ & $<1.0$ mg/cm$^2$)
LBP=Lead Based Paint ($\geq 1.0$ mg/cm$^2$)

# TABLE 3
# XRF PAINT SAMPLING DATA

**Ferndale Veterans Memorial Bldg.**
**1100 Main St., Ferndale, CA**
**(Current Sampling)**

| Reading # | Sample Location | Component Description | Lead Concentration ($mg/cm^{2)}$ | Paint Classification | Surface Coating Material | Color | Substrate |
|---|---|---|---|---|---|---|---|
| 48 | M. RR | Window trim | 0.5 | LCSC | Paint | Brown | Wood |
| 49 | M. RR | Window frame | 0.6 | LCSC | Paint | Brown | Wood |
| **50** | **M. RR** | **Ceramic wall tile (6" x6")** | **14.0** | **LBP** | **Glaze** | **Tan with brown specks** | **Ceramic** |
| 51 | M. RR | Door | -0.1 | NEG | Paint | Brown | Wood |
| 52 | ACC. RR | Wall | 0.2 | LCSC | Paint | White | Plaster |
| 53 | ACC. RR | Door | 0 | NEG | Paint | White | Wood |
| 54 | Calibration | Standard Reference Material | 1.1 | -- | -- | -- | -- |
| 55 | Calibration | Standard Reference Material | 0.9 | -- | -- | -- | -- |
| 56 | Calibration | Standard Reference Material | 1.1 | -- | -- | -- | -- |
| 57 | Calibration | Standard Reference Material | 1.0 | -- | -- | -- | -- |
| 58 | Calibration | Standard Reference Material | 0.9 | -- | -- | -- | -- |
| 59 | Calibration | Standard Reference Material | 0.9 | -- | -- | -- | -- |

NEG = Negative ($<0.1$ mg/cm$^2$)
LCSC = Lead Containing Surface Coating ($\geq 0.1$ mg/cm$^2$ & $<1.0$ mg/cm$^2$)
LBP=Lead Based Paint ($\geq 1.0$ mg/cm$^2$)

# TABLE 3
# XRF PAINT SAMPLING DATA

**Ferndale Veterans Memorial Bldg.**
**1100 Main St., Ferndale, CA**
**(Current Sampling)**

| Reading # | Sample Location | Component Description | Lead Concentration ($mg/cm^{2)}$ | Paint Classification | Surface Coating Material | Color | Substrate |
|---|---|---|---|---|---|---|---|
| 60 | Exterior | Oil tank | 0.4 | LCSC | Paint | Tan | Metal |
| 61 | Exterior | Oil tank stand | 0.2 | LCSC | Paint | Red | Metal |
| 62 | Calibration | Standard Reference Material | 1.0 | -- | -- | -- | -- |
| 63 | Calibration | Standard Reference Material | 1.0 | -- | -- | -- | -- |
| 64 | Calibration | Standard Reference Material | 1.0 | -- | -- | -- | -- |

NEG = Negative ($<0.1$ mg/cm$^2$)
LCSC = Lead Containing Surface Coating ($\geq 0.1$ mg/cm$^2$ & $<1.0$ mg/cm$^2$)
LBP=Lead Based Paint ($\geq 1.0$ mg/cm$^2$)

**TABLE 4**
**XRF PAINT SAMPLING DATA**
**Ferndale Veteran's Memorial Building**
**1100 Main Street  Ferndale, CA**

**XRF Lead Paint Analyzer:**
Company  Heuresis Corp.
Model  Pb200i
Type  XRF Lead Paint Analyzer
Serial #  1566

**Calibration:**
Standard Reference Material: 1.04 mg/cm2  +/-0.064
Response Verification Check Range: 0.8 to 1.2 mg/cm2
Note: for Performance Characteristic Sheet (PCS) compliance, the average of three calibration readings must fall within the "Response Verification Check Range".

| Reading # | Sample Location | Component Description | Lead Concentration (mg/cm2) | Paint Classification | Surface Coating Material | Color | Substrate |
|---|---|---|---|---|---|---|---|
| 1 | Calibration | Standard Reference Material | 1 | - | - | - | - |
| 2 | Calibration | Standard Reference Material | 0.9 | - | - | - | - |
| 3 | Calibration | Standard Reference Material | 1 | - | - | - | - |
| 4 | Exterior, east wall | lap siding | 0 | NEG | paint | tan | wood |
| 5 | Exterior, east wall | window frame | -0.1 | NEG | paint | red | wood |
| 6 | Exterior, east wall | window sill | 3 | LBP | paint | dark tan | wood |
| 7 | Exterior, east wall | lap siding | -0.1 | NEG | paint | tan | wood |
| 8 | Exterior, south wall | door trim | -0.1 | NEG | paint | dark tan | wood |
| 9 | Exterior, south wall | bat & board siding | -0.1 | NEG | paint | tan | wood |

**TABLE 4**
**XRF PAINT SAMPLING DATA**
**Ferndale Veteran's Memorial Building**
**1100 Main Street Ferndale, CA**

| Reading # | Sample Location | Component Description | Lead Concentration (mg/cm2) | Paint Classification | Surface Coating Material | Color | Substrate |
|---|---|---|---|---|---|---|---|
| 10 | Exterior, east wall | bat & board siding | -0.2 | NEG | paint | tan | wood |
| 11 | Exterior, east wall | bat & board siding | -0.2 | NEG | paint | tan | wood |
| 12 | Exterior, north wall | lap siding | -0.2 | NEG | paint | tan | wood |
| 13 | Exterior, west wall | lap siding | -0.1 | NEG | paint | tan | wood |
| 14 | Exterior, west wall | lap siding | -0.2 | NEG | paint | tan | wood |
| 15 | Exterior, west wall | window frame | 3.6 | LBP | paint | red | wood |
| 16 | Exterior, west wall | window trim | 3.1 | LBP | paint | dark tan | wood |
| 17 | Exterior, west wall | door | 5 | LBP | paint | red | wood |
| 18 | Exterior, west wall | window frame | 1.7 | LBP | paint | red | wood |
| 19 | Exterior, west wall | winow jamb | 2.8 | LBP | paint | dark tan | wood |
| 20 | Exterior, west wall | window frame | 4.2 | LBP | paint | red | wood |
| 21 | Exterior, west wall | window sill | 4.5 | LBP | paint | dark tan | wood |
| 22 | Exterior, north wall | door | 4.9 | LBP | paint | red | wood |
| 23 | Exterior, north wall | railing | 0.5 | LCSC | paint | dark tan | metal |
| 24 | Exterior, south wall | fascia | 4 | LBP | paint | dark tan | wood |
| 25 | Calibration | Standard Reference Material | 0.9 | - | - | - | - |

**TABLE 4**
**XRF PAINT SAMPLING DATA**
**Ferndale Veteran's Memorial Building**
**1100 Main Street  Ferndale, CA**

| Reading # | Sample Location | Component Description | Lead Concentration (mg/cm2) | Paint Classification | Surface Coating Material | Color | Substrate |
|---|---|---|---|---|---|---|---|
| 26 | Calibration | Standard Reference Material | 0.9 | - | - | - | - |
| 27 | Calibration | Standard Reference Material | 0.9 | - | - | - | - |

NEG = Negative (<0.1 mg/cm2)
LCSC = Lead Containing Surface Coating (≥ 0.1 mg/cm2 & <1.0 mg/cm2)
LBP = Lead Based Paint (≥ 1.0 mg/cm2)
Note: Zero or negative XRF readings can contain trace ammounts of lead.
Paint chip sample analysis is necessary for negatve lead determinations.

# APPENDIX B

## Asbestos & Lead Survey Report

*Brunelle & Clark Consulting, LLC*

# REVISED INTEGRATED ASBESTOS SURVEY & LEAD PAINT SAMPLING FERNDALE VETERANS MEMORIAL BUILDING 1100 MAIN STREET FERNDALE, CA

May 15, 2022

Project # 2200304

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**ASBESTOS SURVEY**
**& LEAD PAINT SAMPLING**
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**1100 MAIN STREET**
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# REVISED INTEGRATED
# ASBESTOS SURVEY
# & LEAD PAINT SAMPLING
# FERNDALE VETERANS MEMORIAL BUILDING
# 1100 MAIN STREET
# FERNDALE, CA
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## 1.0 PURPOSE

On April 20 and May 10, 2022, this office conducted supplemental asbestos and lead sampling, for the *Ferndale Veterans Building HVAC Replacement Project*, at the Ferndale Veterans Memorial Building, located at 1100 Main Street, in Ferndale, CA.

This current sampling is intended to supplement previous sampling conducted at the site, and this current asbestos and lead report integrates the data and finding of the previous asbestos & lead reports with the current sampling data and findings.

The asbestos survey was also conducted to provide for compliance with the California Health & Safety Code; the Cal/OSHA asbestos regulations, 8 CCR 1529; and the EPA National Emission Standards for Hazardous Air Pollutants (NESHAP) regulations concerning renovation and/or demolition activities, 40 CFR, Part 61, Subpart M.

The lead sampling was conducted to provide for compliance with the Cal/OSHA Lead in Construction Standard Title 8, CCR Section 1532.1; the California Code of Regulations Title 17, CCR 35000-36100; and the EPA Lead Renovation, Repair, and Painting Rule, 40 CFR Part 745.

The person completing this survey and report is certified through the Division of Occupational Safety & Health (DOSH) as an Asbestos Building Inspector and a Certified Asbestos Consultant (CAC), and is certified by the California Department of Public Health (CDPH) as a Lead Inspector/Assessor/Supervisor.

## 2.0 EXECUTIVE SUMMARY

The Ferndale Veterans Memorial Building is a single story wood framed structure that sits on a perimeter foundation, and contains a large crawlspace and attic space. The exterior is finished with wood siding and trim, and composition shingle roofing. The interior walls and ceilings are largely finished with plaster, and the floors are finished with a combination of hardwood, vinyl floor tile, and sheet flooring.

### Current Asbestos & Lead Survey

The current asbestos survey includes all wall and ceiling finish throughout the interior of the building, HVAC registers, the concrete walls in the boiler room, the Transite pipes on the exterior of the building, the chimney cap, and all suspect materials in the crawlspace.

The current survey does not include any materials in the Kitchen, any flooring materials in the building, or drilling through wood wall panels. The wall and ceiling finish in the Assembly Hall, and materials in the attic, were sampled in a previous survey and were not include in the current sampling.

**Previous Asbestos & Lead Surveys**

Three previous asbestos & lead survey reports with data relevant to the HVAC Replacement Project, were provided by this office, and are contained in Appendix E, of this report. The previous survey reports are listed below.

- Survey report titled *"Asbestos Sampling For The Boiler, Furnaces & Ducting Removal Project And The Assembly Room Ceiling, Ferndale Veteran's Memorial Building, 1100 Main Street, Ferndale, CA,"* B&CC project #1600304, dated August 18, 2016

- Survey report titled *"Limited Asbestos Survey & Representative Paint Sampling For Enclosed Patio Door Replacement, Ferndale Veterans Building, 1100 Main Street, Ferndale, CA,"* B&CC project #1800307, dated February 20, 2018

- Survey report titled *"Limited Asbestos & Paint Sampling, Re-Painting Project, Ferndale Veteran's Building, 1100 Main Street, Ferndale, CA,"* B&CC project #1800316, dated May 7, 2018

**Integrated Survey Findings**

During the **current asbestos survey, five (5) types** of materials were found to contain asbestos, and during the **previous surveys, five (5) other types** of materials were found to contain asbestos.

During the current and previous surveys paint sampling, **Lead Based Paint (LBP), and lead content at levels less than LBP were found on a several building component types.**

## 3.0 ASBESTOS SURVEY

During this current survey, a total of forty-four (44) bulk samples were collected from suspect materials and submitted for the laboratory analysis of asbestos content. A description of all samples, and sample locations are contained in Table 1, Appendix B. All sample locations are indicated on Figures 1-3, Appendix A.

The bulk samples were submitted to an NVLAP accredited laboratory, AmeriSci Richmond (Midlothian, VA) for the analysis of asbestos content by Polarized Light Microscopy (PLM) by EPA 600/R-93/116, including requirements for EPA 600/M4-82-020 per 40 CFR 763. The sample Chain of Custody and Laboratory Report is contained in Appendix B. All the Asbestos analytic data are summarized in Table 1, Appendix B.

Materials found to contain asbestos are divided into categories according to percentage and type of asbestos found in the materials, as defined below.

- ***Asbestos Containing Construction Materials (ACCM)*** contain asbestos in amounts between 0.1% and 1.0%.
- ***Asbestos Containing Materials (ACM)*** *are materials that contain >1% asbestos.*
- ***Presumed Asbestos Containing Material (PACM)*** *is material presumed to be >1% asbestos.*
- ***Regulated Asbestos Containing Materials (RACM)*** *refers to "regulated" ACM, a category of ACM that is subject to NESHAP regulation.*
- ***"Friable"*** *asbestos material is defined as: material containing >1% asbestos, that when dry, may be crumbled, pulverized, or reduced to powder by hand pressure.*

During the **current asbestos survey, five (5) types** of materials were found to contain asbestos, and during the **previous surveys, five (5) other types** of materials were found to contain asbestos.

The asbestos containing materials identified during this **"current survey" and during the "previous surveys,"** are listed by category below.

One material was found to be Asbestos Containing Construction Material (ACCM), and is listed below:

**ACCM**

- **Acoustic plaster, textured top coat**

Nine materials are categorized as Asbestos Containing Material (ACM), four of which are listed below. Five materials, described further below, are categorized as Regulated ACM (RACM).

**ACM**

- **Transite flue pipes, gray**
- **Tar roof patch, black (all tar roof patch)**
- **Caulking, black**
- **Window putty, gray (all window putty)**

Five materials are further categorized as NESHAP Regulated ACM (RACM), which are listed below.

**RACM**

- **Pipe insulation elbow, white compound**
- **Pipe insulation, block, white compound**
- **Pipe insulation, Aircell, brow-white cardboard**
- **Duct Insulation, Aircell, brown & white cardboard**
- **Gasket, gray fabric**

The **current survey** and the **previous survey** materials identified to contain asbestos are listed in the **"Integrated Table 2"** below, including location, asbestos content, the agency categorization, abatement requirements, and waste categorization. The locations of the asbestos materials identified in this **current survey** and the **previous surveys** are shown on the **"Integrated Asbestos Location Figures,"** Figures 5-9 in Appendix A of this current report.

# TABLE 2
# ASBESTOS IDENTIFICATIONS & CLASSIFICATIONS
## (Integrated Current & Previous Surveys)

**Ferndale Veterans Memorial Bldg.**
**1100 Main St., Ferndale, CA**

| MATERIAL | LOCATION | QUANTITY | ASBESTOS CONTENT & TYPE | OSHA CLASSIFICATION | NESHAP CATEGORY | WASTE DISPOSAL CLASSIFICATION |
|---|---|---|---|---|---|---|
| **Current Survey (Project #2200304)** | | | | | | |
| **Transite Flue Pipe, gray (10"x 2" oval)** | **Exterior,** on the north side, 3 pipes penetrating the siding, and running up the Sid of the building (See Fig. 5) | Approx. 25 LF | 4% CR & 12% CH | ACM, Class II abatement required where disturbed | Category II Non-Friable ACM<br>Not RACM* | Non-friable asbestos waste |
| **Tar Roof Patch, black**<br>Note: all tar roof patch is ACM | **Roof,** on top of the metal chimney cap (See Fig. 7) | Approx. 15 SF | 5% CH | ACM, Class II abatement required where disturbed | Category I Non-Friable ACM<br>Not RACM* | Non-friable asbestos waste |
| **Pipe Insulation Elbow, white compound** | **Storage Room,** coming up through the floor in the north-east corner of the room (See Fig. 5)<br>**Note:** there is potential for asbestos pipe insulation to be present in walls associated with restrooms, kitchens, and other water outlet areas | Approx. 1 LF visibly identifiable, potential for more in inaccessible areas | 20% AM & 10% CH | ACM, Class I abatement required where disturbed | "Friable"<br>RACM | "Friable" asbestos waste |

# TABLE 2
# ASBESTOS IDENTIFICATIONS & CLASSIFICATIONS
## (Integrated Current & Previous Surveys)

**Ferndale Veterans Memorial Bldg.**
**1100 Main St., Ferndale, CA**

| MATERIAL | LOCATION | QUANTITY | ASBESTOS CONTENT & TYPE | OSHA CLASSIFICATION | NESHAP CATEGORY | WASTE DISPOSAL CLASSIFICATION |
|---|---|---|---|---|---|---|
| **Pipe Insulation, Block, white compound**<br>Note: all associated fiberglass pipe insulation in the crawlspace is contaminated by contact with the asbestos pipe insulation | **Crawlspace,**<br>on insulated water pipes, and as debris in the dirt, throughout the crawlspace (See Fig. 6) | Approx.<br>300 LF<br>&<br>debris in the dirt | 25% AM<br>&<br>5% CH | ACM, Class I abatement required where disturbed | "Friable"<br><br>RACM | "Friable" asbestos waste |
| **Pipe Insulation, Aircell, brown-white cardboard**<br>Note: all associated fiberglass pipe insulation in the crawlspace is contaminated by contact with the asbestos pipe insulation | **Crawlspace,**<br>on insulated water pipes, and as debris in the dirt, throughout the crawlspace (See Fig. 6) | Quantity included as part of the block insulation quantity above | 65% CH | ACM, Class I abatement required where disturbed | "Friable"<br><br>RACM | "Friable" asbestos waste |

# TABLE 2
# ASBESTOS IDENTIFICATIONS & CLASSIFICATIONS
## (Integrated Current & Previous Surveys)

**Ferndale Veterans Memorial Bldg.**
**1100 Main St., Ferndale, CA**

| MATERIAL | LOCATION | QUANTITY | ASBESTOS CONTENT & TYPE | OSHA CLASSIFICATION | NESHAP CATEGORY | WASTE DISPOSAL CLASSIFICATION |
|---|---|---|---|---|---|---|
| **Previous Survey (Project #1600304)** | | | | | | |
| **Acoustic Plaster, textured top coat** | **Assembly Hall,** wall finish on upper half of walls (See Fig. 8) | Approx. 1,500 SF | <1% CH by initial PLM<br>0.3% by 400 Point Count | ACCM, Class II abatement required where disturbed | ACCM<br>Not RACM* | Non-Friable asbestos waste |
| **Caulking, black** | **Boiler Room,** on HVAC ducting (See Fig. 8) | 10 SF Approx. | 13% CH | ACM, Class II abatement required where disturbed | ACM<br>Not RACM* | Non-Friable asbestos waste |
| **Duct Insulation, Aircell, brown-white cardboard**<br>Note: the duct insulation is significantly damaged, and the entire attic space is contaminated | **Attic & Boiler Room,** on HVAC ducting in Boiler Rm. & throughout attic spaces, including debris in attic under & around HVAC ducting (See Fig. 8) | 1800 SF Approx. | 35% CH | ACM, Class I abatement required where disturbed | "Friable"<br>RACM | "Friable" asbestos waste |
| **Gasket, gray fabric** | **Boiler Room,** on boiler door (See Fig. 8) | 2 SF Approx. | 15% CH<br>5% AM | ACM, Class I abatement required where disturbed | "Friable"<br>RACM | "Friable" asbestos waste |

# TABLE 2
# ASBESTOS IDENTIFICATIONS & CLASSIFICATIONS
## (Integrated Current & Previous Surveys)

**Ferndale Veterans Memorial Bldg.**
**1100 Main St., Ferndale, CA**

| MATERIAL | LOCATION | QUANTITY | ASBESTOS CONTENT & TYPE | OSHA CLASSIFICATION | NESHAP CATEGORY | WASTE DISPOSAL CLASSIFICATION |
|---|---|---|---|---|---|---|
| **Previous Survey (Project #1800316)** | | | | | | |
| **Window Putty, gray** | **Exterior,** all windows (See Fig. 9) | 29 Windows, Quantity TBD for repair and re-painting | <1% CH | PACM, Class II abatement required where disturbed | Category II Non-friable Not RACM* | Non-friable asbestos waste |

**ACCM** = Asbestos Containing Construction Materials, asbestos content of 0.1% to 1.0%

**ACM** = Asbestos Containing Materials, containing >1% asbestos

**AM** = Amosite Asbestos

**CH** = Chrysotile Asbestos

**CR** = Crocidolite Asbestos

**Friable** = asbestos material containing >1% asbestos, that when dry, may be crumbled, pulverized, or reduced to powder by hand pressure

**LF =** Linear Feet

**NAD** = No asbestos detected

**PACM** = Presumed ACM

**RACM** = Regulated ACM under NESHAP regulations

**RACM*** = Not considered RACM if asbestos content is 1% or less, or if not made friable by disturbance

**SF** = Square Feet

**TBD** = To be determined

# 4.0 CONCLUSIONS AND REGULATORY REQUIREMENTS FOR ASBESTOS

## Conclusions

During the **current asbestos survey, five (5) types** of materials were found to contain asbestos, and during the **previous surveys, five (5) other types** of materials were found to contain asbestos.

Asbestos containing pipe insulation debris was found mixed in the dirt on the ground throughout the crawlspace, and all dirt in the crawlspace is contaminated.

**The entire crawlspace is contaminated, and is an "Asbestos Hazard Area." Personnel without proper training and personal protective equipment should not be allowed access to the crawlspace. All entries to the crawlspace should be secured to prevent access, and "Asbestos Hazard Warning Signs" should be posted at all entrances.**

All pipe insulation should be abated from the crawlspace, including removal of all visible debris from the dirt. Due to the potential presence of non-visible asbestos fibers mixed in the dirt, the entire crawlspace must be maintained as an asbestos hazard area indefinitely, even after all visible asbestos pipe insulation and debris has been removed.

The crawlspace can be cleared, and asbestos hazard area status can be removed, if the first four to six (4-6) inches of soil is removed from the entire crawlspace, or a sufficiently thick concrete surfacing is used to encapsulate the contaminated soil.

Any abatement of the ACM pipe insulation, removal of contaminated soil, or "Enclosure" of the contaminated soil, must be done by a licensed asbestos abatement contractor as Class I work using Class I methods. The abated waste, including any contaminated soil removed, must be disposed of as "friable" asbestos waste.

**The entire Attic Space is contaminated, and is an "Asbestos Hazard Area." Personnel without proper training and personal protective equipment should not be allowed access to the Attic Space. All entries to the Attic Space should be secured to prevent access, and "Asbestos Hazard Warning Signs" should be posted at all entrances.**

All duct insulation should be abated from the Attic Space, including removal of all visible debris. Following completion of the abatement in the Attic Space, post asbestos abatement air clearance sampling should be conducted.

The disturbance, abatement, and demolition of the materials containing asbestos will require compliance with the EPA NESHAP, and Cal/OSHA regulations regarding asbestos in construction.

All asbestos containing material must be abated prior to renovation or demolition activities that would disturb the asbestos containing materials.

All abatement of asbestos containing material must be done by a registered asbestos abatement contractor, using trained and certified personnel, and conducted as an asbestos abatement project.

The data and conclusion contained in this report are only applicable to the sampled/surveyed spaces/materials and should not be used to assess materials elsewhere at the site. If suspect materials that were not covered by this survey are encountered by the contractor during the project, the disturbance of such materials should cease until such materials are surveyed and/or sampled for asbestos. (Note: un-sampled materials must be presumed to contain asbestos until sampled and proven otherwise).

**Regulatory Requirements**

The EPA National Emission Standards for Hazardous Air Pollutants (NESHAP) requires an asbestos survey to identify the possible presence of any *Asbestos Containing Materials* (ACM) prior to any renovation and/or demolition work at "subject" sites. That requirement has been met with this report.

In Humboldt, Del Norte, and Trinity counties, the NESHAP regulations concerning renovation and/or demolition work is enforced by the North Coast Unified Air Quality Management District (NCUAQMD) located in Eureka, California. When NESHAP Notifications are required, they must be submitted to the NCUAQMD, at least 10 days prior to conducting asbestos abatement and/or demolition work. A copy of the *NESHAP Notification Form* is contained in Appendix C, of this report. Contact the NCUAQMD (707-443-3093) if any questions arise.

Friable NESHAP Regulated Asbestos Containing Material (RACM) was identified during this survey. **A NESHAP Notification for "abatement" will be required** to be filed at least 10 days prior to abatement of the regulated asbestos containing materials.

NESHAP defines the removal of any "load bearing" members" in the course of renovation work as "demolition" work. **If any "load bearing members" are to be removed during the renovation project, a NESHAP Notification for "demolition" will need to be filed at least 10 days prior to such work**.

Cal/OSHA regulates any disturbance or abatement of any material containing any amount of asbestos. All asbestos abatement must be performed by a registered asbestos abatement contractor, using properly trained and certified asbestos abatement workers. All asbestos abatement must be conducted following Cal/OSHA defined asbestos abatement methods.

**A temporary worksite notification to the Division of Occupational Safety and Health, must be submitted a minimum of 24-hours prior to asbestos abatement activities.**

Friable ACM waste will be generated during this project. **A hazardous waste generator "Temporary State Hazardous Waste Id Number" must be obtained from the Department of Toxic Substance Control (DTSC).**

If you are required to obtain a permit from a local or county building department, you will need to file this report with them.

## Project ACM & ACCM

The regulatory requirements for the abatement and disposal of project ACM and/or ACCM identified in this survey are discussed below.

**ACCM Acoustic Plaster:** The acoustic plaster identified in this report contains asbestos. The material was found to contain <1% asbestos therefore, the material is defined as ACCM. While the ACCM designation excludes the material from regulation under NESHAP, Cal/OSHA requires Class II methods for abatement/disturbance of the material by a registered asbestos abatement contractor. It is recommended herein to augment the standard Class II abatement with negative air containment of the abatement area.

While materials determined to be ACCM are often characterized as "general construction debris," many asbestos abatement contractors will choose to dispose of the abated ACCM as "non-friable" asbestos waste to avoid possible liabilities insofar as worker protection on the site, during transport, and disposal. If disposed of as "general construction debris," it is recommended herein that all ACCM be handled/contained at the jobsite and transported as ACM up to the point of actual disposal at an accepting waste facility. Waste facilities typically must be informed when the waste is ACCM.

**ACM Transite Flue Pipes:** Any abatement or disturbance of the ACM Transite pipes identified in this report must be done by a licensed asbestos abatement contractor using Class II methods, with disposal as "non-friable" asbestos waste.

**ACM Tar Roof Patch:** Any abatement or disturbance of the ACM tar roof patch identified in this report must be done by a licensed asbestos abatement contractor using Class II methods, with disposal as "non-friable" asbestos waste.

**ACM Black Caulking:** Any abatement or disturbance of the ACM black caulking identified in this report must be done by a licensed asbestos abatement contractor using Class II methods, with disposal as "non-friable" asbestos waste.

**ACM Window Putty:** Any abatement or disturbance of the ACM (PACM) window putty identified in this report must be done by a licensed asbestos abatement contractor using Class II methods, with disposal as "non-friable" asbestos waste.

**RACM Pipe Insulation:** Any abatement of the three types of ACM pipe insulation identified in this report must be done by a licensed asbestos abatement contractor as Class I work, using Class I methods. The abated waste must be disposed of as "friable" asbestos waste. This will require the use of a licensed "hazardous" waste hauler. In addition, a temporary hazardous waste generator number from the EPA will need to be obtained for the site. An abatement contractor will typically handle these issues.

**RACM Duct Insulation:** Any abatement of the ACM duct insulation identified in this report must be done by a licensed asbestos abatement contractor as Class I work, using Class I methods. The abated waste must be disposed of as "friable" asbestos waste. This will require the use of a licensed "hazardous" waste hauler. In addition, a temporary hazardous waste generator number from the

EPA will need to be obtained for the site. An abatement contractor will typically handle these issues.

**RACM Fabric Gasket:** Any abatement of the ACM fabric gasket identified in this report must be done by a licensed asbestos abatement contractor as Class I work, using Class I methods. The abated waste must be disposed of as "friable" asbestos waste. This will require the use of a licensed "hazardous" waste hauler. In addition, a temporary hazardous waste generator number from the EPA will need to be obtained for the site. An abatement contractor will typically handle these issues.

## 5.0 PAINT SAMPLING/LEAD ANALYSIS

The current paint sampling for lead includes representative sampling of all ceiling and wall building component types on the interior of the building.

### XRF Paint Sampling

The current sampling for lead in paint was conducted using a portable Heuresis Corporation, Pb200i XRF (X-ray fluorescence) Lead Paint Analyzer. The XRF was used to measure lead content in paint coatings of fifty-two (52) building components within the project area.

A description of current sampled components, sample locations, and XRF data is contained in Table 3, Appendix B. The current XRF Paint Analyzer Data sheet is also contained in Appendix B. All current XRF sample locations are indicated on Figure 4, Appendix A.

Paint coatings on building components are placed in one of three categories, based on the lead content identified by XRF sampling. The three categories are defined by the amount of lead contained in a paint coating, and are listed below.

- **Lead Based Paint (LBP)** is defined as paint with a lead content at or above 1.0 mg/cm$^2$.
- **Lead Containing Surface Coatings (LCSC)** are paints with lead content that include 0.1 mg/cm$^2$ and range up to but not including 1.0 mg/cm$^2$.
- **Undetectable for Lead** are results of less than 0.1 mg/cm$^2$ lead content, and are deemed to be essentially "lead free."

During the **"current"** paint sampling: three (3) sampled component were identified to have Lead Based Paint (LBP), thirty-three (33) were found to have lead content less than LBP, and sixteen (16) were found to be "negative" for detectable lead.

During the **"previous"** paint sampling: twelve (12) sampled component were identified to have Lead Based Paint (LBP), four (4) were found to have lead content less than LBP, and ten (10) were found to be "negative" for detectable lead.

The sampled component types identified to contain significant lead content in the **"current" and "previous"** sampling are listed by category below.

**Lead Based Paint (LBP)**

- Window sills (exterior)
- Window trim (exterior)
- Window jambs (exterior)
- Window frames (exterior)
- Doors (exterior)
- Door trim (exterior)
- Fascia trim (exterior)
- Ceramic wall tile (restrooms & Kitchen Storage)

**Lead Containing Surface Coating (LCSC)**

- Metal railings (exterior, north entrance)
- Plaster wall & ceiling finish (throughout interior)
- Window frames (interior)
- Window trim (interior)
- Window jambs (interior)
- Cabinet (Kitchen Storage)
- Siding (exterior patio)

All other sampled component types were found to contain trace to negative quantities of lead. See Table 3, Appendix B for all current sampling data, and see the previous survey reports in Appendix E, for all sampling data in the previous sampling.

## 6.0 CONCLUSIONS & REGULATORY REQUIREMENTS FOR LEAD

**Lead In Paint**

During the current and previous surveys paint sampling, **Lead Based Paint (LBP) and lead content at levels less than LBP** were found on a several building component types on the exterior and interior of the building.

All lead related construction work requires compliance with the Cal/OSHA Lead Construction Standard, Title 8 CCR 1532.1, for worker protection; the California Code of Regulations Title 17, CCR 35000-36100; and when applicable, the EPA Lead Renovation, Repair, and Painting Rule, 40 CFR Part 745.

Any contractor conducting lead related construction work, including demolition of building components with paint containing lead, should be familiar with the applicable lead regulations, conduct the work following the applicable regulatory requirements, and when required, be certified to conduct lead related activities.

All personnel conducting lead related construction work, should be properly trained, and when required, be certified to conduct lead related activities.

Cal/OSHA requires exposure assessment personal air sampling to be conducted when LBP and/or LCSC is disturbed by Cal/OSHA defined "trigger tasks," or any lead related construction work that may result in lead exposure to workers. Pending exposure assessment, the contractor must provide interim protective measures, including but not limited to, proper respirators, protective clothing, and training.

Exposure Assessment requires the collection of personal air samples to be submitted for laboratory analyses of lead content, to determine if the Action Level (AL) or the Permissible Exposure Limit (PEL) for airborne lead will be met or exceeded during the work.

## 7.0 ASBESTOS REGULATIONS

The following regulations are some of the more pertinent Federal and California asbestos regulations, and one or more of these regulations will apply to construction projects in California.

**EPA Asbestos Hazard Emergency Response Act (AHERA):** The Asbestos-Containing Materials in Schools Rule (40 CFR Part 763, Subpart E) regulates asbestos in schools including, but not limited to; inspections, response actions, clearances, training, and certifications.

**EPA National Emissions Standard For Hazardous Air Pollutants (NESHAP):** The NESHAP regulation (40 CFR, Part 61, Subpart M) applies to all commercial, public, institutional, industrial, and residential structures with more than four dwelling units, and requires an asbestos survey prior to demolition and/or renovation activities on subject properties.

**Cal/OSHA Asbestos Construction Standard:** The Cal/OSHA standard (8 CCR 1529) is designed to protect employees (workers) from adverse exposure to asbestos in any workplace, and in particular, regulates the asbestos abatement industry.

**Department of Toxic Substance Control (DTSC)**: The California code of Regulations, 22 CCR 66261- 66263 apply to hazardous waste generation and disposal in California, including "friable" asbestos.

Some of the general regulatory requirements for asbestos related construction work and asbestos containing waste are discussed below. Depending on the types of asbestos containing material found at a site, some or all of these regulatory requirements will apply.

### EPA NESHAP

All commercial, public, institutional, industrial, and residential structures with more than four dwelling units, are subject to the EPA NESHAP regulations concerning renovation and/or

demolition work. NESHAP requires an asbestos survey to identify the possible presence of any *Asbestos Containing Materials* (ACM) prior to any renovation and/or demolition work at "subject" sites.

The NESHAP regulation requires filing a NESHAP Notification with the enforcing agency in the following two cases.

If Regulated Asbestos Containing Material (RACM) is present and is to be abated, and the amount of RACM to be abated exceed the threshold quantity of 160 square feet, 260 linear feet, or 35 cubic feet, a NESHAP Notification for the *abatement* of RACM will need to be filed with the enforcing agency, at least ten working days prior to the commencement of abatement activities. The notification includes: the NESHAP notification form; a copy of this report; and a filing fee.

If the proposed renovations will disturb any *"load bearing"* members, such work is considered "demolition" work, and a NESHAP Notification is required prior to any "demolition" work. The NESHAP Notification for *demolition* must be filed with the enforcing agency, at least ten working days prior to any "demolition" activity.

If both abatement of RACM and demolition are to be conducted, the NESHAP notification for "abatement" and "demolition" can be filed using the same form however, a filing fee is required for each notification.

The assistance of the asbestos abatement contractor will typically be needed to file the NESHAP Notification form.

**Cal/OSHA**

The Cal/OSHA Asbestos Standard for the Construction Industry (8 CCR 1529) regulates any disturbance or abatement of any material containing any amount of asbestos. All employees are covered by OSHA regulations, and the disturbance of ACM or ACCM is subject to Cal/OSHA worker protection regulations for asbestos related work.

The Cal/OSHA regulations require that "any activities disturbing" ACM or ACCM materials must be done by properly trained and certified asbestos abatement contractors & workers, using proper abatement methods. It is therefore necessary to identify, and properly abate ACM and ACCM from buildings prior to the disturbance of such materials by renovation or demolition activities.

An employer who conducts asbestos related work involving more than 100 square feet of material containing any amount of asbestos must be registered with the Division of Occupational Safety and Health (DOSH).

A temporary worksite notification must be filed with Division of Occupational Safety and Health (DOSH) at least 24 hours prior to asbestos abatement activities. The asbestos abatement contractor will typically submit this notification.

**DTSC**

The Department of Toxic Substance Control (DTSC) is the California agency responsible for enforcing the hazardous waste laws. The California code of Regulations, 22 CCR 66261.24 (a)(2) defines "friable" asbestos waste as "hazardous" waste.

A hazardous waste generator "Temporary State Hazardous Waste Id Number" must be obtained from the DTSC when friable ACM waste is generated at a site, all friable asbestos waste must be transported as hazardous waste by a licensed hazardous waste hauler, and all friable asbestos waste must be disposed of as hazardous waste, at an approved Class I waste facility. The Temporary State Id number can be obtained on the DTSC website at:

**https://dtsc.ca.gov/apply-for-hazardous-waste-epa-id-number/**

Friable asbestos waste may be temporarily stored on-site pending transport for a period of up to 90 days. While being stored pending transport, such waste must be contained in proper bags of containers, clearly and properly labeled as hazardous asbestos material, and secured in a locked storage location with proper asbestos warning signs.

The shipping of "non-friable" asbestos waste does not require a hazardous waste hauler, and can be performed by an abatement contractor or other commercial transporters however, the material must be handled and disposed of as asbestos containing material.

## 8.0 LEAD REGULATIONS

The following regulations are some of the more pertinent Federal and California regulations pertaining to lead, and some or all of these regulations will apply to construction projects in California.

**Cal/OSHA Construction Safety Orders, Lead:** The Cal/OSHA regulation (8 CCR 1532.1) pertains to all workers who may be exposed to lead in the work place.

**Title 17, California Code of Regulations:** The "Accreditation, Certification, and Work Practices For Lead-Based Paint and Lead Hazards" (17 CCR 35000-36100) regulation applies to lead related construction in California.

**EPA Lead Renovation, Repair, and Painting Rule (RRP):** The RRP rule (40 CFR Part 745) applies to all maintenance, renovation and other construction activities conducted in pre-1978 housing and child-occupied facilities, including residential, public, and commercial building.

**Department of Toxic Substance Control (DTSC):** The California code of Regulations, 22 CCR 66261- 66263 applies to generation and disposal of waste categorized as hazardous waste by California criteria, including hazardous lead containing construction waste.

**Resource Conservation and Recovery Act (RCRA):** The Federal code of Regulations, 40 CFR 260-262, applies to generation and disposal of waste categorized as hazardous waste by federal criteria, including hazardous lead containing construction waste.

**U.S. Department of Housing and Urban Development (HUD):** the HUD Lead Safe Housing Rule, 24 CFR 35, subparts B through R applies to pre-1978 housing that is federally owned, or receiving federal assistance.

**HUD "Guidelines for the Evaluation and Control of Lead-Based Paint Hazards in Housing," second edition, 2012:** is comprehensive document developed by HUD to help contractors, property owners, and other organizations identify lead-based paint, lead hazards, and control lead hazards, in an effort to reduce childhood exposure to lead. This guideline is not a regulation however, it is directly incorporated into some lead regulations.

Some of the basic regulatory requirements for lead related construction work and lead containing waste are discussed below.

## Cal/OSHA Compliance Measures for Lead Related Construction Work

The disturbance of any LBP and/or LCSC by Cal/OSHA defined "trigger tasks" " or any lead related construction work that may result in lead exposure to workers or occupants requires compliance with the Cal/OSHA Lead Construction Standard (Title 8 CCR 1532.1) for worker protection. The Cal/OSHA "trigger tasks" include various actions that would disturb LBP or LCSC paint including, but not limited to, manual demolition, scraping, sanding, cutting, sawing, and torch cutting. Some key compliance measures are summarized below (see Title 8 CCR 1532.1 for all Cal/OSHA requirements).

Any contractor performing any of the Cal/OSHA trigger tasks must comply with the provisions of the Cal/OSHA Lead Construction Standard (Title 8 CCR 1532.1). More specifically, an Exposure Assessment must be performed at the start of any trigger task activities. This assessment involves the collection of personal air samples to be submitted for the laboratory analyses of lead content to determine if the Action Level (AL) or the Permissible Exposure Limit (PEL) for airborne lead will be met or exceeded during the work. Pending that assessment, the contractor must provide interim protective measures, including but not limited to; respirators, protective clothing, and training.

If initial assessment demonstrates the possibility that the AL will be met or exceeded during the work, continued worker exposure monitoring must be conducted. If initial assessment demonstrates the possibility that the PEL will be exceeded during the work Cal/OSHA requirements include but are not limited to: establishment of regulated areas, continued use of respirators, continued personal air monitoring, protective clothing, hygiene facilities, medical surveillance, and training certified by the California Department of Public Health (CDPH).

In addition, the disturbance of Lead Based Paint in excess of 100 square feet will require a contractor to file a "Lead-Work Pre-Job Notification" with Cal/OSHA at least 24 hours prior to performing any trigger tasks.

## Title 17 Compliance Measures For Lead Related Construction Work & Lead Abatement

In California, lead activities are regulated by the California Code of Regulations Title 17, CCR 35000-36100, which include, but are not limited to, requirements for lead related construction

work, lead abatement, worker training, and worker certification. Title 17 regulatory requirements for worker certification, and work practices are enforced by the California Department of Public Health (CDPH).

Any contractor performing any lead activities must use "Lead-Safe Work Practices" (17 CCR 36050), which include: use of containment (17 CCR 35016), no visible dust or debris remaining at completion of work, and demonstrate compliance to the CDPH if requested.

Title 17 defines "Lead Activities" as "abatement, lead hazard evaluation, lead-related construction work, or any activity which disturbs lead-based paint, presumed lead-based paint, or creates a lead hazard (17 CCR 35032).

Title 17 defines "Lead Related Construction Work," as "any construction, alteration, painting, demolition, salvage, renovation, repair, or maintenance of any residential or public building, including preparation and cleanup, that, by using or disturbing lead-containing material or soil, may result in significant exposure of adults or children to lead (17 CCR 35040).

Title 17 defines "Abatement" as "any set of measures designed to reduce or eliminate lead hazards or lead-based paint for public and residential buildings, but does not include containment or cleaning" (17 CCR 35001). See 17 CCR 35000-36100 for all Title 17 regulatory requirements for lead activities.

Title 17 fully incorporates work practices defined by the "Guidelines for the Evaluation and Control of Lead-Based Paint Hazards in Housing," U.S. Department of Housing and Urban Development (HUD), June 1995.

**Lead Containing Waste**

Both State and Federal laws regulate the disposal of lead containing materials in landfills. In California, the disposal of lead containing materials is regulated by the Department of Toxic Substance Control (DTSC). If demolition debris potentially contains lead containing material; the waste stream must be tested for lead content, and characterized for proper waste disposal. Completion of a 'waste profile" requires that at least one representative bulk sample of the waste stream be collected and submitted for laboratory analysis of lead content for waste characterization.

The results of the lead waste characterization determine the "hazard level" of waste, which can range from unrestricted "general construction debris," California hazardous waste, and highly restrictive Resource Conservation and Recovery Act (RCRA) federal "hazardous" waste.

Generation of waste materials that meet the California hazardous waste criteria require the generator to obtain a Temporary State Hazardous Waste Id Number. Hazardous waste haulers and disposal sites are also required to have a State Id Number.

Generation of more than 100 kg (220 lbs.) of waste materials that meet the federal (RCRA) waste criteria require the generator to obtain a Temporary Hazardous Waste EPA Id Number. Hazardous waste haulers and disposal sites are also required to have an EPA Id Number for RCRA waste.

The Temporary State Id Number and the Temporary EPA Id Number can be obtained on the DTSC website at:

- **https://dtsc.ca.gov/apply-for-hazardous-waste-epa-id-number/**

**Painted Metal Recycling**

Painted metal components may be properly disposed of through a licensed recycling facility, regardless of lead content. In that case painted metal components need not be, and were not, included in the waste stream testing for lead. Recycling facilities must be notified when recycle components have lead containing surface coatings.

## 9.0 DISCLAIMER

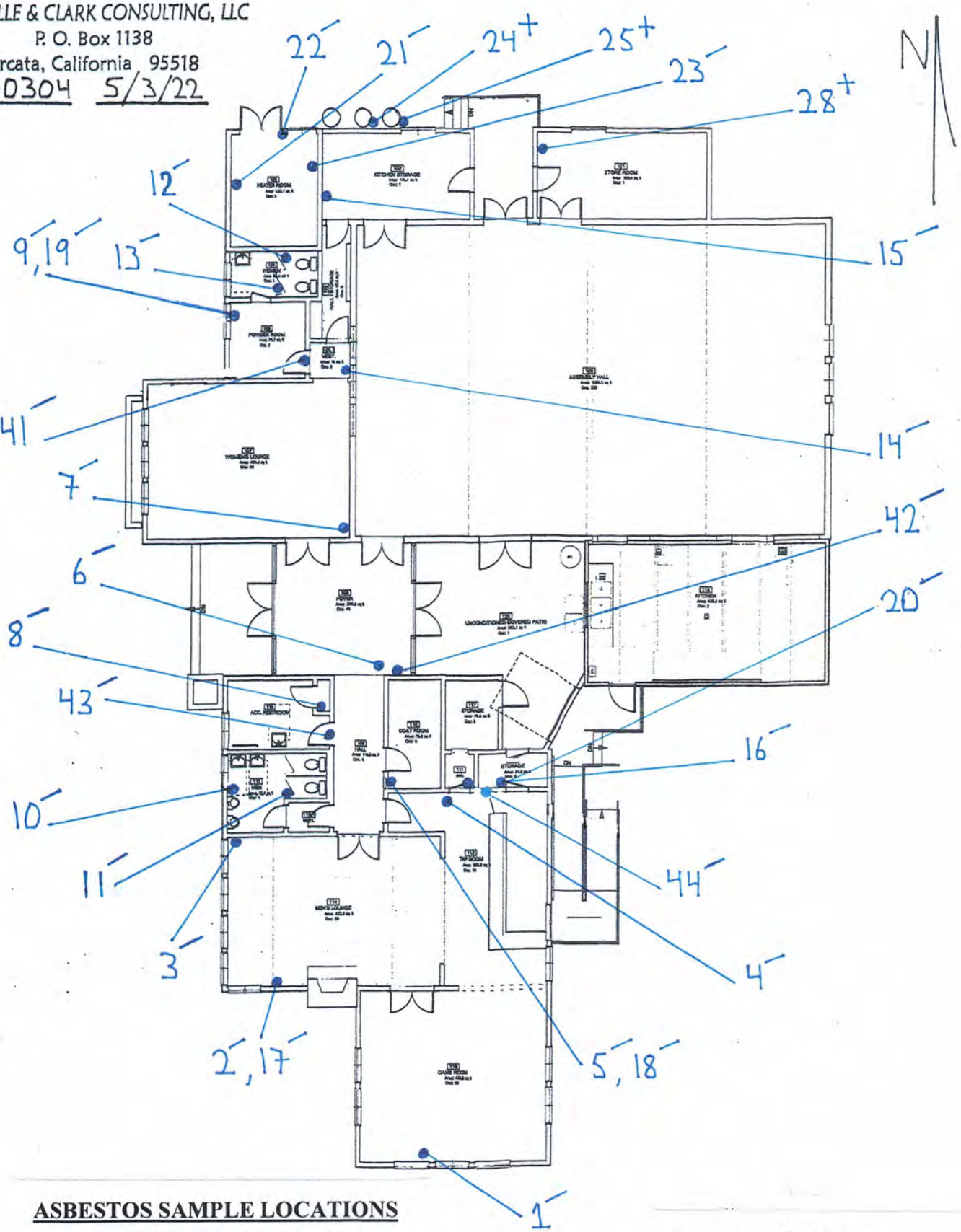
The sole purpose of this investigation and of this report is to assess the site with respect to asbestos materials and/or lead containing surface coatings as defined by the scope of work. Brunelle & Clark Consulting, LLC, is not responsible for locating asbestos containing building material in inaccessible areas such as behind walls, above hard ceilings, beneath flooring or underground. The passage of time, manifestation of latent conditions, or occurrence of future events may require further exploration at the site, analysis of data, and reevaluation of the findings, observations, conclusions, and recommendations expressed in the report. This report has been prepared on behalf of and for the exclusive use of the client, and is subject to and issued in connection with the agreement and the provisions thereof. All findings, conclusions, and analytical data presented in this report are based on the information obtained by Brunelle & Clark Consulting, LLC's survey and by the laboratory analysis.

While the owner/operator was responsible for describing the extent and limits of site work, materials to be sampled were determined by the certified (asbestos) building inspector who performed this survey and was not otherwise subject to limitations by the owner/operator.

-end of text-

# APPENDIX A
## Figures

BRUNELLE & CLARK CONSULTING, LLC
P. O. Box 1138
Arcata, California 95518
2200304 5/3/22




## ASBESTOS SAMPLE LOCATIONS

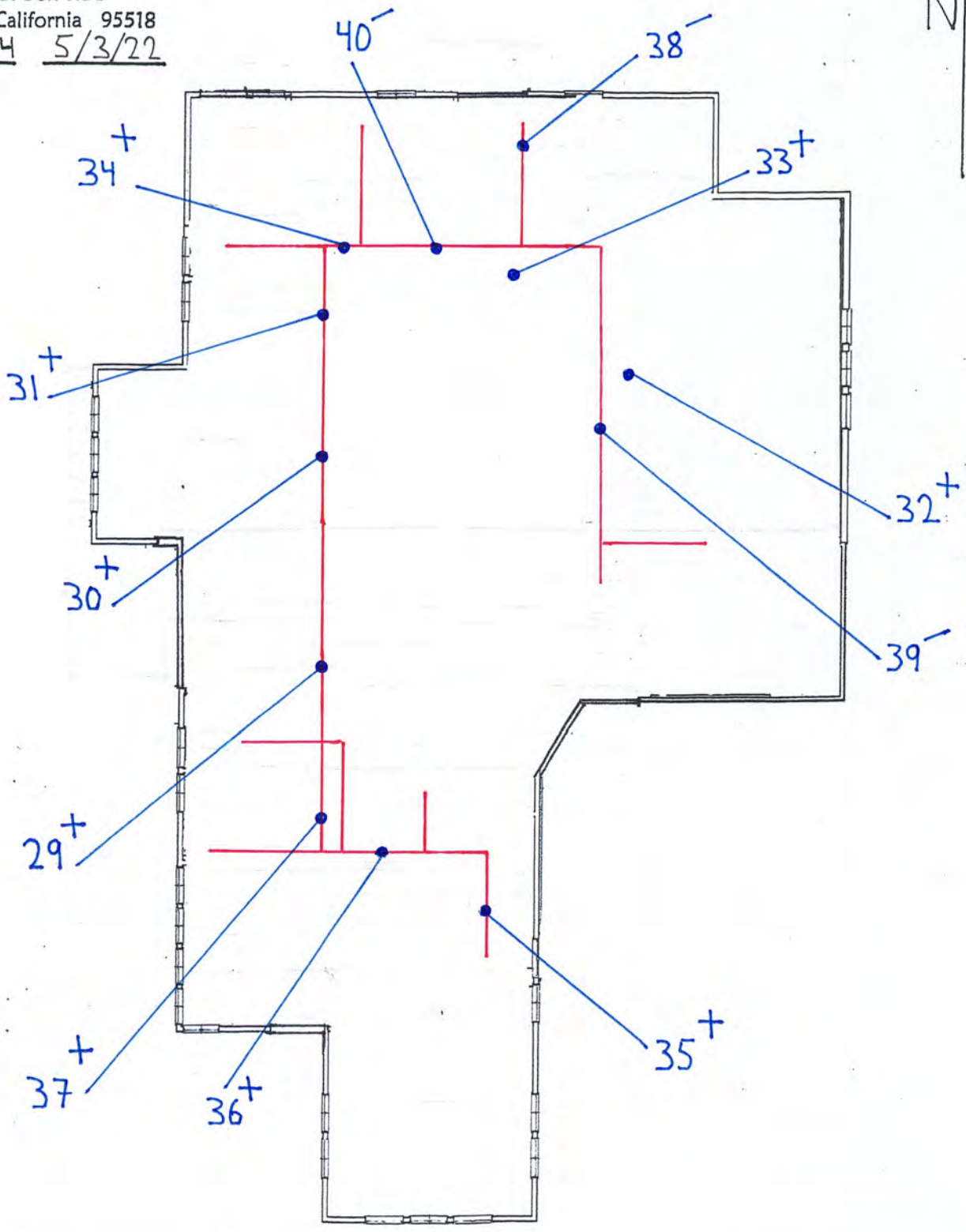
**(Asbestos Samples: 1-25, 28, 41-44)**

●—# Asbestos Sample Locations
(Prefixed 22304- #, with + or − designation)
**(+) is positive for Asbestos, (−) is negative**

**Interior/Exterior**
1100 Main St.
Ferndale, CA

FIG. 1

BRUNELLE & CLARK CONSULTING, LLC
P. O. Box 1138
Arcata, California 95518
2200304 5/3/22




**ASBESTOS SAMPLE LOCATIONS**

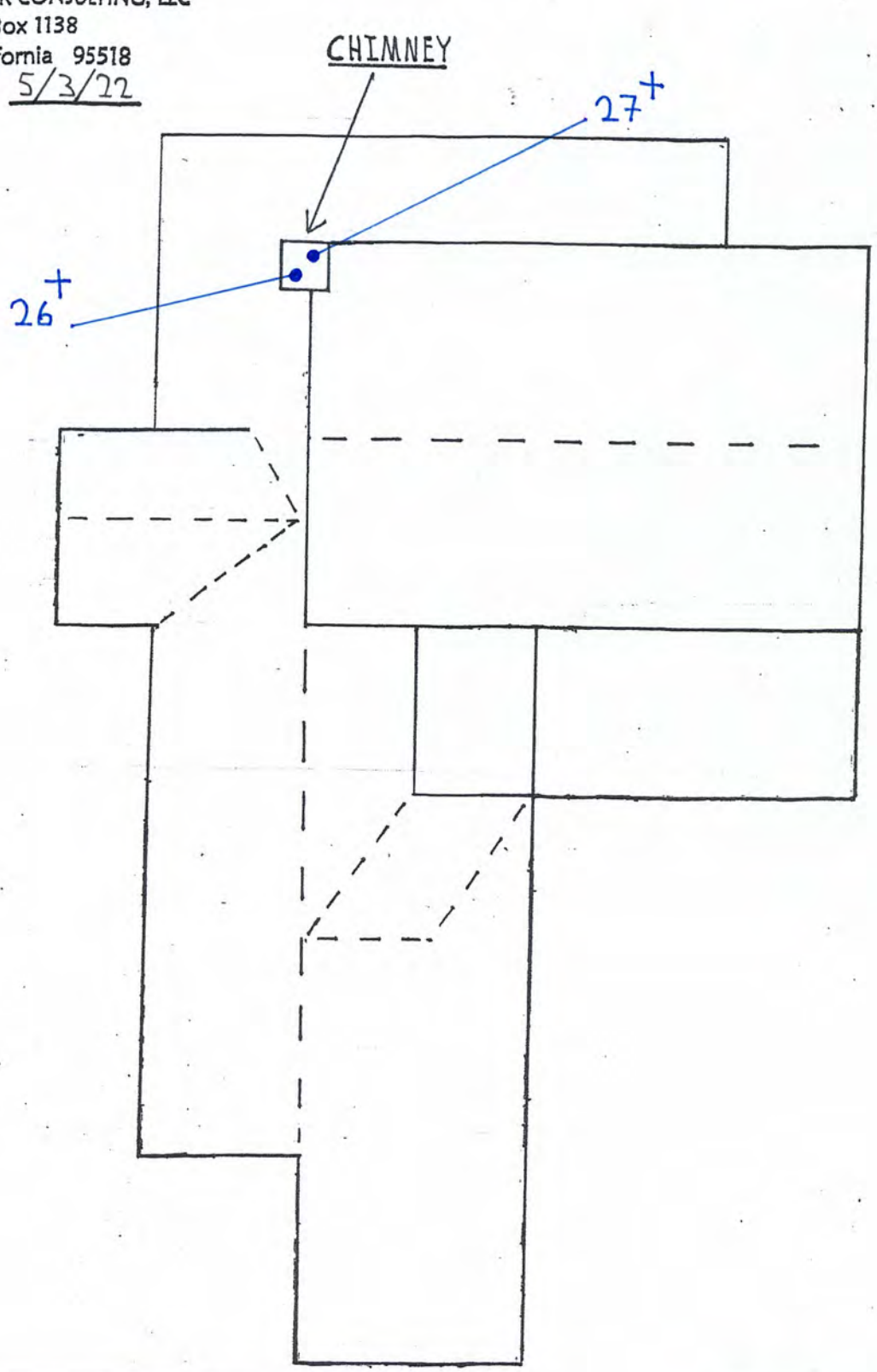
**(Asbestos Samples: 29-40)**

●—# Asbestos Sample Locations
(Prefixed 22304- #, with + or − designation)
**(+) is positive for Asbestos, (−) is negative**

**Crawl Space**
1100 Main St.
Ferndale, CA

FIG. 2

BRUNELLE & CLARK CONSULTING, LLC
P. O. Box 1138
Arcata, California 95518
2200304 5/3/22




**ASBESTOS SAMPLE LOCATIONS**

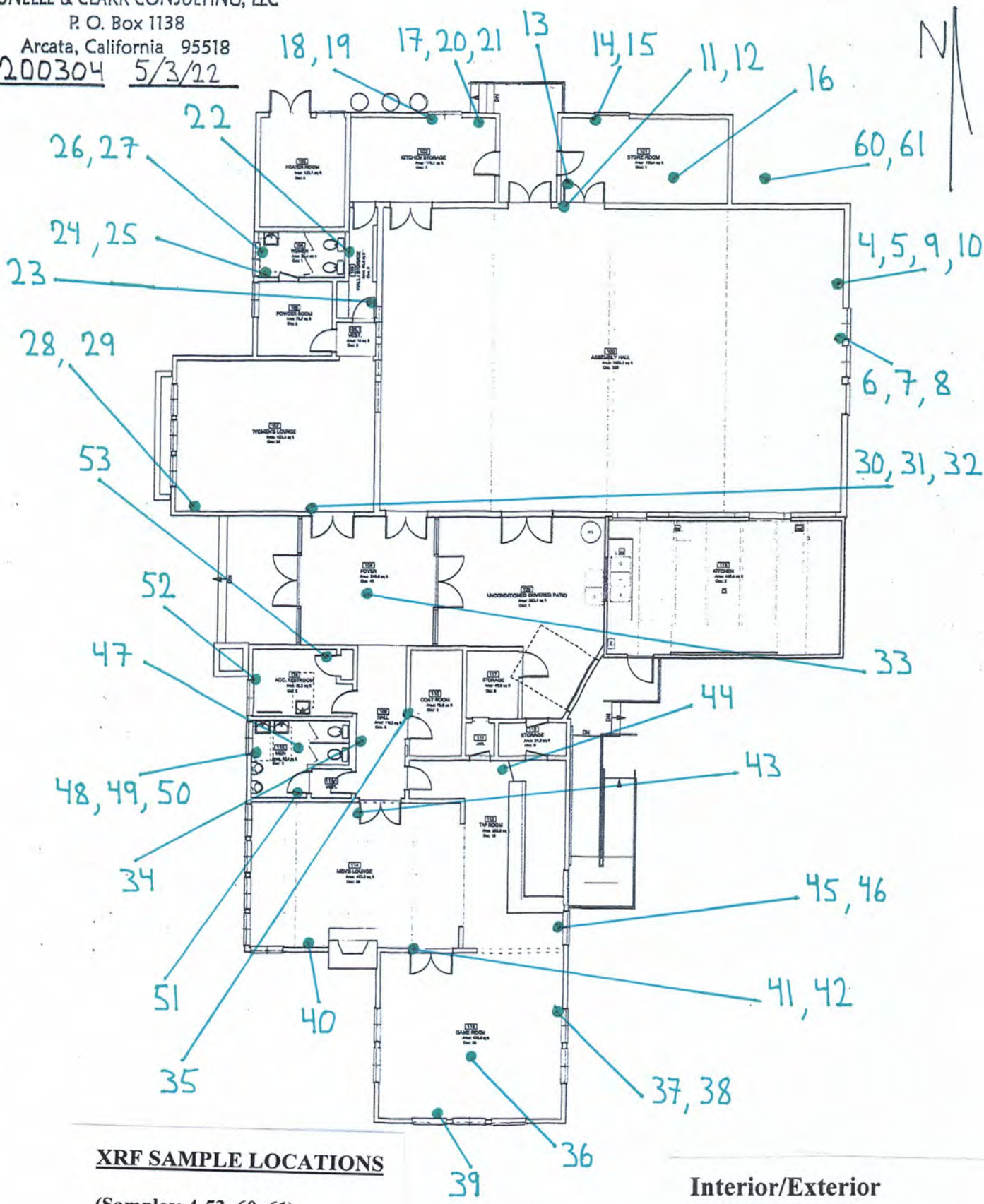
**(Asbestos Samples: 26, 27)**

●— # Asbestos Sample Locations
(Prefixed 22304- #, with + or – designation)
**(+) is positive for Asbestos, (–) is negative**

**Roof**
1100 Main St.
Ferndale, CA

FIG. 3

BRUNELLE & CLARK CONSULTING, LLC
P. O. Box 1138
Arcata, California 95518
2200304 5/3/22




**XRF SAMPLE LOCATIONS**

**(Samples: 4-53, 60, 61)**

\# XRF Sample Location

**Interior/Exterior**
1100 Main St.
Ferndale, CA

FIG. 4

BRUNELLE & CLARK CONSULTING, LLC
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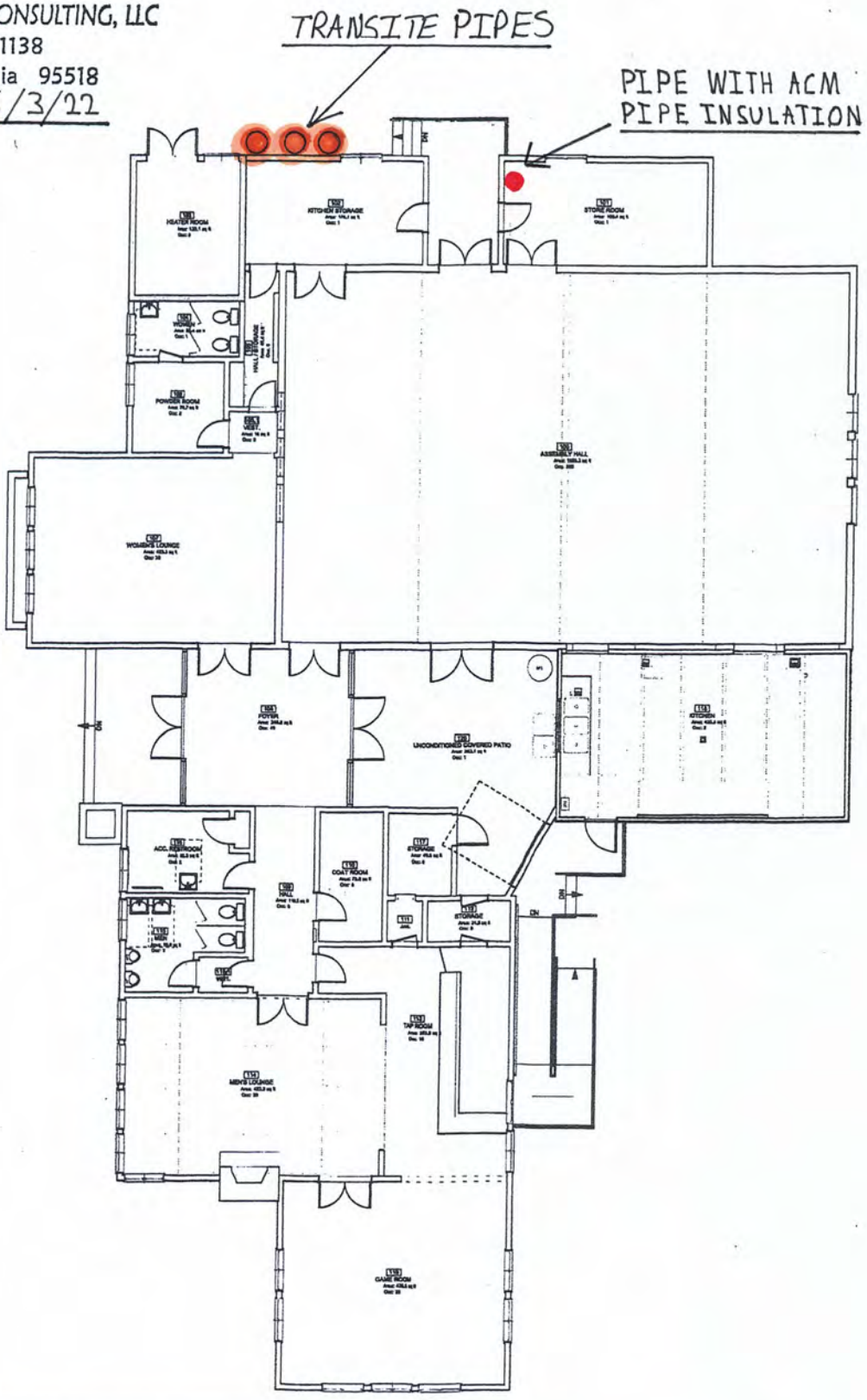
Arcata, California 95518
2200304 5/3/22




**ASBESTOS LOCATIONS**

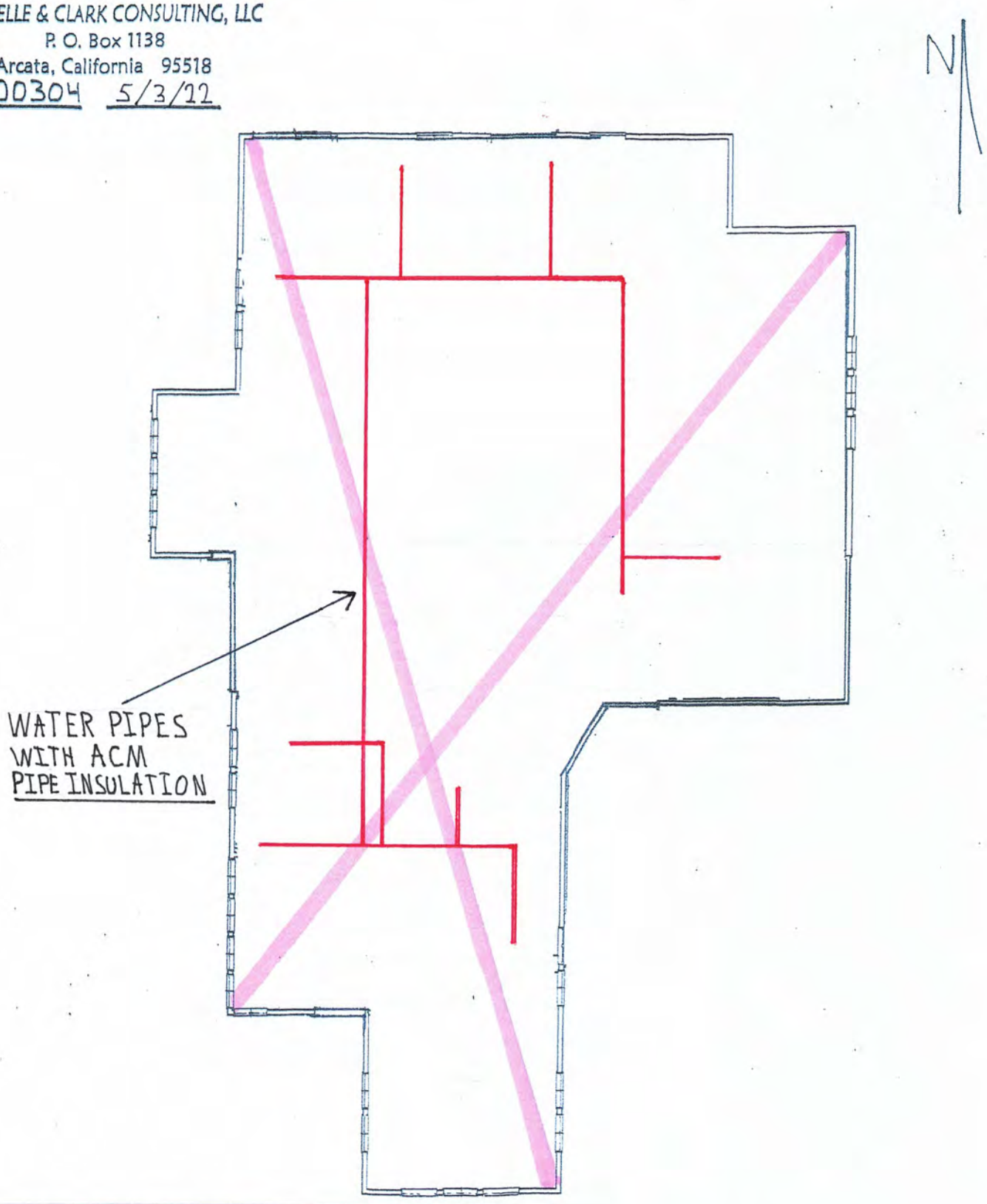
- ACM Transite flue pipe, gray
- ACM Pipe insulation elbow, white compound

**Note: see Table 2 for material & location details**

**Interior/Exterior**
1100 Main St.
Ferndale, CA

FIG. 5

BRUNELLE & CLARK CONSULTING, LLC
P. O. Box 1138
Arcata, California 95518
2200304 5/3/22




**ASBESTOS LOCATIONS**

- ACM Pipe insulation, block, Aircell & contaminated fiberglass
- ACM Pipe insulation debris on dirt throughout crawl space

**Note: see Table 2 for material & location details**

**Crawl Space**
1100 Main St.
Ferndale, CA

FIG. 6

BRUNELLE & CLARK CONSULTING, LLC
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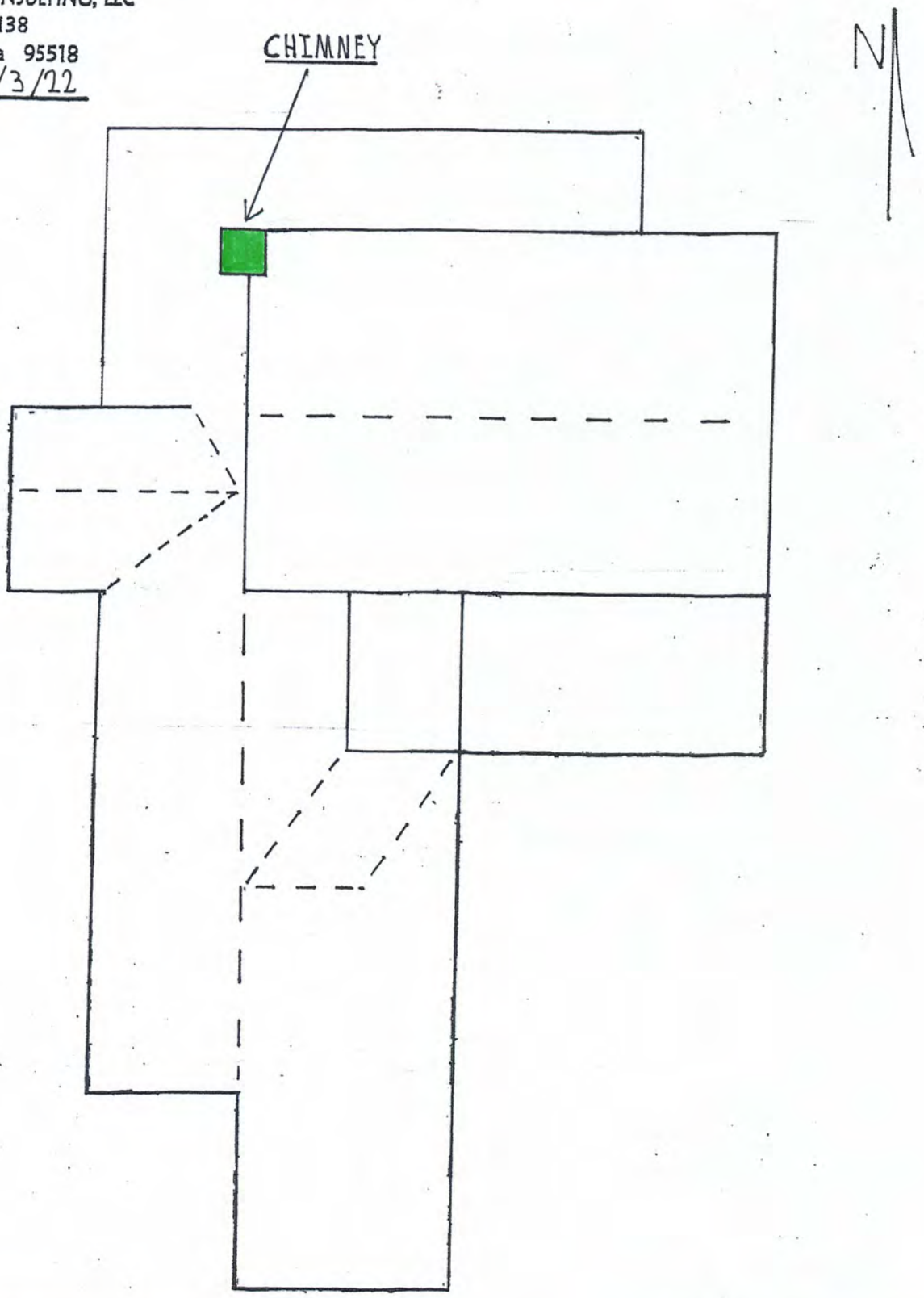
2200304 5/3/22



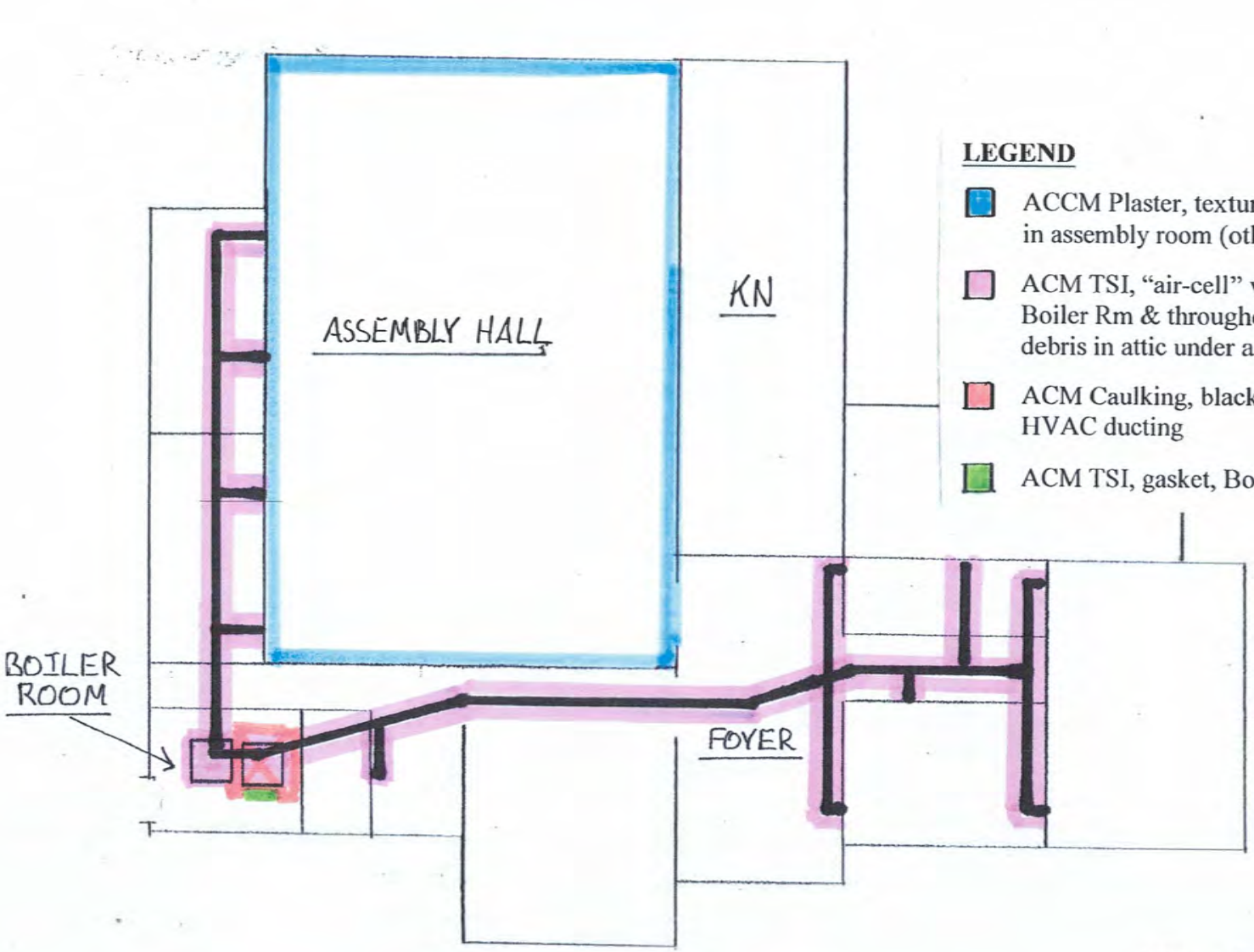

**ASBESTOS LOCATIONS**

ACM Tar roof patch, black

**Note: see Table 2 for material & location details**

**Roof**
1100 Main St.
Ferndale, CA

FIG. 7

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Arcata, California 95521

1600304 8/18/16

Ferndale Veterans Bldg.
1100 Main Street
Ferndale, CA

FIG. 8

BRUNELLE & CLARK CONSULTING, LLC
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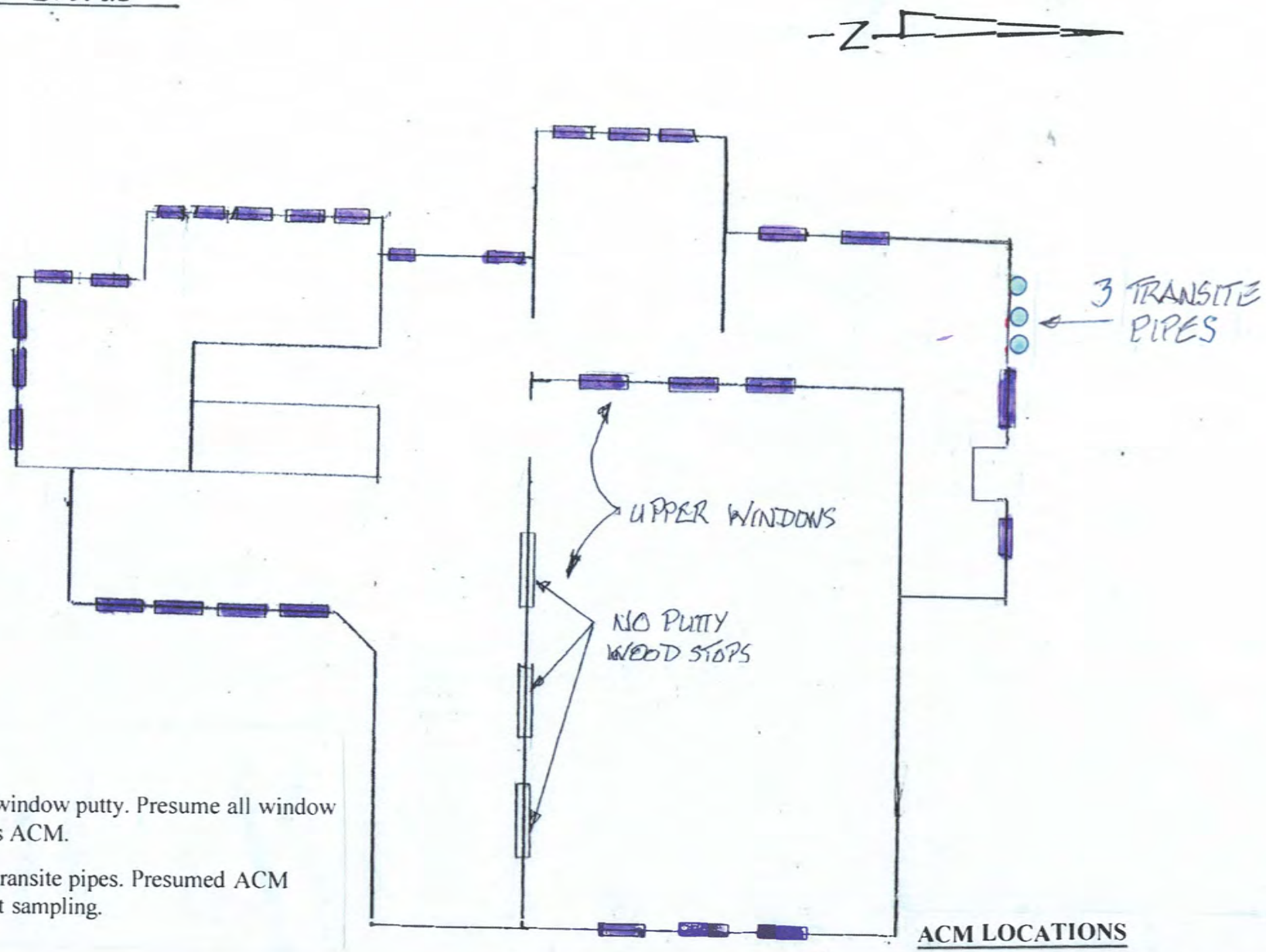
Arcata, California 95518
1800316 5/7/18




**LEGEND**

- ACM window putty. Presume all window putty is ACM.
- ACM transite pipes. Presumed ACM without sampling.

**ACM LOCATIONS**

**VETERAN'S MEMORIAL BLDG.**
**1100 MAIN STREET**
**FERNDALE, CA**

**FIG. 9**

# APPENDIX B

## Tables & Laboratory Reports

# TABLE 1
# SUMMARY OF ASBESTOS ANALYTIC DATA

**Ferndale Veterans Memorial Bldg.**
**1100 Main St., Ferndale, CA**
**(Current Sampling)**

| Sample Number | Sample Description (each layer) | Location | Asbestos % and Type | Friable vs. Non-Friable | Comments |
|---|---|---|---|---|---|
| 22304-1 | Plaster; skip trowel; tan topcoat | Game Rm, ceiling | NAD | NF | |
| 2nd layer | Gray rough coat | ‘’ | NAD | NF | |
| 22304-2 | Plaster; skip trowel; tan topcoat | M. Lounge, wall | NAD | NF | |
| 2nd layer | Gray rough coat | ‘’ | NAD | NF | |
| 22304-3 | Plaster; skip trowel; tan topcoat | M. Lounge, wall | NAD | NF | |
| 2nd layer | Gray rough coat | ‘’ | NAD | NF | |
| 22304-4 | Plaster; skip trowel; tan topcoat | Tap Rm, ceiling | NAD | NF | |
| 2nd layer | Gray rough coat | ‘’ | NAD | NF | |
| 22304-5 | Plaster; skip trowel; tan topcoat | Coat Rm, wall | NAD | NF | |
| 2nd layer | Gray rough coat | ‘’ | NAD | NF | |
| 22304-6 | Plaster; skip trowel; tan topcoat | Foyer, ceiling | NAD | NF | |
| 2nd layer | Gray rough coat | ‘’ | NAD | NF | |
| 22304-7 | Plaster; skip trowel; tan topcoat | W. Lounge, wall | NAD | NF | |
| 2nd layer | Gray rough coat | ‘’ | NAD | NF | |
| 22304-8 | Plaster; skip trowel; tan topcoat | ACC RR, wall | NAD | NF | |
| 2nd layer | Gray rough coat | ‘’ | NAD | NF | |
| 22304-9 | Plaster; skip trowel; tan topcoat | Powder Rm, wall | NAD | NF | |
| 2nd layer | Gray rough coat | ‘’ | NAD | NF | |

# TABLE 1
# SUMMARY OF ASBESTOS ANALYTIC DATA

**Ferndale Veterans Memorial Bldg.**
**1100 Main St., Ferndale, CA**
**(Current Sampling)**

| Sample Number | Sample Description (each layer) | Location | Asbestos % and Type | Friable vs. Non-Friable | Comments |
|---|---|---|---|---|---|
| 22304-10 | Plaster; smooth; white topcoat | M. RR, wall | NAD | NF | |
| 2nd layer | Gray rough coat | ‘’ | NAD | NF | |
| 22304-11 | Plaster; smooth; white topcoat | M. RR, ceiling | NAD | NF | |
| 2nd layer | Gray rough coat | ‘’ | NAD | NF | |
| 22304-12 | Plaster; smooth; white topcoat | W. RR, wall | NAD | NF | |
| 2nd layer | Gray rough coat | ‘’ | NAD | NF | |
| 22304-13 | Plaster; smooth; white topcoat | W. RR, ceiling | NAD | NF | |
| 2nd layer | Gray rough coat | ‘’ | NAD | NF | |
| 22304-14 | Plaster; smooth; white topcoat | Hall-storage, ceiling | NAD | NF | |
| 2nd layer | Gray rough coat | ‘’ | NAD | NF | |
| 22304-15 | Plaster; smooth; white topcoat | KN storage, wall | NAD | NF | |
| 2nd layer | Gray rough coat | ‘’ | NAD | NF | |
| 22304-16 | Plaster; smooth; white topcoat | Storage closet, wall | NAD | NF | |
| 2nd layer | Gray rough coat | ‘’ | NAD | NF | |
| 22304-17 | Button board, gypsum, white | M. Lounge, wall | NAD | NF | |
| 22304-18 | Button board, gypsum, white | Coat Rm, wall | NAD | NF | |
| 22304-19 | Button board, gypsum, pink | Powder Rm, wall | NAD | NF | |
| 22304-20 | Plaster; smooth; white topcoat | Jan, wall | NAD | NF | |
| 2nd layer | Gray rough coat | ‘’ | NAD | NF | |

# TABLE 1
# SUMMARY OF ASBESTOS ANALYTIC DATA

**Ferndale Veterans Memorial Bldg.**
**1100 Main St., Ferndale, CA**
**(Current Sampling)**

| Sample Number | Sample Description (each layer) | Location | Asbestos % and Type | Friable vs. Non-Friable | Comments |
|---|---|---|---|---|---|
| 22304-21 | Concrete, gray | Heater Rm, wall | NAD | NF | |
| 22304-22 | Concrete, gray | Heater Rm, wall | NAD | NF | |
| 22304-23 | Concrete, gray | Heater Rm, wall | NAD | NF | |
| **22304-24** | **Transite pipe, gray** | **Exterior, flue pipe** | **4% CR & 12% CH** | **NF** | |
| **22304-25** | **Transite pipe, gray** | **Exterior, flue pipe** | **PACM** | **NF** | **NA/PS** |
| **22304-26** | **Tar roof patch, black** | **Roof, sheet metal chimney cap** | **5% CH** | **NF** | |
| **22304-27** | **Tar roof patch, black** | **Roof, sheet metal chimney cap** | **PACM** | **NF** | **NA/PS** |
| **22304-28** | **Pipe insulation elbow, white compound** | **Store Rm, pipe** | **20% AM & 10% CH** | **F** | |
| **22304-29** | **Pipe insulation, block, white compound** | **Crawl space, water pipe** | **25% AM & 5% CH** | **F** | |
| **22304-30** | **Pipe insulation, block, white compound** | **Crawl space, water pipe** | **PACM** | **F** | **NA/PS** |
| **22304-31** | **Pipe insulation, block, white compound** | **Crawl space, water pipe** | **PACM** | **F** | **NA/PS** |
| **22304-32** | **Pipe insulation, block, white compound** | **Crawl space, debris on ground** | **PACM** | **F** | **NA/PS** |
| **22304-33** | **Pipe insulation, block, white compound** | **Crawl space, debris on ground** | **PACM** | **F** | **NA/PS** |
| **22304-34** | **Pipe insulation, block, white compound** | **Crawl space, debris on ground** | **PACM** | **F** | **NA/PS** |
| **22304-35** | **Pipe insulation, aircell** | **Crawl space, water pipe** | **65% CH** | **F** | |

# TABLE 1
# SUMMARY OF ASBESTOS ANALYTIC DATA

**Ferndale Veterans Memorial Bldg.**
**1100 Main St., Ferndale, CA**
**(Current Sampling)**

| Sample Number | Sample Description (each layer) | Location | Asbestos % and Type | Friable vs. Non-Friable | Comments |
|---|---|---|---|---|---|
| **22304-36** | **Pipe insulation, aircell** | **Crawl space, water pipe** | **PACM** | **F** | **NA/PS** |
| **22304-37** | **Pipe insulation, aircell** | **Crawl space, water pipe** | **PACM** | **F** | **NA/PS** |
| 22304-38 | Pipe insulation jacket, white fabric | Crawl space, water pipe | NAD | NF | |
| 22304-39 | Pipe insulation jacket, white fabric | Crawl space, water pipe | NAD | NF | |
| 22304-40 | Pipe insulation jacket, white fabric | Crawl space, water pipe | NAD | NF | |
| 22304-41 | Foam seal, black | Powder Rm, HVAC register | NAD | NF | |
| 22304-42 | Foam seal, black | Foyer, HVAC register | NAD | NF | |
| 22304-43 | Foam seal, black | AC RR, HVAC register | NAD | NF | |
| 22304-44 | Foam seal, black | Tap Rm, wall, HVAC register | NAD | NF | |

**AM** = Amosite Asbestos

**Bold Type** = materials found to contain asbestos

**CH** = Chrysotile Asbestos

**CR** = Crocidolite Asbestos

**F** = "Friable," asbestos material defined as: material containing >1% asbestos, that when dry, may be crumbled, pulverized, or reduced to powder by hand pressure

**NAD** = No Asbestos Detected

**NA/PS** = Not analyzed/Positive stop, stopped analysis after 1st positive test for identical material (see prev. sample)

**NF** = Non-friable

**PACM** = Presumed ACM

**<1%** = less than 1% asbestos content

**Note:** Some samples had multiple layers analyzed separately

# TABLE 3
# XRF PAINT SAMPLING DATA

**Ferndale Veterans Memorial Bldg.**
**1100 Main St., Ferndale, CA**
**(Current Sampling)**

**XRF Lead Paint Analyzer:**

Heuresis Corp.

Model: Pb200i

Serial# 1566

**Calibration:**

Standard Reference Material: lead content of 1.04 mg/cm$^2$ ±0.0643

Response Verification Check Range: 0.8 mg/cm$^2$ to 1.2 mg/cm$^2$

Note: for Performance Characteristic Sheet (PCS) compliance, the average of three calibration readings must fall within the "Response Verification Check Range."

| Reading # | Sample Location | Component Description | Lead Concentration (mg/cm$^2$) | Paint Classification | Surface Coating Material | Color | Substrate |
|---|---|---|---|---|---|---|---|
| 1 | Calibration | Standard Reference Material | 1.0 | -- | -- | -- | -- |
| 2 | Calibration | Standard Reference Material | 1.1 | -- | -- | -- | -- |
| 3 | Calibration | Standard Reference Material | 1.1 | -- | -- | -- | -- |
| 4 | Assembly Hall | Wall panel | 0 | NEG | Paint | White | Plywood |
| 5 | Assembly Hall | Acoustic wall plaster | 0.1 | LCSC | Paint | White | Plaster |
| 6 | Assembly Hall | Window trim | 0 | NEG | Paint | White | Wood |

NEG = Negative (<0.1 mg/cm$^2$)
LCSC = Lead Containing Surface Coating (≥ 0.1 mg/cm$^2$ & <1.0 mg/cm$^2$)
LBP=Lead Based Paint (≥1.0 mg/cm$^2$)

# TABLE 3
# XRF PAINT SAMPLING DATA

**Ferndale Veterans Memorial Bldg.**
**1100 Main St., Ferndale, CA**
**(Current Sampling)**

| Reading # | Sample Location | Component Description | Lead Concentration ($mg/cm^{2)}$ | Paint Classification | Surface Coating Material | Color | Substrate |
|---|---|---|---|---|---|---|---|
| 7 | Assembly Hall | Window jamb | 0.2 | LCSC | Paint | White | Wood |
| 8 | Assembly Hall | Window frame | 0 | NEG | Paint | White | Wood |
| 9 | Assembly Hall | Baseboard | 0 | NEG | Paint | Tan | Wood |
| 10 | Assembly Hall | Hardwood floor | 0.1 | LCSC | Glaze | Clear | Wood |
| 11 | Assembly Hall | Door trim | 0.1 | LCSC | Paint | Tan | Wood |
| 12 | Assembly Hall | Door | 0.1 | LCSC | Paint | White | Wood |
| 13 | Store Rm | Wall | 0.3 | LCSC | Paint | White | Plaster |
| 14 | Store Rm | Windowsill | 0.1 | LCSC | Paint | White | Wood |
| 15 | Store Rm | Window frame | 0 | NEG | Paint | White | Wood |
| 16 | Store Rm | Ceiling | 0.3 | LCSC | Paint | White | Plaster |
| 17 | KN storage | Wall | 0.4 | LCSC | Paint | White | Plaster |
| 18 | KN storage | Window trim | 0.4 | LCSC | Paint | White | Wood |
| 19 | KN storage | Window frame | 0.3 | LCSC | Paint | White | Wood |
| 20 | KN storage | Cabinet door | 0.2 | LCSC | Paint | White | Wood |

NEG = Negative ($<0.1$ mg/cm$^2$)
LCSC = Lead Containing Surface Coating ($\geq 0.1$ mg/cm$^2$ & $<1.0$ mg/cm$^2$)
LBP=Lead Based Paint ($\geq 1.0$ mg/cm$^2$)

# TABLE 3
# XRF PAINT SAMPLING DATA

**Ferndale Veterans Memorial Bldg.**
**1100 Main St., Ferndale, CA**
**(Current Sampling)**

| Reading # | Sample Location | Component Description | Lead Concentration ($mg/cm^{2)}$ | Paint Classification | Surface Coating Material | Color | Substrate |
|---|---|---|---|---|---|---|---|
| **21** | **KN storage** | **Ceramic tile Backsplash (6"x 6")** | **19.7** | **LBP** | **Glaze** | **Yellow** | **Ceramic** |
| 22 | Hall/storage | Wall | 0.3 | LCSC | Paint | White | Plaster |
| 23 | Hall/storage | Door | 0 | NEG | Paint | White | Wood |
| 24 | W. RR | Wall | 0.3 | LCSC | Paint | White | Plaster |
| **25** | **W. RR** | **Ceramic wall tile (6"x 6")** | **11.7** | **LBP** | **Glaze** | **Tan with brown specks** | **Ceramic** |
| 26 | W. RR | Window trim | 0.5 | LCSC | Paint | Brown | Wood |
| 27 | W. RR | Window frame | 0.2 | LCSC | Paint | Brown | Wood |
| 28 | W. Lounge | Wall | 0.3 | LCSC | Paint | White | Plaster |
| 29 | W. Lounge | Chair rail trim | -0.2 | NEG | Paint | White | Wood |
| 30 | W. Lounge | Door trim | -0.1 | NEG | Paint | White | Wood |
| 31 | W. Lounge | Baseboard | -0.1 | NEG | Paint | White | Wood |
| 32 | W. Lounge | Door | 0 | NEG | Paint | White | Wood |
| 33 | Foyer | Ceiling | 0.3 | LCSC | Paint | White | Plaster |

NEG = Negative ($<0.1$ mg/cm$^2$)
LCSC = Lead Containing Surface Coating ($\geq 0.1$ mg/cm$^2$ & $<1.0$ mg/cm$^2$)
LBP=Lead Based Paint ($\geq 1.0$ mg/cm$^2$)

# TABLE 3
# XRF PAINT SAMPLING DATA

**Ferndale Veterans Memorial Bldg.**
**1100 Main St., Ferndale, CA**
**(Current Sampling)**

| Reading # | Sample Location | Component Description | Lead Concentration ($mg/cm^{2)}$ | Paint Classification | Surface Coating Material | Color | Substrate |
|---|---|---|---|---|---|---|---|
| 34 | Hall | Wall | 0.6 | LCSC | Paint | White | Plaster |
| 35 | Hall | Door trim | 0 | NEG | Paint | White | Plaster |
| 36 | Game Rm | Ceiling | 0.2 | LCSC | Paint | White | Plaster |
| 37 | Game Rm | Window trim | 0.2 | LCSC | Paint | White | Wood |
| 38 | Game Rm | Window frame | 0.9 | LCSC | Paint | White | Wood |
| 39 | Game Rm | Window frame | 0.5 | LCSC | Paint | White | Wood |
| 40 | M. Lounge | Wall | 0.5 | LCSC | Paint | White | Plaster |
| 41 | M. Lounge | Door trim | 0.1 | LCSC | Paint | White | Wood |
| 42 | M. Lounge | Baseboard | 0 | NEG | Paint | White | Wood |
| 43 | M. Lounge | Door | 0 | NEG | Paint | White | Wood |
| 44 | Tap Room | Ceiling | 0.1 | LCSC | Paint | White | Plaster |
| 45 | Tap Room | Windowsill | 0 | NEG | Paint | White | Wood |
| 46 | Tap Room | Window frame | 0.8 | LCSC | Paint | White | Wood |
| 47 | M. RR | Ceiling | 0.4 | LCSC | Paint | White | Plaster |

NEG = Negative ($<0.1$ mg/cm$^2$)
LCSC = Lead Containing Surface Coating ($\geq 0.1$ mg/cm$^2$ & $<1.0$ mg/cm$^2$)
LBP=Lead Based Paint ($\geq 1.0$ mg/cm$^2$)

# TABLE 3
# XRF PAINT SAMPLING DATA

**Ferndale Veterans Memorial Bldg.**
**1100 Main St., Ferndale, CA**
**(Current Sampling)**

| Reading # | Sample Location | Component Description | Lead Concentration ($mg/cm^{2)}$ | Paint Classification | Surface Coating Material | Color | Substrate |
|---|---|---|---|---|---|---|---|
| 48 | M. RR | Window trim | 0.5 | LCSC | Paint | Brown | Wood |
| 49 | M. RR | Window frame | 0.6 | LCSC | Paint | Brown | Wood |
| **50** | **M. RR** | **Ceramic wall tile (6" x6")** | **14.0** | **LBP** | **Glaze** | **Tan with brown specks** | **Ceramic** |
| 51 | M. RR | Door | -0.1 | NEG | Paint | Brown | Wood |
| 52 | ACC. RR | Wall | 0.2 | LCSC | Paint | White | Plaster |
| 53 | ACC. RR | Door | 0 | NEG | Paint | White | Wood |
| 54 | Calibration | Standard Reference Material | 1.1 | -- | -- | -- | -- |
| 55 | Calibration | Standard Reference Material | 0.9 | -- | -- | -- | -- |
| 56 | Calibration | Standard Reference Material | 1.1 | -- | -- | -- | -- |
| 57 | Calibration | Standard Reference Material | 1.0 | -- | -- | -- | -- |
| 58 | Calibration | Standard Reference Material | 0.9 | -- | -- | -- | -- |
| 59 | Calibration | Standard Reference Material | 0.9 | -- | -- | -- | -- |

NEG = Negative ($<0.1$ mg/cm$^2$)
LCSC = Lead Containing Surface Coating ($\geq 0.1$ mg/cm$^2$ & $<1.0$ mg/cm$^2$)
LBP=Lead Based Paint ($\geq 1.0$ mg/cm$^2$)

# TABLE 3
# XRF PAINT SAMPLING DATA

**Ferndale Veterans Memorial Bldg.**
**1100 Main St., Ferndale, CA**
**(Current Sampling)**

| Reading # | Sample Location | Component Description | Lead Concentration ($mg/cm^{2)}$ | Paint Classification | Surface Coating Material | Color | Substrate |
|---|---|---|---|---|---|---|---|
| 60 | Exterior | Oil tank | 0.4 | LCSC | Paint | Tan | Metal |
| 61 | Exterior | Oil tank stand | 0.2 | LCSC | Paint | Red | Metal |
| 62 | Calibration | Standard Reference Material | 1.0 | -- | -- | -- | -- |
| 63 | Calibration | Standard Reference Material | 1.0 | -- | -- | -- | -- |
| 64 | Calibration | Standard Reference Material | 1.0 | -- | -- | -- | -- |

NEG = Negative ($<0.1$ mg/cm$^2$)
LCSC = Lead Containing Surface Coating ($\geq 0.1$ mg/cm$^2$ & $<1.0$ mg/cm$^2$)
LBP=Lead Based Paint ($\geq 1.0$ mg/cm$^2$)

**AmeriSci Richmond**
13635 GENITO ROAD
MIDLOTHIAN, VIRGINIA 23112
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# PLM Bulk Asbestos Report

Brunelle & Clark Consulting, LLC
Attn: Zindar Brunelle
PO Box 1138

Arcata, CA 95518

**Date Received** 04/22/22
**Date Examined** 04/27/22

**AmeriSci Job #** 122042119
**P.O. #**
**Page** 1 **of** 10

**RE:** 2200304; Ferndale Veterans Memorial Bldg; 1100 Main St, Ferndale, CA

| Client No. / HGA | Lab No. | Asbestos Present | Total % Asbestos |
|---|---|---|---|
| 22304-1 | 122042119-01.1 | *No* | NAD (by CVES) by Donna M. Blackwell on 04/27/22 |
| **Location:** Skip Trowel Tan Plaster; TC/Gray RC; Game Rm/Ceiling | | | |
| **Analyst Description:** White, Homogeneous, Non-Fibrous, Cementitious, Top Coat (Plaster) | | | |
| **Asbestos Types:** | | | |
| **Other Material:** Non-fibrous 100% | | | |
| 22304-1 | 122042119-01.2 | *No* | NAD (by CVES) by Donna M. Blackwell on 04/27/22 |
| **Location:** Skip Trowel Tan Plaster; TC/Gray RC; Game Rm/Ceiling | | | |
| **Analyst Description:** Gray, Homogeneous, Non-Fibrous, Cementitious, Rough Coat (Plaster) | | | |
| **Asbestos Types:** | | | |
| **Other Material:** Non-fibrous 100% | | | |
| 22304-2 | 122042119-02.1 | *No* | NAD (by CVES) by Donna M. Blackwell on 04/27/22 |
| **Location:** Skip Trowel Tan Plaster; TC/Gray RC; M Lounge /Wall | | | |
| **Analyst Description:** White, Homogeneous, Non-Fibrous, Cementitious, Top Coat (Plaster) | | | |
| **Asbestos Types:** | | | |
| **Other Material:** Non-fibrous 100% | | | |
| 22304-2 | 122042119-02.2 | *No* | NAD (by CVES) by Donna M. Blackwell on 04/27/22 |
| **Location:** Skip Trowel Tan Plaster; TC/Gray RC; M Lounge /Wall | | | |
| **Analyst Description:** Gray, Homogeneous, Non-Fibrous, Cementitious, Rough Coat (Plaster) | | | |
| **Asbestos Types:** | | | |
| **Other Material:** Cellulose 2%, Non-fibrous 98% | | | |
| 22304-3 | 122042119-03.1 | *No* | NAD (by CVES) by Donna M. Blackwell on 04/27/22 |
| **Location:** Skip Trowel Tan Plaster; TC/Gray RC; M Lounge /Wall | | | |
| **Analyst Description:** White, Homogeneous, Non-Fibrous, Cementitious, Top Coat (Plaster) | | | |
| **Asbestos Types:** | | | |
| **Other Material:** Non-fibrous 100% | | | |

See Reporting notes on last page

# PLM Bulk Asbestos Report

2200304; Ferndale Veterans Memorial Bldg; 1100 Main St, Ferndale, CA

| Client No. / HGA | Lab No. | Asbestos Present | Total % Asbestos |
|---|---|---|---|
| 22304-3 | 122042119-03.2 | ***No*** | NAD |
| **Location:** Skip Trowel Tan Plaster; TC/Gray RC; M Lounge /Wall | | | (by CVES) by Donna M. Blackwell on 04/27/22 |
| **Analyst Description:** Gray, Heterogeneous, Non-Fibrous, Cementitious, Rough Coat (Plaster) | | | |
| **Asbestos Types:** | | | |
| **Other Material:** Cellulose 2%, Non-fibrous 98% | | | |
| 22304-4 | 122042119-04.1 | ***No*** | NAD |
| **Location:** Skip Trowel Tan Plaster; TC/Gray RC; Tap Rm/Ceiling | | | (by CVES) by Donna M. Blackwell on 04/27/22 |
| **Analyst Description:** White, Homogeneous, Non-Fibrous, Cementitious, Top Coat (Plaster) | | | |
| **Asbestos Types:** | | | |
| **Other Material:** Non-fibrous 100% | | | |
| 22304-4 | 122042119-04.2 | ***No*** | NAD |
| **Location:** Skip Trowel Tan Plaster; TC/Gray RC; Tap Rm/Ceiling | | | (by CVES) by Donna M. Blackwell on 04/27/22 |
| **Analyst Description:** Gray, Heterogeneous, Non-Fibrous, Cementitious, Rough Coat (Plaster) | | | |
| **Asbestos Types:** | | | |
| **Other Material:** Cellulose 2%, Non-fibrous 98% | | | |
| 22304-5 | 122042119-05.1 | ***No*** | NAD |
| **Location:** Skip Trowel Tan Plaster; TC/Gray RC; Coat Rm/Wall | | | (by CVES) by Donna M. Blackwell on 04/27/22 |
| **Analyst Description:** White, Homogeneous, Non-Fibrous, Cementitious, Top Coat (Plaster) | | | |
| **Asbestos Types:** | | | |
| **Other Material:** Non-fibrous 100% | | | |
| 22304-5 | 122042119-05.2 | ***No*** | NAD |
| **Location:** Skip Trowel Tan Plaster; TC/Gray RC; Coat Rm/Wall | | | (by CVES) by Donna M. Blackwell on 04/27/22 |
| **Analyst Description:** Gray, Homogeneous, Non-Fibrous, Cementitious, Rough Coat (Plaster) | | | |
| **Asbestos Types:** | | | |
| **Other Material:** Non-fibrous 100% | | | |
| 22304-6 | 122042119-06.1 | ***No*** | NAD |
| **Location:** Skip Trowel Tan Plaster; TC/Gray RC; Foyer/Ceiling | | | (by CVES) by Donna M. Blackwell on 04/27/22 |
| **Analyst Description:** White, Homogeneous, Non-Fibrous, Cementitious, Top Coat (Plaster) | | | |
| **Asbestos Types:** | | | |
| **Other Material:** Non-fibrous 100% | | | |

See Reporting notes on last page

# PLM Bulk Asbestos Report

2200304; Ferndale Veterans Memorial Bldg; 1100 Main St,
Ferndale, CA

| Client No. / HGA | Lab No. | Asbestos Present | Total % Asbestos |
|---|---|---|---|
| 22304-6 | 122042119-06.2 | ***No*** | NAD |
| **Location:** Skip Trowel Tan Plaster; TC/Gray RC; Foyer/Ceiling | | | (by CVES) by Donna M. Blackwell on 04/27/22 |
| **Analyst Description:** Gray, Homogeneous, Non-Fibrous, Cementitious, Rough Coat (Plaster) | | | |
| **Asbestos Types:** | | | |
| **Other Material:** Cellulose Trace, Non-fibrous 100% | | | |
| 22304-7 | 122042119-07.1 | ***No*** | NAD |
| **Location:** Skip Trowel Tan Plaster; TC/Gray RC; W Lounge /Wall | | | (by CVES) by Donna M. Blackwell on 04/27/22 |
| **Analyst Description:** White, Homogeneous, Non-Fibrous, Cementitious, Top Coat (Plaster) | | | |
| **Asbestos Types:** | | | |
| **Other Material:** Non-fibrous 100% | | | |
| 22304-7 | 122042119-07.2 | ***No*** | NAD |
| **Location:** Skip Trowel Tan Plaster; TC/Gray RC; W Lounge /Wall | | | (by CVES) by Donna M. Blackwell on 04/27/22 |
| **Analyst Description:** Gray, Homogeneous, Non-Fibrous, Cementitious, Rough Coat (Plaster) | | | |
| **Asbestos Types:** | | | |
| **Other Material:** Cellulose 2%, Non-fibrous 98% | | | |
| 22304-8 | 122042119-08.1 | ***No*** | NAD |
| **Location:** Skip Trowel Tan Plaster; TC/Gray RC; ACC RR/Wall | | | (by CVES) by Donna M. Blackwell on 04/27/22 |
| **Analyst Description:** White, Homogeneous, Non-Fibrous, Cementitious, Top Coat (Plaster) | | | |
| **Asbestos Types:** | | | |
| **Other Material:** Non-fibrous 100% | | | |
| 22304-8 | 122042119-08.2 | ***No*** | NAD |
| **Location:** Skip Trowel Tan Plaster; TC/Gray RC; ACC RR/Wall | | | (by CVES) by Donna M. Blackwell on 04/27/22 |
| **Analyst Description:** Gray, Homogeneous, Non-Fibrous, Cementitious, Rough Coat (Plaster) | | | |
| **Asbestos Types:** | | | |
| **Other Material:** Cellulose 2%, Non-fibrous 98% | | | |
| 22304-9 | 122042119-09.1 | ***No*** | NAD |
| **Location:** Skip Trowel Tan Plaster; TC/Gray RC; Powder Rm/Wall | | | (by CVES) by Donna M. Blackwell on 04/27/22 |
| **Analyst Description:** White, Homogeneous, Non-Fibrous, Cementitious, Top Coat (Plaster) | | | |
| **Asbestos Types:** | | | |
| **Other Material:** Non-fibrous 100% | | | |

See Reporting notes on last page

# PLM Bulk Asbestos Report

2200304; Ferndale Veterans Memorial Bldg; 1100 Main St, Ferndale, CA

| Client No. / HGA | Lab No. | Asbestos Present | Total % Asbestos |
|---|---|---|---|
| 22304-9 | 122042119-09.2 | ***No*** | NAD |
| **Location:** Skip Trowel Tan Plaster; TC/Gray RC; Powder Rm/Wall | | | (by CVES) by Donna M. Blackwell on 04/27/22 |
| **Analyst Description:** Gray, Homogeneous, Non-Fibrous, Cementitious, Rough Coat (Plaster) | | | |
| **Asbestos Types:** | | | |
| **Other Material:** Cellulose Trace, Non-fibrous 100% | | | |
| 22304-10 | 122042119-10.1 | ***No*** | NAD |
| **Location:** Plaster; Smooth/White TC/Gray RC; M RR/Wall | | | (by CVES) by Donna M. Blackwell on 04/27/22 |
| **Analyst Description:** White, Homogeneous, Non-Fibrous, Cementitious, Top Coat (Plaster) | | | |
| **Asbestos Types:** | | | |
| **Other Material:** Non-fibrous 100% | | | |
| 22304-10 | 122042119-10.2 | ***No*** | NAD |
| **Location:** Plaster; Smooth/White TC/Gray RC; M RR/Wall | | | (by CVES) by Donna M. Blackwell on 04/27/22 |
| **Analyst Description:** Gray, Homogeneous, Non-Fibrous, Cementitious, Rough Coat (Plaster) | | | |
| **Asbestos Types:** | | | |
| **Other Material:** Cellulose Trace, Non-fibrous 100% | | | |
| 22304-11 | 122042119-11.1 | ***No*** | NAD |
| **Location:** Plaster; Smooth/White TC/Gray RC; M RR/Ceiling | | | (by CVES) by Donna M. Blackwell on 04/27/22 |
| **Analyst Description:** White, Homogeneous, Non-Fibrous, Cementitious, Top Coat (Plaster) | | | |
| **Asbestos Types:** | | | |
| **Other Material:** Non-fibrous 100% | | | |
| 22304-11 | 122042119-11.2 | ***No*** | NAD |
| **Location:** Plaster; Smooth/White TC/Gray RC; M RR/Ceiling | | | (by CVES) by Donna M. Blackwell on 04/27/22 |
| **Analyst Description:** Gray, Homogeneous, Non-Fibrous, Cementitious, Rough Coat (Plaster) | | | |
| **Asbestos Types:** | | | |
| **Other Material:** Cellulose Trace, Non-fibrous 100% | | | |
| 22304-12 | 122042119-12.1 | ***No*** | NAD |
| **Location:** Plaster; Smooth/White TC/Gray RC; W RR/Wall | | | (by CVES) by Donna M. Blackwell on 04/27/22 |
| **Analyst Description:** White, Homogeneous, Non-Fibrous, Cementitious, Top Coat (Plaster) | | | |
| **Asbestos Types:** | | | |
| **Other Material:** Non-fibrous 100% | | | |

See Reporting notes on last page

# PLM Bulk Asbestos Report

2200304; Ferndale Veterans Memorial Bldg; 1100 Main St,
Ferndale, CA

| Client No. / HGA | Lab No. | Asbestos Present | Total % Asbestos |
|---|---|---|---|
| 22304-12 | 122042119-12.2 | ***No*** | NAD |
| **Location:** Plaster; Smooth/White TC/Gray RC; W RR/Wall | | | (by CVES)<br>by Donna M. Blackwell<br>on 04/27/22 |
| **Analyst Description:** Gray, Homogeneous, Non-Fibrous, Cementitious, Rough Coat (Plaster)<br>**Asbestos Types:**<br>**Other Material:** Cellulose Trace, Non-fibrous 100% | | | |
| 22304-13 | 122042119-13.1 | ***No*** | NAD |
| **Location:** Plaster; Smooth/White TC/Gray RC; W RR/Ceiling | | | (by CVES)<br>by Donna M. Blackwell<br>on 04/27/22 |
| **Analyst Description:** White, Homogeneous, Non-Fibrous, Cementitious, Top Coat (Plaster)<br>**Asbestos Types:**<br>**Other Material:** Non-fibrous 100% | | | |
| 22304-13 | 122042119-13.2 | ***No*** | NAD |
| **Location:** Plaster; Smooth/White TC/Gray RC; W RR/Ceiling | | | (by CVES)<br>by Donna M. Blackwell<br>on 04/27/22 |
| **Analyst Description:** Gray, Homogeneous, Non-Fibrous, Cementitious, Rough Coat (Plaster)<br>**Asbestos Types:**<br>**Other Material:** Cellulose Trace, Non-fibrous 100% | | | |
| 22304-14 | 122042119-14.1 | ***No*** | NAD |
| **Location:** Plaster; Smooth/White TC/Gray RC; Hall - Storage /Ceiling | | | (by CVES)<br>by Donna M. Blackwell<br>on 04/27/22 |
| **Analyst Description:** White, Homogeneous, Non-Fibrous, Cementitious, Top Coat (Plaster)<br>**Asbestos Types:**<br>**Other Material:** Non-fibrous 100% | | | |
| 22304-14 | 122042119-14.2 | ***No*** | NAD |
| **Location:** Plaster; Smooth/White TC/Gray RC; Hall - Storage /Ceiling | | | (by CVES)<br>by Donna M. Blackwell<br>on 04/27/22 |
| **Analyst Description:** Gray, Homogeneous, Non-Fibrous, Cementitious, Rough Coat (Plaster)<br>**Asbestos Types:**<br>**Other Material:** Cellulose Trace, Non-fibrous 100% | | | |
| 22304-15 | 122042119-15.1 | ***No*** | NAD |
| **Location:** Plaster; Smooth/White TC/Gray RC; KN Storage /Wall | | | (by CVES)<br>by Donna M. Blackwell<br>on 04/27/22 |
| **Analyst Description:** White, Homogeneous, Non-Fibrous, Cementitious, Top Coat (Plaster)<br>**Asbestos Types:**<br>**Other Material:** Non-fibrous 100% | | | |

See Reporting notes on last page

# PLM Bulk Asbestos Report

2200304; Ferndale Veterans Memorial Bldg; 1100 Main St, Ferndale, CA

| Client No. / HGA | Lab No. | Asbestos Present | Total % Asbestos |
|---|---|---|---|
| 22304-15 | 122042119-15.2 | ***No*** | NAD |
| **Location:** Plaster; Smooth/White TC/Gray RC; KN Storage /Wall | | | (by CVES) by Donna M. Blackwell on 04/27/22 |
| **Analyst Description:** Gray, Homogeneous, Non-Fibrous, Cementitious, Rough Coat (Plaster) | | | |
| **Asbestos Types:** | | | |
| **Other Material:** Animal hair Trace, Non-fibrous 100% | | | |
| 22304-16 | 122042119-16.1 | ***No*** | NAD |
| **Location:** Plaster; Smooth/White TC/Gray RC; Storage Closet/Wall | | | (by CVES) by Donna M. Blackwell on 04/27/22 |
| **Analyst Description:** White, Homogeneous, Non-Fibrous, Cementitious, Top Coat (Plaster) | | | |
| **Asbestos Types:** | | | |
| **Other Material:** Non-fibrous 100% | | | |
| 22304-16 | 122042119-16.2 | ***No*** | NAD |
| **Location:** Plaster; Smooth/White TC/Gray RC; Storage Closet/Wall | | | (by CVES) by Donna M. Blackwell on 04/27/22 |
| **Analyst Description:** Gray, Homogeneous, Non-Fibrous, Cementitious, Rough Coat (Plaster) | | | |
| **Asbestos Types:** | | | |
| **Other Material:** Cellulose Trace, Non-fibrous 100% | | | |
| 22304-17 | 122042119-17 | ***No*** | NAD |
| **Location:** Buttonboard, Gypsum, White; M Lounge /Wall | | | (by CVES) by Donna M. Blackwell on 04/27/22 |
| **Analyst Description:** White, Heterogeneous, Fibrous, Gypsum Board | | | |
| **Asbestos Types:** | | | |
| **Other Material:** Cellulose 5%, Non-fibrous 95% | | | |
| 22304-18 | 122042119-18 | ***No*** | NAD |
| **Location:** Buttonboard, Gypsum, White; Coat Rm/Wall | | | (by CVES) by Donna M. Blackwell on 04/28/22 |
| **Analyst Description:** White/Brown, Heterogeneous, Fibrous, Gypsum Board | | | |
| **Asbestos Types:** | | | |
| **Other Material:** Cellulose 10%, Non-fibrous 90% | | | |
| 22304-19 | 122042119-19 | ***No*** | NAD |
| **Location:** Buttonboard, Gypsum, Pink; Powder Rm/Wall | | | (by CVES) by Donna M. Blackwell on 04/28/22 |
| **Analyst Description:** Pink, Heterogeneous, Fibrous, Gypsum Board | | | |
| **Asbestos Types:** | | | |
| **Other Material:** Cellulose 10%, Non-fibrous 90% | | | |

See Reporting notes on last page

# PLM Bulk Asbestos Report

2200304; Ferndale Veterans Memorial Bldg; 1100 Main St, Ferndale, CA

| Client No. / HGA | Lab No. | Asbestos Present | Total % Asbestos |
|---|---|---|---|
| 22304-20 | 122042119-20.1 | ***No*** | NAD |
| | **Location:** Plaster; Smooth/White TC/Gray RC; Jan/Wall | | (by CVES) by Donna M. Blackwell on 04/28/22 |
| **Analyst Description:** White, Homogeneous, Non-Fibrous, Cementitious, Top Coat (Plaster) | | | |
| **Asbestos Types:** | | | |
| **Other Material:** Non-fibrous 100% | | | |
| 22304-20 | 122042119-20.2 | ***No*** | NAD |
| | **Location:** Plaster; Smooth/White TC/Gray RC; Jan/Wall | | (by CVES) by Donna M. Blackwell on 04/28/22 |
| **Analyst Description:** Gray, Homogeneous, Non-Fibrous, Cementitious, Rough Coat (Plaster) | | | |
| **Asbestos Types:** | | | |
| **Other Material:** Cellulose 2%, Non-fibrous 98% | | | |
| 22304-21 | 122042119-21 | ***No*** | NAD |
| | **Location:** Concrete, Gray; Heater Rm/Wall | | (by CVES) by Donna M. Blackwell on 04/28/22 |
| **Analyst Description:** Gray, Heterogeneous, Non-Fibrous, Cementitious, Concrete | | | |
| **Asbestos Types:** | | | |
| **Other Material:** Non-fibrous 100% | | | |
| 22304-22 | 122042119-22 | ***No*** | NAD |
| | **Location:** Concrete, Gray; Heater Rm/Wall | | (by CVES) by Donna M. Blackwell on 04/28/22 |
| **Analyst Description:** Gray, Heterogeneous, Non-Fibrous, Cementitious, Concrete | | | |
| **Asbestos Types:** | | | |
| **Other Material:** Non-fibrous 100% | | | |
| 22304-23 | 122042119-23 | ***No*** | NAD |
| | **Location:** Concrete, Gray; Heater Rm/Wall | | (by CVES) by Donna M. Blackwell on 04/28/22 |
| **Analyst Description:** Gray, Heterogeneous, Non-Fibrous, Cementitious, Concrete | | | |
| **Asbestos Types:** | | | |
| **Other Material:** Non-fibrous 100% | | | |
| 22304-24 | 122042119-24 | ***Yes*** | 16% |
| 1 **Location:** Transite Pipe, Gray; Exterior /Flue Pipe | | | (by CVES) by Donna M. Blackwell on 04/28/22 |
| **Analyst Description:** Gray, Heterogeneous, Fibrous, Cementitious, Transite | | | |
| **Asbestos Types:** Crocidolite 4.0 %, Chrysotile 12.0 % | | | |
| **Other Material:** Non-fibrous 84% | | | |

See Reporting notes on last page

# PLM Bulk Asbestos Report

2200304; Ferndale Veterans Memorial Bldg; 1100 Main St, Ferndale, CA

| Client No. / HGA | Lab No. | Asbestos Present | Total % Asbestos |
|---|---|---|---|
| 22304-25 | 122042119-25 | | NA/PS |
| 1 | **Location:** Transite Pipe, Gray; Exterior /Flue Pipe | | |
| **Analyst Description:** Transite<br>**Asbestos Types:**<br>**Other Material:** | | | |
| 22304-26 | 122042119-26 | ***Yes*** | 5% |
| 2 | **Location:** Tar Roof Patch, Black; Roof/Sheet Metal Chimney Cap | | (by CVES)<br>by Donna M. Blackwell<br>on 04/28/22 |
| **Analyst Description:** Black, Heterogeneous, Fibrous, Tar<br>**Asbestos Types:** Chrysotile 5.0 %<br>**Other Material:** Non-fibrous 95% | | | |
| 22304-27 | 122042119-27 | | NA/PS |
| 2 | **Location:** Tar Roof Patch, Black; Roof/Sheet Metal Chimney Cap | | |
| **Analyst Description:** Tar<br>**Asbestos Types:**<br>**Other Material:** | | | |
| 22304-28 | 122042119-28 | ***Yes*** | 30% |
| | **Location:** Pipe Insulation Elbow, White Compound; Store Rm/Pipe | | (by CVES)<br>by Donna M. Blackwell<br>on 04/28/22 |
| **Analyst Description:** White, Heterogeneous, Fibrous, Insulation<br>**Asbestos Types:** Chrysotile 10.0 %, Amosite 20.0 %<br>**Other Material:** Non-fibrous 70% | | | |
| 22304-29 | 122042119-29 | ***Yes*** | 30% |
| 3 | **Location:** Pipe Insulation Block, White Compound; Crawlspace/Water Pipe | | (by CVES)<br>by Donna M. Blackwell<br>on 04/28/22 |
| **Analyst Description:** White, Heterogeneous, Fibrous, Insulation<br>**Asbestos Types:** Chrysotile 5.0 %, Amosite 25.0 %<br>**Other Material:** Non-fibrous 70% | | | |
| 22304-30 | 122042119-30 | | NA/PS |
| 3 | **Location:** Pipe Insulation Block, White Compound; Crawlspace/Water Pipe | | |
| **Analyst Description:** Insulation<br>**Asbestos Types:**<br>**Other Material:** | | | |

See Reporting notes on last page

# PLM Bulk Asbestos Report

2200304; Ferndale Veterans Memorial Bldg; 1100 Main St,
Ferndale, CA

| Client No. / HGA | Lab No. | Asbestos Present | Total % Asbestos |
|---|---|---|---|
| 22304-31 | 122042119-31 | | NA/PS |
| 3 | **Location:** Pipe Insulation Block, White Compound; Crawlspace/Water Pipe | | |
| **Analyst Description:** Insulation<br>**Asbestos Types:**<br>**Other Material:** | | | |
| 22304-32 | 122042119-32 | | NA/PS |
| 3 | **Location:** Pipe Insulation Block, White Compound; Crawlspace/Debris On Ground | | |
| **Analyst Description:** Insulation<br>**Asbestos Types:**<br>**Other Material:** | | | |
| 22304-33 | 122042119-33 | | NA/PS |
| 3 | **Location:** Pipe Insulation Block, White Compound; Crawlspace/Debris On Ground | | |
| **Analyst Description:** Insulation<br>**Asbestos Types:**<br>**Other Material:** | | | |
| 22304-34 | 122042119-34 | | NA/PS |
| 3 | **Location:** Pipe Insulation Block, White Compound; Crawlspace/Debris On Ground | | |
| **Analyst Description:** Insulation<br>**Asbestos Types:**<br>**Other Material:** | | | |
| 22304-35 | 122042119-35 | ***Yes*** | 65% |
| 4 | **Location:** Pipe Insulation, Aircell; Crawlspace/Water Pipe | | (by CVES)<br>by Donna M. Blackwell<br>on 04/28/22 |
| **Analyst Description:** Gray, Homogeneous, Fibrous, Insulation<br>**Asbestos Types:** Chrysotile 65.0 %<br>**Other Material:** Non-fibrous 35% | | | |
| 22304-36 | 122042119-36 | | NA/PS |
| 4 | **Location:** Pipe Insulation, Aircell; Crawlspace/Water Pipe | | |
| **Analyst Description:** Insulation<br>**Asbestos Types:**<br>**Other Material:** | | | |

See Reporting notes on last page

# PLM Bulk Asbestos Report

2200304; Ferndale Veterans Memorial Bldg; 1100 Main St,
Ferndale, CA

| Client No. / HGA | Lab No. | Asbestos Present | Total % Asbestos |
|---|---|---|---|
| 22304-37<br>4 | 122042119-37<br>**Location:** Pipe Insulation, Aircell; Crawlspace/Water Pipe | | NA/PS |
| **Analyst Description:** Insulation<br>**Asbestos Types:**<br>**Other Material:** | | | |
| 22304-38<br>5 | 122042119-38<br>**Location:** Pipe Insulation Jacket, White Fabric; Crawlspace/Water Pipe | ***No*** | NAD<br>(by CVES)<br>by Donna M. Blackwell<br>on 04/28/22 |
| **Analyst Description:** Beige, Heterogeneous, Fibrous, Wrap<br>**Asbestos Types:**<br>**Other Material:** Cellulose 100% | | | |
| 22304-39<br>5 | 122042119-39<br>**Location:** Pipe Insulation Jacket, White Fabric; Crawlspace/Water Pipe | ***No*** | NAD<br>(by CVES)<br>by Donna M. Blackwell<br>on 04/28/22 |
| **Analyst Description:** Beige, Heterogeneous, Fibrous, Wrap<br>**Asbestos Types:**<br>**Other Material:** Cellulose 100% | | | |
| 22304-40<br>5 | 122042119-40<br>**Location:** Pipe Insulation Jacket, White Fabric; Crawlspace/Water Pipe | ***No*** | NAD<br>(by CVES)<br>by Donna M. Blackwell<br>on 04/27/22 |
| **Analyst Description:** Beige, Heterogeneous, Fibrous, Wrap<br>**Asbestos Types:**<br>**Other Material:** Cellulose 100% | | | |

**Reporting Notes:**

Analyzed by: Donna M. Blackwell  Reviewed by: Donna M. Blackwell 
Date: 4/27/2022

*NAD = no asbestos detected, Detection Limit <1%, Reporting Limits: CVES = 1%, 400 Pt Ct = 0.25%, 1000 Pt Ct = 0.1%; "Present" or NVA = "No Visible Asbestos" are observations made during a qualitative analysis; NA = not analyzed; NA/PS = not analyzed / positive stop; PLM Bulk Asbestos Analysis using Olympus, Model BH-2 microscope, Serial #232420, by EPA 600/R-93/116 per 40 CFR 763 (NVLAP Lab Code 101904-0) and ELAP PLM Analysis Protocol 198.1 for New York friable samples which includes quantitation of any vermiculite observed (198.6 for NOB samples) or EPA 400 pt ct by EPA 600/M4-82-020 (NYSDOH ELAP Lab # 10984); CA ELAP Lab # 2508; Note: PLM is not consistently reliable in detecting asbestos in floor coverings and similar NOB materials. NAD or Trace results by PLM are inconclusive, TEM is currently the only method that can be used to determine if this material can be considered or treated as non-asbestos-containing in New York State (also see EPA Advisory for floor tile, FR 59, 146, 38970, 8/1/94). NIST Accreditation requirements mandate that this report must not be reproduced except in full without the approval of the laboratory. This PLM report relates ONLY to the items tested.

**AmeriSci Richmond**
13635 GENITO ROAD
MIDLOTHIAN, VIRGINIA 23112
TEL: (804) 763-1200 • FAX: (804) 763-1800

# PLM Bulk Asbestos Report

Brunelle & Clark Consulting, LLC
Attn: Zindar Brunelle
PO Box 1138

Arcata, CA 95518

**Date Received** 05/12/22
**Date Examined** 05/12/22

**AmeriSci Job #** 122051473
**P.O. #**
**Page** 1 **of** 2

**RE:** 2200304; Ferndale Veterans Memorial Bldg; 1100 Main St, Fortuna, CA

| Client No. / HGA | Lab No. | Asbestos Present | Total % Asbestos |
|---|---|---|---|
| 22304-41 | 122051473-01 | *No* | NAD (by CVES) by Donna M. Blackwell on 05/12/22 |
| **Location:** Foam Seal, Black; Powder Rm/Wall/HVAC Register | | | |
| **Analyst Description:** Black, Heterogeneous, Non-Fibrous, Sealant | | | |
| **Asbestos Types:** | | | |
| **Other Material:** Non-fibrous 100% | | | |
| 22304-42 | 122051473-02 | *No* | NAD (by CVES) by Donna M. Blackwell on 05/12/22 |
| **Location:** Foam Seal, Black; Foyer/Wall/HVAC Register | | | |
| **Analyst Description:** Black, Homogeneous, Non-Fibrous, Sealant | | | |
| **Asbestos Types:** | | | |
| **Other Material:** Non-fibrous 100% | | | |
| 22304-43 | 122051473-03 | *No* | NAD (by CVES) by Donna M. Blackwell on 05/12/22 |
| **Location:** Foam Seal, Black; AC RR/Wall/HVAC Register | | | |
| **Analyst Description:** Black, Homogeneous, Non-Fibrous, Sealant | | | |
| **Asbestos Types:** | | | |
| **Other Material:** Non-fibrous 100% | | | |
| 22304-44 | 122051473-04 | *No* | NAD (by CVES) by Donna M. Blackwell on 05/12/22 |
| **Location:** Foam Seal, Black; Tap Rm/Wall/HVAC Register | | | |
| **Analyst Description:** Black, Homogeneous, Non-Fibrous, Sealant | | | |
| **Asbestos Types:** | | | |
| **Other Material:** Non-fibrous 100% | | | |

See Reporting notes on last page

# PLM Bulk Asbestos Report

2200304; Ferndale Veterans Memorial Bldg; 1100 Main St,
Fortuna, CA

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**Reporting Notes:**

Analyzed by: Donna M. Blackwell  Reviewed by: Donna M. Blackwell 

Date: 5/12/2022

*NAD = no asbestos detected, Detection Limit <1%, Reporting Limits: CVES = 1%, 400 Pt Ct = 0.25%, 1000 Pt Ct = 0.1%; "Present" or NVA = "No Visible Asbestos" are observations made during a qualitative analysis; NA = not analyzed; NA/PS = not analyzed / positive stop; PLM Bulk Asbestos Analysis using Olympus, Model BH-2 microscope, Serial #232420, by EPA 600/R-93/116 per 40 CFR 763 (NVLAP Lab Code 101904-0) and ELAP PLM Analysis Protocol 198.1 for New York friable samples which includes quantitation of any vermiculite observed (198.6 for NOB samples) or EPA 400 pt ct by EPA 600/M4-82-020 (NYSDOH ELAP Lab # 10984); CA ELAP Lab # 2508; Note: PLM is not consistently reliable in detecting asbestos in floor coverings and similar NOB materials. NAD or Trace results by PLM are inconclusive, TEM is currently the only method that can be used to determine if this material can be considered or treated as non-asbestos-containing in New York State (also see EPA Advisory for floor tile, FR 59, 146, 38970, 8/1/94). NIST Accreditation requirements mandate that this report must not be reproduced except in full without the approval of the laboratory. This PLM report relates ONLY to the items tested.

122042119

| Analysis: X Standard PLM<br>___ 400 Point Count<br>___ 1,000 Point Count<br>Turnaround Time:<br>Rush/1-day/2-days/3-days/5-days | BRUNELLE & CLARK CONSULTING, LLC<br>P.O. Box 1138<br>Arcata, CA 95518<br>Ph: (707) 822-4058 Cell #: (707) 672-5345<br>zbconsult@outlook.com | Date: 4/20/22<br>Site: Ferndale Veterans memorial Bldg 1100 main St., Ferndale, CA<br>Proj. # 2200304 |
|---|---|---|

# BULK ASBESTOS SAMPLING

| Sample No. | Sample Description | Hom. Area | Location | Mat'l Type | Friability |
|---|---|---|---|---|---|
| 22304-1 | Skip Trowel tan Plaster; TC / gray RC | 1 | Game Rm / ceiling | SM | NF |
| - 2 | / | 1 | M. Lounge / wall | | |
| - 3 | / | 1 | ↓ / ↓ | | |
| - 4 | / | 1 | Tap Rm / ceiling | | |
| - 5 | / | 1 | Coat Rm / wall | | |
| - 6 | / | 1 | Foyer / ceiling | | |
| - 7 | / | 1 | W. Lounge / wall | | |
| - 8 | / | 1 | ACC RR / wall | | |
| - 9 | ↓ / ↓ | 1 | Powder Rm / wall | ↓ | |
| - 10 | Plaster; smooth; white TC / gray RC | 2 | M. RR / wall | SM | |
| - 11 | / | 2 | M. RR / ceiling | | |
| - 12 | / | 2 | W. RR / wall | | |
| - 13 | / | 2 | W. RR / ceiling | | |
| - 14 | / | 2 | Hall-Storage / ceiling | | |
| - 15 | / | 2 | KN storage / wall | ↓ | ↓ |

**Sample Abbreviations**
Hom. Area = Homogenous Area
VFT = Vinyl Floor Tile
SF = Sheet Flooring
JC/GB = Joint Compound/Gypsum Board
BBM = Baseboard Mastic
CT = Ceiling Tile (glued or nailed)
CP = Ceiling Panel (t-grid or drop ceil.)

**Material Type**
Thermal System Insulation = TSI
Misc. Material = MM
Surfacing Material = SM

* = Stop analysis for any layer at first positive, if >1%, where indicated.

| Sampled by: Zindar Brunelle | Received by: |
|---|---|
| Relinquished by: Zindar Brunelle<br>Date/Time: 4/21/22 | Signature:<br>Date/Time: |

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APR 22 2022
By TM

122042119

| Analysis: | BRUNELLE & CLARK CONSULTING, LLC | Date: 4/20/22 |
|---|---|---|
| X Standard PLM<br>___ 400 Point Count<br>___ 1,000 Point Count<br>Turnaround Time:<br>Rush/1-day/2-days/3-days/5-days | P.O. Box 1138<br>Arcata, CA 95518<br>Ph: (707) 822-4058 Cell #: (707) 672-5345<br>zbconsult@outlook.com | Site: Ferndale Veterans Memorial Bldg 1100 Main St., Ferndale, CA<br>Proj. # 2200304 |

# BULK ASBESTOS SAMPLING

| Sample No. | Sample Description | Hom. Area | Location | Mat'l Type | Friability |
|---|---|---|---|---|---|
| 22304-16 | Plaster; Smooth; white TC / gray RC | 2 | Storage Closet / wall | SM | NF |
| -17 | Buttonboard, gypsum, white | 3 | M. Lounge / wall | MM | |
| -18 | Buttonboard, gypsum, white | 3 | Coat Rm / wall | | |
| -19 | Buttonboard, gypsum, Pink | 4 | Powder Rm / wall | | |
| -20 | Plaster; Smooth; white TC / gray RC | 2 | Jan / wall | SM | |
| -21 | Concrete, gray | 5 | Heater Rm / wall | MM | |
| -22 | ↓ | 5 | ↓ / ↓ | ↓ | |
| -23 | ↓ | 5 | ↓ / ↓ | ↓ | |
| -24 * | Transite Pipe, gray | 6 | Exterior / Flue Pipe | | |
| -25 | ↓ | 6 | ↓ / ↓ | | |
| -26 * | Tar roof patch, black | 7 | Roof / sheet metal chimney cap | | |
| -27 | ↓ | 7 | ↓ / ↓ | ↓ | ↓ |
| -28 | Pipe insulation elbow, white compound | 8 | Store Rm / Pipe | TSI | F |
| -29 * | Pipe insulation, block, white compound | 9 | Crawl Space / water pipe | | |
| -30 | ↓ | 9 | ↓ / ↓ | ↓ | ↓ |

**Sample Abbreviations**
Hom. Area = Homogenous Area
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**Material Type**
Thermal System Insulation = TSI
Misc. Material = MM
Surfacing Material = SM

* = Stop analysis for any layer at first positive, if >1%, where indicated.

| Sampled by: Zindar Brunelle | Received by: |
|---|---|
| Relinquished by: Zindar Brunelle 4/21/22<br>Date/Time: | Signature: RECEIVED<br>Date/Time: |

APR 22 2022
By TM

122042119

| Analysis: X Standard PLM<br>___ 400 Point Count<br>___ 1,000 Point Count<br>Turnaround Time:<br>Rush/1-day/2-days/3-days/5-days | BRUNELLE & CLARK CONSULTING, LLC<br>P.O. Box 1138<br>Arcata, CA 95518<br>Ph: (707) 822-4058 Cell #: (707) 672-5345<br>zbconsult@outlook.com | Date: 4/20/22<br>Site: Ferndale Veterans Memorial Bldg 1100 Main St., Ferndale, CA<br>Proj. # 2200304 |
|---|---|---|

# BULK ASBESTOS SAMPLING

| Sample No. | Sample Description | Hom. Area | Location | Mat'l Type | Friability |
|---|---|---|---|---|---|
| 22304-31 | Pipe insulation, block, white compound | 9 | Crawlspace / water pipe | TSI | F |
| - 32 | | 9 | / debris on ground | | |
| - 33 | | 9 | / | | |
| - 34 | | 9 | / | | |
| - 35 | Pipe insulation, aircell | 10 | / water pipe | | |
| - 36 | | 10 | / | | |
| - 37 | | 10 | / | | |
| - 38 | Pipe insulation jacket, white fabric | 11 | / | | |
| - 39 | | 11 | / | | |
| - 40 | | 11 | / | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |

**Sample Abbreviations**
Hom. Area = Homogenous Area
VFT = Vinyl Floor Tile
SF = Sheet Flooring
JC/GB = Joint Compound/Gypsum Board
BBM = Baseboard Mastic
CT = Ceiling Tile (glued or nailed)
CP = Ceiling Panel (t-grid or drop ceil.)

**Material Type**
Thermal System Insulation = TSI
Misc. Material = MM
Surfacing Material = SM

* = Stop analysis for any layer at first positive, if >1%, where indicated.

| Sampled by: Zindar Brunelle | Received by: |
|---|---|
| Relinquished by: Zindar Brunelle 4/21/22<br>Date/Time: | Signature:<br>Date/Time: |

RECEIVED
APR 22 2022
By TM

| Analysis: X Standard PLM<br>___ 400 Point Count<br>___ 1,000 Point Count<br><br>Turnaround Time:<br>Rush/1-day/2-days/3-days/5-days | BRUNELLE & CLARK CONSULTING, LLC<br>P.O. Box 1138<br>Arcata, CA 95518<br>Ph: (707) 822-4058 Cell #: (707) 672-5345<br>zbconsult@outlook.com | Date: 5/10/22<br>Site: Ferndale Veterans Memorial Bldg., 1100 Main St., Fortuna, CA<br>Proj. # Z200304 |
|---|---|---|

# BULK ASBESTOS SAMPLING 122051473

| Sample No. | Sample Description | Hom. Area | Location | Mat'l Type | Friability |
|---|---|---|---|---|---|
| Z2304-41 | Foam seal, black | 1 | Powder Rm / wall / HVAC Register | MM | NF |
| -42 | ↓ | 1 | Foyer / / | ↓ | ↓ |
| -43 | | 1 | AC RR / / | | |
| -44 | ↓ | 1 | Tap Rm / ↓ / ↓ | ↓ | ↓ |
| | | | | | |
| | | | | | |
| | | | | | |
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**Sample Abbreviations**
Hom. Area = Homogenous Area
VFT = Vinyl Floor Tile
SF = Sheet Flooring
JC/GB = Joint Compound/Gypsum Board
BBM = Baseboard Mastic
CT = Ceiling Tile (glued or nailed)
CP = Ceiling Panel (t-grid or drop ceil.)

**Material Type**
Thermal System Insulation = TSI
Misc. Material = MM
Surfacing Material = SM

* = Stop analysis for any layer at first positive, if >1%, where indicated.

| Sampled by: Zinder Brunelle | Received by: |
|---|---|
| Relinquished by: Zinder Brunelle 5/11/22<br>Date/Time: | Signature:<br>Date/Time: Kenzelle M 5/12/22 |

# XRF Paint Analyzer Data Sheet

**Ferndale Veterans Memorial Bldg.**

**1100 Main St., Ferndale, CA**

**(Current Sampling)**

| | |
|---|---|
| Company | Heuresis Corp. |
| Model | Pb200i |
| Type | XRF Lead Paint Analyzer |
| Serial Num. | 1566 |
| App Version | Pb200i-4.1-11 |

| Reading # | Concentration | Units | 3 SD | Result | Action Level | NomSecs | Date | Time | User | Mode | Analytic Mode |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1 | mg/cm2 | 0.2 | Positive | 1 | 5 | 4/20/2022 | 12:06:37 | zburnelle | Action Lev | Lead Paint |
| 2 | 1.1 | mg/cm2 | 0.2 | Positive | 1 | 5 | 4/20/2022 | 12:07:00 | zburnelle | Action Lev | Lead Paint |
| 3 | 1.1 | mg/cm2 | 0.2 | Positive | 1 | 5 | 4/20/2022 | 12:07:21 | zburnelle | Action Lev | Lead Paint |
| 4 | 0 | mg/cm2 | 0.3 | Negative | 1 | 2 | 4/20/2022 | 12:10:42 | zburnelle | Action Lev | Lead Paint |
| 5 | 0.1 | mg/cm2 | 0.3 | Negative | 1 | 2 | 4/20/2022 | 12:11:35 | zburnelle | Action Lev | Lead Paint |
| 6 | 0 | mg/cm2 | 0.3 | Negative | 1 | 2 | 4/20/2022 | 12:12:14 | zburnelle | Action Lev | Lead Paint |
| 7 | 0.2 | mg/cm2 | 0.3 | Negative | 1 | 2 | 4/20/2022 | 12:13:11 | zburnelle | Action Lev | Lead Paint |
| 8 | 0 | mg/cm2 | 0.3 | Negative | 1 | 2 | 4/20/2022 | 12:13:51 | zburnelle | Action Lev | Lead Paint |
| 9 | 0 | mg/cm2 | 0.3 | Negative | 1 | 2 | 4/20/2022 | 12:14:59 | zburnelle | Action Lev | Lead Paint |
| 10 | 0.1 | mg/cm2 | 0.3 | Negative | 1 | 2 | 4/20/2022 | 12:15:22 | zburnelle | Action Lev | Lead Paint |
| 11 | 0.1 | mg/cm2 | 0.3 | Negative | 1 | 2 | 4/20/2022 | 12:16:07 | zburnelle | Action Lev | Lead Paint |
| 12 | 0.1 | mg/cm2 | 0.3 | Negative | 1 | 2 | 4/20/2022 | 12:16:46 | zburnelle | Action Lev | Lead Paint |
| 13 | 0.3 | mg/cm2 | 0.3 | Negative | 1 | 2 | 4/20/2022 | 12:17:25 | zburnelle | Action Lev | Lead Paint |
| 14 | 0.1 | mg/cm2 | 0.3 | Negative | 1 | 2 | 4/20/2022 | 12:18:29 | zburnelle | Action Lev | Lead Paint |
| 15 | 0 | mg/cm2 | 0.3 | Negative | 1 | 2 | 4/20/2022 | 12:18:43 | zburnelle | Action Lev | Lead Paint |
| 16 | 0.3 | mg/cm2 | 0.3 | Negative | 1 | 2 | 4/20/2022 | 12:19:40 | zburnelle | Action Lev | Lead Paint |
| 17 | 0.4 | mg/cm2 | 0.3 | Negative | 1 | 2 | 4/20/2022 | 12:27:32 | zburnelle | Action Lev | Lead Paint |
| 18 | 0.4 | mg/cm2 | 0.3 | Negative | 1 | 2 | 4/20/2022 | 12:27:55 | zburnelle | Action Lev | Lead Paint |
| 19 | 0.3 | mg/cm2 | 0.3 | Negative | 1 | 2 | 4/20/2022 | 12:28:19 | zburnelle | Action Lev | Lead Paint |
| 20 | 0.2 | mg/cm2 | 0.3 | Negative | 1 | 2 | 4/20/2022 | 12:28:40 | zburnelle | Action Lev | Lead Paint |
| 21 | 19.7 | mg/cm2 | 0.3 | Positive | 1 | 2 | 4/20/2022 | 12:29:21 | zburnelle | Action Lev | Lead Paint |
| 22 | 0.3 | mg/cm2 | 0.3 | Negative | 1 | 2 | 4/20/2022 | 12:31:22 | zburnelle | Action Lev | Lead Paint |
| 23 | 0 | mg/cm2 | 0.3 | Negative | 1 | 2 | 4/20/2022 | 12:36:28 | zburnelle | Action Lev | Lead Paint |
| 24 | 0.3 | mg/cm2 | 0.3 | Negative | 1 | 2 | 4/20/2022 | 12:37:14 | zburnelle | Action Lev | Lead Paint |
| 25 | 11.7 | mg/cm2 | 0.3 | Positive | 1 | 2 | 4/20/2022 | 12:37:38 | zburnelle | Action Lev | Lead Paint |

# XRF Paint Analyzer Data Sheet

## Ferndale Veterans Memorial Bldg.

## 1100 Main St., Ferndale, CA

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| 26 | 0.5 | mg/cm2 | 0.3 | Negative | 1 | 2 | 4/20/2022 | 12:38:35 | zburnelle | Action Lev Lead Paint |
| 27 | 0.2 | mg/cm2 | 0.3 | Negative | 1 | 2 | 4/20/2022 | 12:38:56 | zburnelle | Action Lev Lead Paint |
| 28 | 0.3 | mg/cm2 | 0.3 | Negative | 1 | 2 | 4/20/2022 | 12:39:41 | zburnelle | Action Lev Lead Paint |
| 29 | -0.2 | mg/cm2 | 0.3 | Negative | 1 | 2 | 4/20/2022 | 12:40:37 | zburnelle | Action Lev Lead Paint |
| 30 | -0.1 | mg/cm2 | 0.3 | Negative | 1 | 2 | 4/20/2022 | 12:41:33 | zburnelle | Action Lev Lead Paint |
| 31 | -0.1 | mg/cm2 | 0.3 | Negative | 1 | 2 | 4/20/2022 | 12:42:30 | zburnelle | Action Lev Lead Paint |
| 32 | 0 | mg/cm2 | 0.3 | Negative | 1 | 2 | 4/20/2022 | 12:43:46 | zburnelle | Action Lev Lead Paint |
| 33 | 0.3 | mg/cm2 | 0.3 | Negative | 1 | 2 | 4/20/2022 | 12:45:12 | zburnelle | Action Lev Lead Paint |
| 34 | 0.6 | mg/cm2 | 0.3 | Negative | 1 | 2 | 4/20/2022 | 12:46:26 | zburnelle | Action Lev Lead Paint |
| 35 | 0 | mg/cm2 | 0.3 | Negative | 1 | 2 | 4/20/2022 | 12:46:53 | zburnelle | Action Lev Lead Paint |
| 36 | 0.2 | mg/cm2 | 0.3 | Negative | 1 | 2 | 4/20/2022 | 12:56:11 | zburnelle | Action Lev Lead Paint |
| 37 | 0.2 | mg/cm2 | 0.3 | Negative | 1 | 2 | 4/20/2022 | 12:57:54 | zburnelle | Action Lev Lead Paint |
| 38 | 0.9 | mg/cm2 | 0.2 | Negative | 1 | 5 | 4/20/2022 | 12:58:24 | zburnelle | Action Lev Lead Paint |
| 39 | 0.5 | mg/cm2 | 0.3 | Negative | 1 | 2 | 4/20/2022 | 12:59:17 | zburnelle | Action Lev Lead Paint |
| 40 | 0.5 | mg/cm2 | 0.3 | Negative | 1 | 2 | 4/20/2022 | 13:01:04 | zburnelle | Action Lev Lead Paint |
| 41 | 0.1 | mg/cm2 | 0.3 | Negative | 1 | 2 | 4/20/2022 | 13:02:03 | zburnelle | Action Lev Lead Paint |
| 42 | 0 | mg/cm2 | 0.3 | Negative | 1 | 2 | 4/20/2022 | 13:02:46 | zburnelle | Action Lev Lead Paint |
| 43 | 0 | mg/cm2 | 0.3 | Negative | 1 | 2 | 4/20/2022 | 13:03:26 | zburnelle | Action Lev Lead Paint |
| 44 | 0.1 | mg/cm2 | 0.3 | Negative | 1 | 2 | 4/20/2022 | 13:05:00 | zburnelle | Action Lev Lead Paint |
| 45 | 0 | mg/cm2 | 0.3 | Negative | 1 | 2 | 4/20/2022 | 13:06:11 | zburnelle | Action Lev Lead Paint |
| 46 | 0.8 | mg/cm2 | 0.2 | Negative | 1 | 5 | 4/20/2022 | 13:20:23 | zburnelle | Action Lev Lead Paint |
| 47 | 0.4 | mg/cm2 | 0.3 | Negative | 1 | 2 | 4/20/2022 | 13:21:48 | zburnelle | Action Lev Lead Paint |
| 48 | 0.5 | mg/cm2 | 0.3 | Negative | 1 | 2 | 4/20/2022 | 13:22:30 | zburnelle | Action Lev Lead Paint |
| 49 | 0.6 | mg/cm2 | 0.2 | Negative | 1 | 3 | 4/20/2022 | 13:22:45 | zburnelle | Action Lev Lead Paint |
| 50 | 14 | mg/cm2 | 0.3 | Positive | 1 | 2 | 4/20/2022 | 13:23:14 | zburnelle | Action Lev Lead Paint |
| 51 | -0.1 | mg/cm2 | 0.3 | Negative | 1 | 2 | 4/20/2022 | 13:23:48 | zburnelle | Action Lev Lead Paint |
| 52 | 0.2 | mg/cm2 | 0.3 | Negative | 1 | 2 | 4/20/2022 | 13:25:02 | zburnelle | Action Lev Lead Paint |
| 53 | 0 | mg/cm2 | 0.3 | Negative | 1 | 2 | 4/20/2022 | 13:25:37 | zburnelle | Action Lev Lead Paint |
| 54 | 1.1 | mg/cm2 | 0.2 | Positive | 1 | 5 | 4/20/2022 | 13:27:04 | zburnelle | Action Lev Lead Paint |
| 55 | 0.9 | mg/cm2 | 0.2 | Negative | 1 | 5 | 4/20/2022 | 13:27:26 | zburnelle | Action Lev Lead Paint |
| 56 | 1.1 | mg/cm2 | 0.2 | Positive | 1 | 5 | 4/20/2022 | 13:27:47 | zburnelle | Action Lev Lead Paint |
| 57 | 1 | mg/cm2 | 0.2 | Positive | 1 | 5 | 4/20/2022 | 13:32:03 | zburnelle | Action Lev Lead Paint |

# XRF Paint Analyzer Data Sheet

## Ferndale Veterans Memorial Bldg.

## 1100 Main St., Ferndale, CA

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| 58 | 0.9 | mg/cm2 | 0.2 | Negative | 1 | 5 | 4/20/2022 | 13:32:24 | zburnelle | Action Lev Lead Paint |
| 59 | 0.9 | mg/cm2 | 0.2 | Negative | 1 | 5 | 4/20/2022 | 13:32:45 | zburnelle | Action Lev Lead Paint |
| 60 | 0.4 | mg/cm2 | 0.3 | Negative | 1 | 2 | 4/20/2022 | 13:42:59 | zburnelle | Action Lev Lead Paint |
| 61 | 0.2 | mg/cm2 | 0.3 | Negative | 1 | 2 | 4/20/2022 | 13:43:18 | zburnelle | Action Lev Lead Paint |
| 62 | 1 | mg/cm2 | 0.2 | Positive | 1 | 5 | 4/20/2022 | 13:46:29 | zburnelle | Action Lev Lead Paint |
| 63 | 1 | mg/cm2 | 0.2 | Positive | 1 | 5 | 4/20/2022 | 13:46:51 | zburnelle | Action Lev Lead Paint |
| 64 | 1 | mg/cm2 | 0.2 | Positive | 1 | 5 | 4/20/2022 | 13:51:11 | zburnelle | Action Lev Lead Paint |

# APPENDIX C
## NESHAP Notification Form

**North Coast Unified**
**Air Quality Management District**
707 L Street, Eureka, CA 95501
Telephone (707) 443-3093 FAX (707) 443-3099
http://www.ncuaqmd.org

# COMPLIANCE ADVISORY
# ASBESTOS NESHAP APPLICABILITY
# TO DEMOLITION AND RENOVATION PROJECTS

In order to reduce the public's potential exposure to airborne asbestos, the Environmental Protection Agency (EPA) established the asbestos National Emission Standards for Hazardous Air Pollutants (NESHAP) regulation. The asbestos NESHAP regulates the demolition and renovation of buildings containing asbestos materials including, but not limited to fireproofing and insulating materials, paints, cements, joint compounds, and floor tiles. The regulation applies to commercial structures, industrial structures, and housing units having greater than four dwelling units. Single family dwellings are ***generally*** exempt. The following is a summary of some of the important NESHAP requirements. Other regulations may apply. For example, CAL/OSHA requires that the asbestos survey be completed by a Certified Asbestos Consultant (CAC) or by a Site Surveillance Technician, under the supervision of a CAC.

## Definitions

***Demolition*** – the wrecking or removal of any load supporting structural member of a building. Moving a structure from one location to another and the burning of a structure are also considered demolitions.

***Regulated Asbestos Containing Material*** – (a) friable asbestos material; (b) Category I non-friable material that has become friable; (c) Category I material that has or will be subjected to grinding, sanding, cutting, or abrading; (d) Category II non-friable material that has a high probability of becoming crumbled, pulverized, or reduced to powder by forces expected to act upon the material in the course of demolition or renovation operations.

***Renovation*** – altering a facility or one or more facility components in any way; this includes and is not limited to the stripping or removal or Regulated Asbestos Containing Material (RACM) from a facility component. Also included are projects on the exterior of a structure, such as façade enhancements or remodels.

Prior to beginning any demolition or renovation activity, the structure must be thoroughly surveyed for the presence of asbestos containing material. Survey must be conducted by an AHERA-accredited Building Inspector (40 CFR 763, Subpart E, App. C).

***For a renovation*** - Upon completion of the asbestos survey, determine if the combined amount of RACM to be stripped, removed, dislodged, cut, drilled or similarly disturbed during a renovation is at least 260 linear feet (on pipes), 160 square feet (i.e. flooring, drywall), or 35 cubic feet in volume whichever is least. If the amount of RACM is at least the threshold amounts, District notification prior to the removal is required.

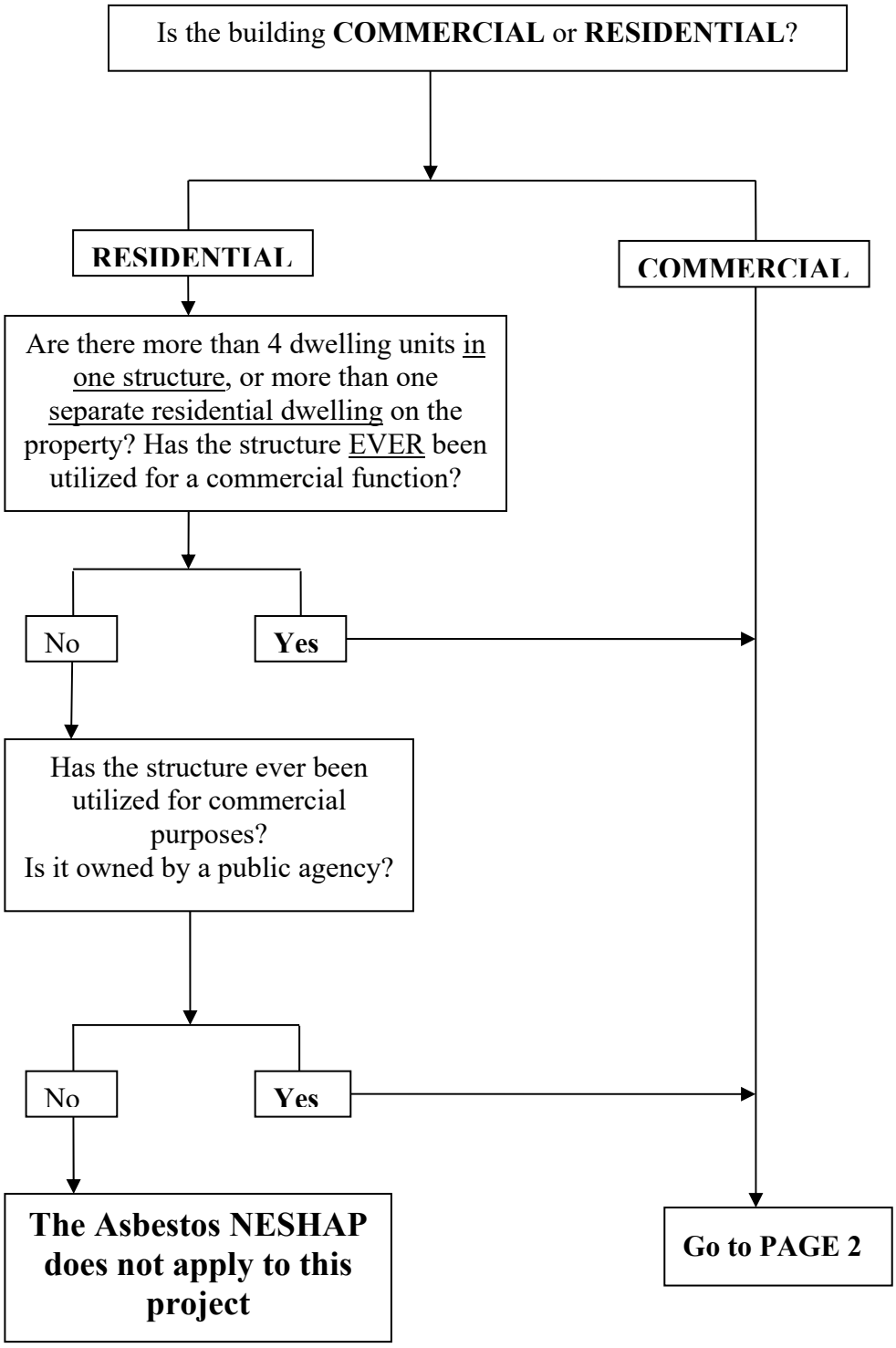
***For a demolition*** - Upon completion of the asbestos survey, a demolition notification form must be submitted to the District at least 10 working days prior to the start date of the demolition. Notification of a demolition is required regardless of the amount of asbestos present. When asbestos-containing material of a quantity greater than or equal to the threshold amounts above will be removed prior to demolition, a separate notification is required.

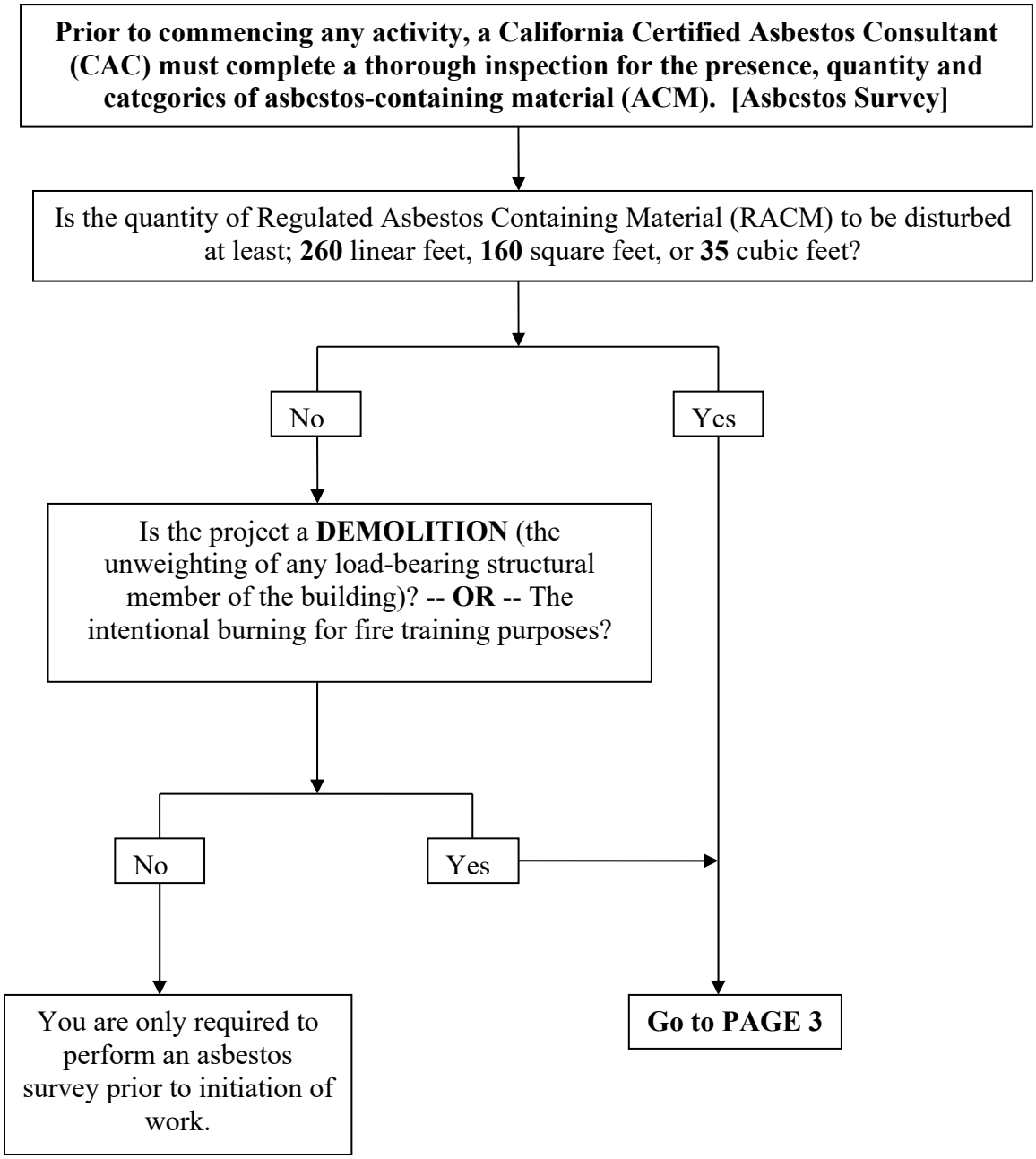
***Other Training Requirements*** – *When removing or disturbing RACM, an AHERA-accredited Contractor/Supervisor must be present and all workers must be AHERA-accredited Workers (40 CFR 763, Subpart E, App. C). All training must be current.*

**f Violations of NESHAP regulations can be prosecuted as felony offenses carrying penalties of $37,500 per day per offense.f**

For further clarification or additional guidance, contact the NCUAQMD office at (707) 443-3093.

# GUIDE TO ASBESTOS NESHAP QUESTIONS




Prior to commencing any activity, a California Certified Asbestos Consultant (CAC) must complete a thorough inspection for the presence, quantity and categories of asbestos-containing material (ACM). [Asbestos Survey]
Is the quantity of Regulated Asbestos Containing Material (RACM) to be disturbed at least; 260 linear feet, 160 square feet, or 35 cubic feet?
No
Yes
Is the project a DEMOLITION (the unweighting of any load-bearing structural member of the building)? -- OR -- The intentional burning for fire training purposes?
No
Yes
You are only required to perform an asbestos survey prior to initiation of work.
Go to PAGE 3

# REGULATED RENOVATIONS AND DEMOLITIONS

1) You must submit an Asbestos Survey and completed Notification Form at least 10 working days prior to initiating work on the project.
2) Demolitions:
   a) Requires a 2-**X** notification fee (unless the building is donated to a fire department for training purposes).
   b) (Regulation IV, Rule 401, §1.1.2) An additional 2-**X*** fee is added if Asbestos Abatement is required **for a <u>Demolition</u>** Project.
3) Renovations require only a 2-**X*** notification fee.
4) IF, after notification has been submitted, the quantity of asbestos containing material (ACM) changes by at least 20%, then update the notification.
5) IF, after notification has been submitted, the start date changes to a date <u>after</u> the original start date, then notify by phone as soon as possible AND provide written notice as soon as possible AND no later than original start date.
6) IF, after notification has been submitted, start date changes to a date earlier than the original start date, then provide written notice at least 10 days prior to the new start date.

**<u>IN NO EVENT SHALL A PROJECT START ON A DATE OTHER THAN THE DATE CONTAINED IN THE WRITTEN NOTIFICATION.</u>**

(40 CFR 61.145 (b) (iv) (C))

***** The **X** value changes annually.
Call to get current value: 707-443-3093

**North Coast Unified**
**Air Quality Management District**
707 L Street, Eureka, CA 95501
Telephone (707) 443-3093 FAX (707) 443-3099
http://www.ncuaqmd.org

# ASBESTOS DEMOLITION AND RENOVATION NOTIFICATION FORM
# GENERAL INFORMATION

**The Asbestos NESHAP, 40 CFR Part 61, Subpart M, requires written notification of demolition or renovation operations under Section 61.145. This form may be used to fulfill this requirement. Only complete notification forms are acceptable. Incomplete notification may result in enforcement action.**

***This notification should be typewritten and postmarked or delivered no later than ten days prior to the beginning of the asbestos removal activity (dates specified in Section VIII) or demolition (dates specified in Section IX). Please submit the form, along with the appropriate fee, to:*** **NORTH COAST UNIFIED AQMD**
**707 L STREET, EUREKA, CA 95501**

**INSTRUCTIONS:**

I. Type of Notification: Enter "O" if the notification is a first time or original notification, "R" if the notification is a revision of a prior notification, or "C" if the activity has been cancelled.

II. Facility Information: Enter the names, addresses, contact persons and telephone numbers of the following:
Owner: Legal owner of the site at which asbestos is being removed or demolition planned
Asbestos Removal Contractor: Certified asbestos contractor hired to remove asbestos (include DOSH registration #)
Other Demolition or Renovation Operator: Demolition contractor, general contractor, or other person who leases, operates, controls, or supervises the site (fire dept if training burn).

III. Type of Operation: Enter "D" for facility demolition, "R" for facility renovation, "O" for ordered demolition, or "E" for emergency renovation. Fire training burns are considered facility demolitions ("D").

IV. Is Asbestos Present?: Answer "yes" or "no" regardless of the amount of asbestos present.

V. Facility Description: Provide detailed information on the areas being renovated or demolished. If applicable, provide the floor numbers and room numbers where renovations are to be conducted.
Site Location: Provide information needed to locate site in event that the address alone is inadequate.
Building Size: Provide in square meters or square feet.
No. of Floors: Enter the number of floors including basement or ground floors.
Age in Years: Enter approximate age of the facility.
Present Use / Prior Use: Describe the primary use of the facility or enter the following codes: H - hospital; S - school; P - public building; O - office; I - industrial; U - university or college; B - ship; C - commercial; or R - residential.

VI. Asbestos Detection Procedure: Describe methods and procedures used to determine whether asbestos is present at the site, including a description of the analytical methods employed. **Building inspections must be performed by an AHERA-accredited Building Inspector** (40 CFR 763, Subpart E, App. C). Include copy of current accreditation. If an inspection report has been prepared by a consultant for the facility please include a copy with the notification.

VII. Approximate Amount of Asbestos, Including: (1) Regulated asbestos containing material (RACM) to be removed (including nonfriable ACM to be sanded, ground, or abraded); (2) Category I ACM not removed ; and (3) Category II ACM not removed. For both removals and demolition, enter the amount of RACM to be removed by entering a number in the appropriate box and an "X" for the unit. For demolition only, enter the amount of Category I and II nonfriable asbestos not to be removed in the appropriate boxes. Category I nonfriable material includes packing, gasket, resilient floor covering, and asphalt roofing materials containing more than one percent asbestos. Category II nonfriable material includes any material, excluding Category I products, containing more than one percent asbestos, that when dry, cannot be crumbled, pulverized, or reduced to powder. Facilities to be used for fire training purposes must have all materials containing more than one percent asbestos removed.

VIII. Scheduled Dates of Asbestos Removal: Enter scheduled dates (month/day/year) for asbestos removal work. Asbestos removal work includes any activity, including site preparation, which may break up, dislodge, or disturb asbestos material. **These dates must be accurate.** Asbestos removal work occurring prior to the start date or after the end date is a violation and could result in substantial enforcement action. If these dates change, notify the District immediately, by submitting a revision request form.

IX. Scheduled Dates of Demo/Renovation: Enter scheduled dates (month/day/year) for beginning and ending of the planned demolition or renovation. For fire training burns this is the time period when the actual fire training burn will take place. **These dates must be accurate.** Demolition or renovation activity occurring prior to the start date or after the end date is a violation and could result in substantial enforcement action. If these dates change, notify the District immediately, by submitting a revision request form.

X. Description of Planned Demolition or Renovation Work, and Method(s) to be Used: Include here a description of the overall work being done and the techniques being used. A work plan can be attached to address this item.

XI. Description of Engineering Controls and Work Practices to be Used to Control Emissions of Asbestos at the Demolition or Renovation Site: Describe the work practices and engineering controls selected to ensure compliance with the requirements of the regulation, including removal and waste handling emission control procedures. A work plan can be attached to address this item.

XII. Waste Transporter(s): Enter the name, addresses, contact persons and telephone numbers of the persons or companies responsible for transporting ACM from the removal site to the waste disposal site. If the removal contractor or owner is the waste transporter, state "same as owner" or "same as removal contractor".

XIII. Waste Disposal Site: Identify the waste disposal site, including the complete name, location, and telephone number of the facility. If ACM is to be disposed of at more than one site, provide complete information on an additional sheet submitted with the form.

XIV. If Demolition Ordered by a Government Agency: Provide the name of the responsible official, title and agency, authority under which the order was issued, the dates of the order and the dates of the ordered demolition. Include a copy of the order with the notification.

XV. Emergency Renovation Information: Provide the date and time of the emergency, a description of the event and a description of unsafe conditions, equipment damage or financial burden resulting from the event. The information should be detailed enough to evaluate whether a renovation falls within the emergency exception.

XVI. Description of Procedures to be Followed in the Event that Unexpected Asbestos is Found or Previously Nonfriable Asbestos Material Becomes Crumbled, Pulverized, or Reduced to Powder: Provide adequate information to demonstrate that appropriate actions have been considered and can be implemented to control asbestos emissions adequately, including at a minimum, conformance with applicable work practice standards. Typically these will include a work stoppage, wetting of material, and notification to the District.

XVII. Certification of Presence of Trained Supervisor: Certify that a person trained in asbestos removal procedures and the provisions of this regulation will be on-site and supervise the demolition or renovation. **When handling RACM, the supervisor must be a current AHERA-accredited contractor/supervisor, and the workers must be AHERA-accredited workers** (40 CFR 763 Subpart E App. C). The supervisor is responsible for the activity on-site. Evidence that the training has been completed by the supervisor must be available for inspection during normal business hours.

XVIII. Verification: Please certify the accuracy and completeness of the information provided by signing and dating the notification form.

---

**FEES AND OTHER REQUIREMENTS:**

Demolition - **OR** - Renovation Notifications …….. **2 X** (Regulation IV, Rule 401(B))
Asbestos Abatement (**with** Demolition Projects) ……..…….. **4 X** (Regulation IV, Rule 401(B))

- All fees must accompany the notification form.
- Notification forms must be mailed or hand delivered to the District office; faxes are acceptable, if followed by the original within three (3) days.
- Notifications must be received or post-marked at least 10 business days prior to the start of demolition or renovation.
- Incomplete forms will be returned for correction. The 10 day clock does not start until a correctly completed notification is received by the District office.
- If a person cancels a notification, they may request a fee refund provided:
    1. the fee has been paid,
    2. the District has not performed an inspection,
    3. the request is in writing,
    4. and the request is made within ten days following cancellation.
- When a Fire Department receives a fee or donation from the property owner of a structure that is to be used for fire training purposes, the notification/inspection fee noted above shall be paid. Coordinated Burn Authorization Permits are required for Fire Department training burns; however they are exempt from the permit fees (Regulation II, Rule 408(C)(4)).
- **Rule 401 (B) -** Where a demolition project includes the removal of Regulated Asbestos Containing Material from a facility prior to the wrecking of the structure, the *removal is treated as a separate renovation project for the purposes of fees*, although they may be included in a single notification. This requires a **second 2 X fee**.
- Any demolition or renovation project that requires physical barriers for the purpose of controlling asbestos emissions (containment) shall install transparent viewing ports which allow observation, to the extent possible, of all stripping and removal of regulated asbestos containing material from outside the containment area.

Questions on completing the asbestos demolition / notification form, or on the NESHAP regulations covering asbestos, can be directed to District staff at (707) 443-3093.

# NORTH COAST UNIFIED AIR QUALITY MANAGEMENT DISTRICT

**NOTIFICATION OF DEMOLITION OR RENOVATION SUBJECT TO ABESTOS NESHAP's (40 CFR PART 61.145)**

***IMPORTANT*: Notifications must be signed in ink. All numbered items must be addressed, regardless of applicability – e.g., enter N/A where numbered items don't apply to your project. Only originals accepted.**

| Operator Project # | Postmark | Date Received | Notification # |
|---|---|---|---|
| | | | |

**I. TYPE OF NOTIFICATION** Circle One: **O** = Original **R** = Revised **C** = Canceled

**II. FACILITY INFORMATION** (*Identify owner, removal contractor and any other contractors*)

| | | |
|---|---|---|
| OWNER NAME: | | |
| Address: TBD | | |
| City: | State: | Zip: |
| Contact: | Tel: | |
| ASBESTOS REMOVAL CONTRACTOR: | | DOSH Reg # |
| Address: | | |
| City: | State: | Zip: |
| Contact: | Tel: | |
| OTHER DEMOLITION OR RENOVATION OPERATOR: | | |
| Address: | | |
| City: | State: | Zip: |
| Contact: | Tel: | |

**III. TYPE OF OPERATION** Circle One: **D** = Demolition **O** = Ordered Demolition **R** = Renovation **E** = Emergency Renov.

**IV. IS ASBESTOS PRESENT** Circle One: (**Y**es **N**o)

**V. FACILITY DESCRIPTION** (*Include building name, number and floor or room numbers*)

| | | | |
|---|---|---|---|
| Bldg. Name: | | | |
| Address: | | | |
| City: | State: | Zip: | County: |
| Site Location: | | | |
| Building Size: | # of Floors: | Age in Years: | |
| Present Use: | Prior Use: | | |

**VI. PROCEDURE USED TO DETECT THE PRESENCE OF ASBESTOS MATERIAL** {An asbestos survey performed by a California "Certified Asbestos Consultant", is required to process this notification}

| **C.A.C. Certification #** | **Certification Experation Date:** |
|---|---|
| | |

| **VII. APPROXIMATE AMOUNT OF ASBESTOS, INCLUDING:**<br>1. Regulated ACM to be Removed<br>2. Category I ACM to be Removed<br>3. Category II ACM to be Removed | RACM To Be Removed | | Nonfriable Asbestos Material To Be Removed | | Indicate Unit of Measurement Below | |
|---|---|---|---|---|---|---|
| | | | Category I | Category II | Units | |
| Pipes | | | | | Ln Ft: | Ln m: |
| Surface Area | | | | | Sq Ft: | Sq m: |
| Vol. RACM Off Facility Component | | | | | Cu Ft: | Cu m: |

| | | |
|---|---|---|
| **VIII. SCHEDULED DATES ASBESTOS REMOVAL** (*MM/DD/YY*) | **Start:** | **Complete** |
| **IX. SCHEDULED DATES DEMO/RENOVATION** (*MM/DD/YY*) | **Start:** | **Complete** |

**X. DESCRIPTION OF PLANNED DEMOLITION OR RENOVATION WORK, AND METHOD(S) TO BE USED:**

| **District Use Only** | **Date Payment Received:** | **Payment Method:** | **Check Number:** | **Amount:** |
|---|---|---|---|---|
| | | | | |

**XI. DESCRIPTION OF WORK PRACTICES AND ENGINEERING CONTROLS TO BE USED TO PREVENT EMISSIONS OF ASBESTOS AT TH DEMOLITION OR RENOVATION SITE (*attach work plan, if appropriate*):**

**XII. WASTE TRANSPORTER #1**

| | | |
|---|---|---|
| Name: | | |
| Address: | | |
| City: | State: | Zip: |
| Contact Person: | Tel: | |

**WASTE TRANSPORTER #2**

| | | |
|---|---|---|
| Name: | | |
| Address: | | |
| City: | State: | Zip: |
| Contact Person: | Tel: | |

**XIII. WASTE DISPOSAL SITE**

| | | |
|---|---|---|
| Name: | Tel: | |
| Address: | | |
| City: | State: | Zip: |

**XIV. IF DEMOLITION ORDERED BY A GOVERNMENT AGENCY PLEASE IDENTIFY THE AGENCY BELOW (*attach copy of demolition order*):**

| | |
|---|---|
| Name: | Title |
| Authority | |
| Date of Order (*MM/DD/YY*): | Date Ordered to Begin (mm/dd/yy): |

**XV. FOR EMERGENCY RENOVATIONS**

Date and Hour of Emergency (*mm/dd/yy*):

Description of the Sudden, Unexpected Event:

Explanation of how the event caused unsafe conditions or would cause equipment damage or an unreasonable financial burden:

**XVI. DESCRIPTION OF PROCEDURES TO BE FOLLOWED IN THE EVENT THAT UNEXPECTED ASBESTOS IS FOUND, OR PREVIOUSL NONFRIABLE ASBESTOS MATERIAL BECOMES FRIABLE:**

**XVII.** I CERTIFY THAT AN INDIVIDUAL TRAINED IN THE PROVISIONS OF THIS REGULATION (40 CFR PART 61, SUBPART M) WILL BE ON-SITE DURING ALL ASBESTOS ABATEMENT, AND EVIDENCE THAT THE REQUIRED CERTIFICATION ACCOMPLISHED BY THIS PERSON WILL BE AVAILABLE FOR INSPECTION BY REGULATING AUTHORITIES DURING NORMAL BUSINESS HOURS.

(Print Name of Owner/Operator) (Signature of Owner/Operator)

**XVIII. I CERTIFY THAT THE ABOVE INFORMATION IS CORRECT.**

(Print Name of Owner/Operator) (Signature of Owner/Operator)

*Any owner or operator of a demolition or renovation project which is subject to 40 CFR-61, Subpart M (NESHAPS) for asbestos and is required to submit a written notification of the demolition/renovation to the District shall submit with the notification form the following fee:*

**SINGLE DEMOLITION – OR – RENOVATION PROJECTS . . . . . 2 X**

**ASBESTOS ABATEMENT accompanying a demolition (Regulation IV, Rule 401, §1.1.2) . . . . . 4 X**

*Fire Department training burns shall be exempted from the fees noted above.*

# APPENDIX D
## Consultant Certifications

State of California
Division of Occupational Safety and Health
**Certified Asbestos Consultant**

Zindar Brunelle
Name

Certification No. 14-5295

Expires on 10/15/22

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.

California Department of PublicHealth

**STATE OF CALIFORNIA**
**DEPARTMENT OF PUBLIC HEALTH**

# LEAD-RELATED CONSTRUCTION CERTIFICATE

| INDIVIDUAL: | CERTIFICATE TYPE: | NUMBER: | EXPIRATION DATE: |
|---|---|---|---|
|  | Lead Inspector/Assessor | LRC-00000482 | 9/2/2022 |
| | Lead Supervisor | LRC-00000481 | 9/2/2022 |

**Zindar Brunelle**

Disclaimer: This document alone should not be relied upon to confirm certification status. Compare the individual's photo and name to another valid form of government issued photo identification. Verify the individual's certification status by searching for Lead-Related Construction Professionals at www.cdph.ca.gov/programs/clppb or calling (800) 597-LEAD.

CALINC TRAINING LLC

This is to certify that

Zindar Brunelle

has successfully completed an A.H.E.R.A course approved by the Department of Industrial Relations Division of Occupational Safety and Health of the State of California entitled

Asbestos Building Inspector Refresher 1011

as required under Toxic Substances Control Act Title II

| 1/5/2022 | | 170527 |
|---|---|---|
| Class Date(s) | | Certificate Number |
| David Esparza - President | CA-001-06 Cal/OSHA Number | 1/5/2023 Expiration Date |

2040 Peabody Road Vacaville, CA 95687 Phone (800) 359-4467 Fax (707) 446-9072

# APPENDIX E

## Previous Asbestos & Lead Survey Reports

# BRUNELLE & CLARK CONSULTING, LLC

August 18, 2016 1600304

Humboldt County
Dept. of Public Works
Attn: Mr. Jake Johnson
1106 Second Street
Eureka, CA 95501

**Re: Asbestos Sampling For The Boiler, Furnaces & Ducting Removal Project And The Assembly Room Ceiling, Ferndale Veteran's Memorial Building, 1100 Main Street, Ferndale, CA**

On July 28, 2016, this firm conducted an asbestos sampling survey of suspect material that will be disturbed by removal the furnace, boiler, and HVAC ducting at the above referenced address. Ceiling materials in the "assembly hall" room were also surveyed and sampled for possible future removal of the drop ceiling in that room. See Figures 1-4, attachment A.

This asbestos survey was conducted to identify any asbestos containing materials (ACM) pursuant to the requirements of the California Health & Safety Code and for compliance with Cal/OSHA regulations (8 CCR 1529) for worker protection. This report will also provide compliance with the EPA National Emission Standards for Hazardous Air Pollutants (NESHAP) regulations concerning renovation activities (40 CFR, Part 61, Subpart M). As a public site, this structure is subject to NESHAP regulation. The person performing this site sampling and survey report is certified as an Asbestos Building Inspector and a Certified Asbestos Consultant.

The furnace and a boiler unit are in a mechanical room accessed through an exterior door located at the N-W corner of the building. Both units appear to be abandoned. There is extensive large diameter HVAC air ducting that runs from the boiler room into the attic space, and through the attic spaces to various locations throughout the building. The HVAC ducting is insulated with "air-cell insulation wrap," which is an asbestos containing cardboard like wrap. Air-cell debris left-over from installation and/or damage was found present under and around the ducting in many areas of the attic space. Neither the boiler or furnace are fully insulated at this time however; some remnant TSI was found on the both units. Caulking and gasket materials were also sampled on those units.

The assembly hall room has a drop ceiling grid fitted with ceiling panels. The upper walls in that room are finished with a textured plaster coat. The hard ceiling above the drop has fiberboard over decorative exposed beams. Future plans may involve removal of the drop ceiling to expose the existing decorative wood beams.

A total of nineteen (19) samples were collected for the analysis of asbestos content, as follows:

3 TSI, air-cell insulation.
3 Plaster, textured top coat.
3 Plaster, gray rough coat.
2 Gypsum button board.
2 Ceiling panels.
2 Fiberboard panels.
2 Caulk, black, on HVAC duct.
1 TSI gasket, gray.
1 TSI insulation, gray, boiler.

19 total samples

The sample locations are indicated on attached Figure 1, Attachment A. The samples were submitted to an accredited laboratory for the initial analysis of asbestos content by Polarized Light Microscopy (PLM). A summary of the analytic data is included under Table 1 in Attachment B. The sample Chain of Custody and Laboratory Report are also attached (Attachment B).

Several materials from this survey tested positive for asbestos under the initial PLM analyses. One material was re-submitted for a more accurate determinations of asbestos content by 400 Point Count analyses, as required for some agency determinations and for waste characterization. That material was of drywall/joint compound, as listed in the following table.

400 Point Count Analyses

| Sample ID# | Material | Initial PLM Result (visually estimated) | 400 Point Count Result |
|---|---|---|---|
| 1100-4 | Plaster, textured top coat. | <1% CH | 0.3% CH |

The following four definitions are referred to in this report:

- *Asbestos Containing Construction Materials (ACCM)* contain asbestos in amounts between 0.1% and 1.0%.
- *Asbestos Containing Materials (ACM)* are materials that contain >1% asbestos.
- *Presumed Asbestos Containing Material (PACM)* is material presumed to be >1% asbestos.
- *Regulated Asbestos Containing materials (RACM)* refers to regulated ACM, a category of ACM that is subject to NESHAP regulation.

One material in this survey that was found to contain asbestos and is categorized as ACCM by the 400 Point Count analysis above. This ACCM is listed below:

ACCM

- Plaster, textured top coat, on upper walls in the Assembly Hall room.

That ACCM may be abated by a licensed asbestos abatement contractor at any time without filing a NESHAP Notification prior to such *abatement*. However, as noted further below, prior to any *demolition* work on this site, including removal of ANY structural member, a NESHAP Notification for *demolition* work must be filed with the North Coast Unified Air Quality Management District (NCUAQMD).

Three other materials in this survey were found to be ACM, and two of them would be further categorized as RACM (see pictures, Figure 3 & 4, attachment A). The ACM is listed below.

ACM, but not defined as "regulated" ACM (RACM).

- Caulking, black, on HVAC ducting.

ACM, and defined as "regulated" ACM (RACM), due to friability.

- Gasket, on boiler unit.
- TSI, air-cell insulation on HVAC ducting, and as debris on top of ceilings in the attic space.
- TSI, gray, remnant on boiler equipment.

The locations of ACCM and ACM are shown on Figure 2, in Attachment A. See attached Table 2 (in Attachment B) for quantities, agency categorizations, abatement and disposal requirements.

This building is subject to the EPA NESHAP regulations concerning renovation and/or demolition work, as enforced by the North Coast Unified Air Quality Management District (NCUAQMD) located in Eureka, California. NESHAP requires an asbestos survey to identify the possible presence of any RACM, as defined under NESHAP, prior to any renovation and/or demolition work at "subject" sites. That requirement has been met with this report.

The ACCM plaster top coat material contains <1% asbestos, and as ACCM, it is not defined as RACM under NESHAP. The ACM black caulking on HVAC ducting is a non-friable type of ACM that will remain non-friable when properly abated and is also not categorized as RACM. Therefore, those two materials may be properly abated by a licensed asbestos abatement contractor at any time. A NESHAP Notification for that abatement work would not be required.

The other three ACMs identified in this survey are TSI materials defined as "friable" types of ACM that are categorized as RACM under NESHAP. **If more than 160 square feet (SF) of these ACM are to be abated, a NESHAP Notification for *abatement* of RACM must be filed with the NCUAQMD at least ten working days prior to any such abatement, along with a copy of this report and a $256 fee.** Furthermore, when abated, the abated ACM TSI materials must be disposed of as "friable" asbestos waste. This will require the use of a licensed "hazardous" waste hauler. In addition, a temporary hazardous waste generator number from the EPA will need to be obtained for the site. An abatement contractor will typically handle the notification and disposal issues. A copy of the NESHAP Notification package is attached (Attachment C).

Note that there is TSI ACM air-cell wrap debris in the attic spaces on top of ceilings in this building, especially noted in the assembly hall room. The attic space should be closed to entry to all personnel except those qualified and equipped for entry into a "regulated area," until such a time as the ACM debris/area is adequately abated/cleaned. Qualified entry is essentially restricted to licensed asbestos abatement personnel who have adequate (certified) asbestos training and who are wearing disposable coveralls and PAPR respirators. All entry hatches need to be posted with adequate "Restricted Area" signage.

A NESHAP Notification for demolition must he filed with the NCUAQMD at least 10 working days prior to any *demolition,* which includes the removal of *any load bearing member*. This office cannot verify such details; that should be determined by the owner, architect, or contractor. The Notification must be filed with the NCUAQMD at least 10 days prior to any demolition, along with a copy of this report, and a separate $256 fee.

Regardless of NESHAP applicability, Cal/OSHA requires that the disturbance or abatement of any ACM or ACCM be performed by a licensed asbestos abatement contractor.

This data and conclusion is only applicable to the sampled/surveyed rooms/materials and should not be used to assess materials elsewhere in the building.

The sole purpose of this investigation and of this report is to assess the site with respect to asbestos as requested by the client. Brunelle & Clark Consulting, LLC is not responsible for locating asbestos in inaccessible areas such as behind walls, above hard ceilings, beneath flooring or underground. The passage of time, manifestation of latent conditions, or occurrence of future events may require further exploration at the site, the reevaluation of the data and findings, observations, conclusions, and recommendations expressed in the report. If suspect materials that were not covered by this survey are encountered by the contractor during this project, the disturbance of such materials should cease until such materials are surveyed and/or sampled for asbestos.

Should you have any questions, please contact this office.

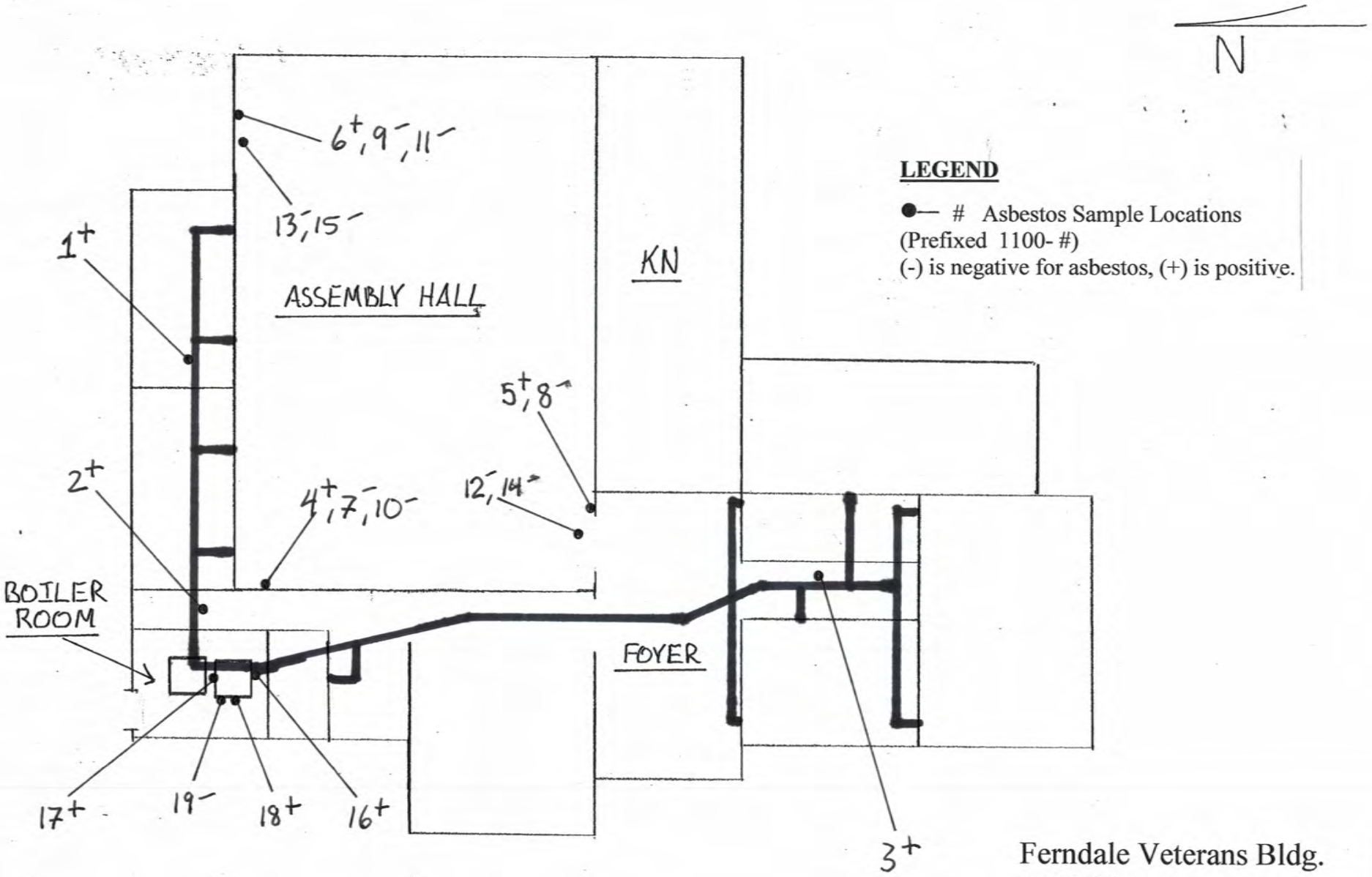
Sincerely

Zindar Brunelle
Certified Asbestos Consultant, #14-5295

Attachments:
- A: Figures 1-4
- B: Tables 1 & 2, Laboratory Report
- C: NESHAP Notification package.
- D: Consultant Certifications.

Ph: (707) 822-4058 Fax: (707) 630-5033 Cell: (707) 672-5345
2640 McDowell Ct., Arcata, CA 95521
zbconsult@outlook.com

# ATTACHMENT A
## Figures

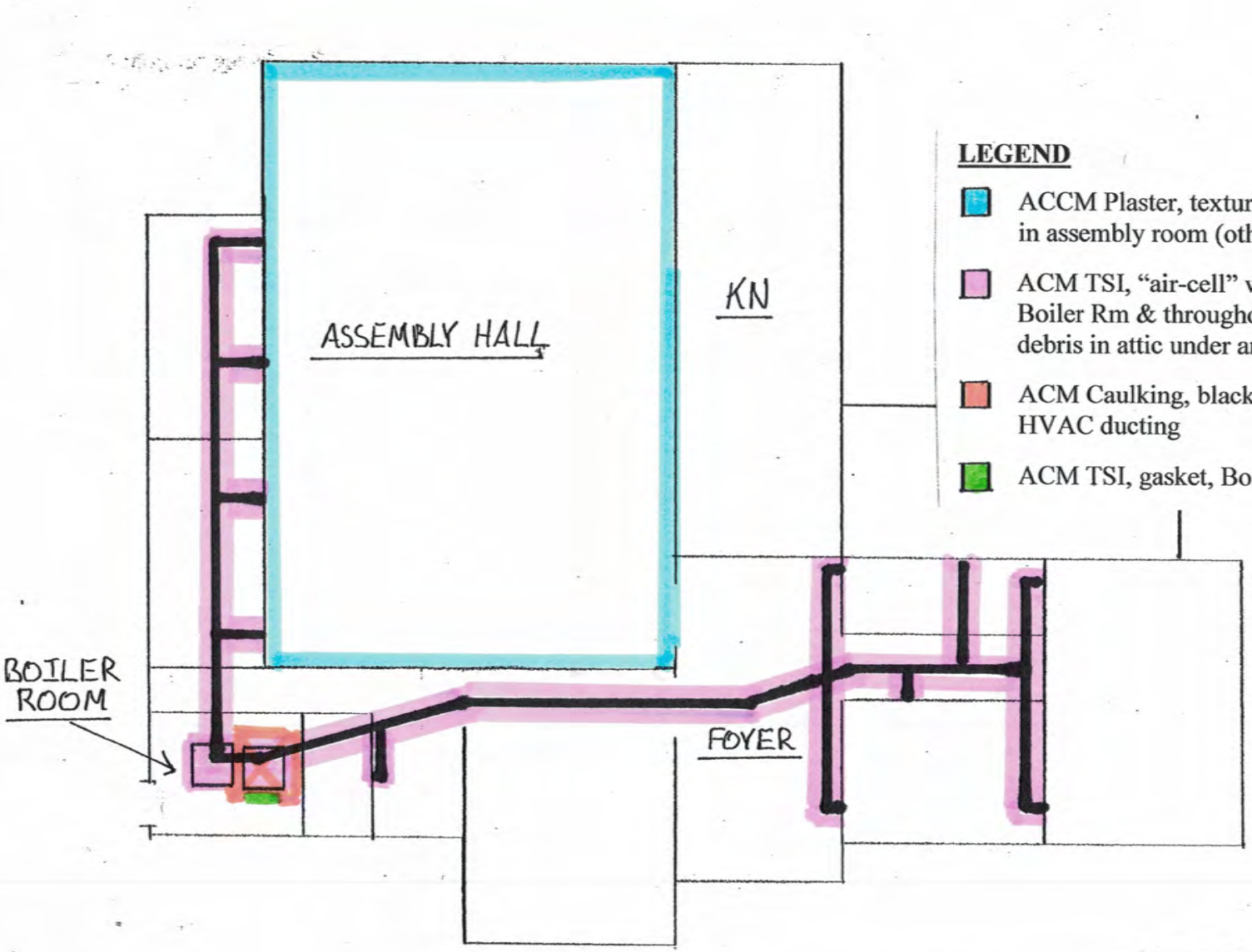



Ferndale Veterans Bldg.
1100 Main Street
Ferndale, CA

BRUNELLE & CLARK CONSULTING, LLC
2640 McDowell Court
Arcata, California 95521

1600304 8/18/16

FIG. 1




BRUNELLE & CLARK CONSULTING, LLC
2640 McDowell Court
Arcata, California 95521

1600304 8/18/16

Ferndale Veterans Bldg.
1100 Main Street
Ferndale, CA

FIG. 2

Brunelle & Clark Consulting, LLC
1975 Ernest Way
Arcata, CA 95521

1600304 8/18/16

TSI Air-Cell Wrap On HVAC Duct In Attic

TSI Air-Cell Wrap Debris On Ceiling In Attic

Ferndale Veterans Building
1100 Main Street
Ferndale, CA

FIG. 3

Brunelle & Clark Consulting, LLC
1975 Ernest Way
Arcata, CA 95521

1600304 8/18/16

TSI Gasket On Door Of Boiler In Boiler Room

TSI Air-Cell Wrap & Black Caulking On HVAC Furnace/Duct In Boiler Rm

Ferndale Veterans Building
1100 Main Street
Ferndale, CA

FIG. 4

# ATTACHMENT B

## Tables & Laboratory Reports

**TABLE 1**
**SUMMARY OF ANALYTIC DATA**

**Ferndale Veteran's Memorial Building**
**1100 Main Street, Ferndale, CA**
**Boiler, Furnace, Ducting, Assembly Room Ceiling**

**BOLD TYPE used to highlight asbestos.** Note: Some samples had multiple layers, as analyzed

| Sample Number | Sample Description (each layer) | Location | Asbestos % and Type | Friable vs. Non-Friable | Comments |
|---|---|---|---|---|---|
| **1100-1** | **Thermal System Insulation, air-cell** | **Attic, on HVAC duct** | **35% CH** | **Friable** | |
| **1100-2** | **Thermal System Insulation, air-cell** | **Attic, on HVAC duct** | **35% CH** | **Friable** | |
| **1100-3** | **Thermal System Insulation, air-cell** | **Attic, on HVAC duct** | **35% CH** | **Friable** | |
| **1100-4** | **Plaster, textured white top coat** | **Attic, wall material** | **<1% CH** | **Non-friable** | |
| ***400 Point Count*** | ***On Plaster sample above*** | ***""*** | ***0.3% CH*** | ***Non-Friable*** | ***By 400 Point Count analysis*** |
| **1100-5** | **Plaster, textured white top coat** | **Assembly hall, upper wall** | **<1% CH** | **Non-friable** | |
| **1100-6** | **Plaster, textured white top coat** | **Assembly hall, upper wall** | **<1% CH** | **Non-friable** | |
| 1100-7 | Plaster, grey rough coat | Attic, wall material | None detected | Non-friable | |
| 1100-8 | Plaster, grey rough coat | Assembly hall, upper wall | None detected | Non-friable | |
| 1100-9 | Plaster, grey rough coat | Assembly hall, upper wall | None detected | Non-friable | |
| 1100-10 | Button board, gypsum | Assembly hall, upper wall | None detected | Non-friable | |
| 1100-11 | Button board, gypsum | Attic, wall material | None detected | Non-friable | |
| 1100-12 | Ceiling Panel, 2x4, holes and fissures | Assembly hall, drop ceiling | None detected | Non-friable | |
| 1100-13 | Ceiling Panel, 2x4, holes and fissures | Assembly hall, drop ceiling | None detected | Non-friable | |

**TABLE 1**
**SUMMARY OF ANALYTIC DATA**

**Ferndale Veteran's Memorial Building**
**1100 Main Street, Ferndale, CA**
**Boiler, Furnace, Ducting, Assembly Room Ceiling**

**BOLD TYPE used to highlight asbestos.** Note: Some samples had multiple layers, as analyzed

| Sample Number | Sample Description (each layer) | Location | Asbestos % and Type | Friable vs. Non-Friable | Comments |
|---|---|---|---|---|---|
| 1100-14 | Fiberboard, white and brown | Assembly hall, ceiling above drop ceiling | None detected | Non-friable | |
| 1100-15 | Fiberboard, white and brown | Assembly hall, ceiling above drop ceiling | None detected | Non-friable | |
| **1100-16** | **Caulking, black** | **Boiler room, on HVAC duct** | **13% CH** | **Non-friable** | |
| **1100-17** | **Caulking, black** | **Boiler room, on HVAC duct** | **13% CH** | **Non-friable** | |
| **1100-18** | **Thermal System Insulation, gasket, grey** | **Boiler room, on boiler** | **15% CH 5% AM** | **Friable** | |
| 1100-19 | Thermal System Insulation, grey | Boiler room, on boiler | None detected | Non-friable | |

CH = Chrysotile asbestos CR = Crocidolite asbestos AM = Amosite asbestos

TR = Tremolite AN = Anthophyllite AC = Actinolite

<1% CH* = Trace amount, less than 1% asbestos, as visually estimated by initial PLM. Requires verification by more accurate point count analyses.

ACM = Asbestos containing material.

PACM= Presumed ACM. See below.

NA/PS = Not analyzed, Positive stop: Stopped analysis after 1st positive test for identical material (see prev. sample).

**TABLE 2**
**ASBESTOS IDENTIFICATIONS & CLASSIFICATIONS**

**Veteran's Memorial Building, 1100 Main Street, Ferndale, CA,**
**Boiler, Furnace, Ducting, and Assembly Room Ceiling.**

| MATERIAL | LOCATION | QUANTITY | ASBESTOS CONTENT & TYPE | OSHA CLASSIFICATION | NESHAP CATEGORY | Waste Disposal Classification |
|---|---|---|---|---|---|---|
| Plaster, textured top coat | Upper walls in assembly room (other spaces not surveyed) | TBD | <1% CH by initial PLM.<br>0.3% by 400 Point Count. | ACCM, Class II abatement required where disturbed | ACCM<br>Not RACM* | Non-Friable asbestos waste |
| Caulking, black | Boiler room, on HVAC ducting | 10 SF Approx. | 13% CH | ACM, Category I non-friable ACM. Class II abatement required where disturbed | ACM<br>Not RACM* | Non-Friable asbestos waste |
| TSI, "air-cell" wrap | HVAC ducting in Boiler Rm & throughout attic spaces, plus loose debris in attic under & around HVAC duct | 1800 SF Approx. | 35% CH | ACM, Class I abatement required where disturbed | "Friable"<br>RACM | "Friable" asbestos waste |
| TSI, gasket | Boiler room, on boiler door | 2 SF Approx. | 15% CH<br>5% AM | ACM, Class I abatement required where disturbed | "Friable"<br>RACM | "Friable" asbestos waste |

SF = Square Feet. LF = Lineal Feet
CH = Chrysotile asbestos AM = Amosite asbestos
ACM = Asbestos Containing Materials, containing >1% asbestos.
PACM = Presumed ACM.
ACCM = Asbestos Containing Construction Materials, asbestos content of 0.1% to 1.0%.
RACM =Regulated ACM under NESHAP regulations.
RACM* = Not considered as RACM if asbestos content is 1% or less, or if not made friable by disturbance. TBD = Abatement quantity to be determined for actual remediation work.

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# PLM Bulk Asbestos Report

Brunelle & Clark Consulting, LLC
Attn: Zindar Brunelle
1975 Ernest Way

Arcata, CA 95521

**Date Received** 08/01/16 **AmeriSci Job #** 916081039
**Date Examined** 08/02/16 **P.O. #**
**Page** 1 **of** 4

**RE:** 1600304; 1100 Main St. Ferndale CA

| Client No. / HGA | Lab No. | Asbestos Present | Total % Asbestos |
|---|---|---|---|
| 1100-1 | 916081039-01 | *Yes* | 35 % (by CVES) by Arturo A. Aldana on 08/02/16 |
| **Location:** TSI, Aircell / Attic / On HVAC Duct | | | |
| **Analyst Description:** Grey, Homogeneous, Fibrous, Aircell<br>**Asbestos Types:** Chrysotile 35.0 %<br>**Other Material:** Non-fibrous 65 % | | | |
| 1100-2 | 916081039-02 | *Yes* | 35 % (by CVES) by Arturo A. Aldana on 08/02/16 |
| **Location:** TSI, Aircell / Attic / On HVAC Duct | | | |
| **Analyst Description:** Grey, Homogeneous, Fibrous, Aircell<br>**Asbestos Types:** Chrysotile 35.0 %<br>**Other Material:** Non-fibrous 65 % | | | |
| 1100-3 | 916081039-03 | *Yes* | 35 % (by CVES) by Arturo A. Aldana on 08/02/16 |
| **Location:** TSI, Aircell / Attic / On HVAC Duct | | | |
| **Analyst Description:** Grey, Homogeneous, Fibrous, Aircell<br>**Asbestos Types:** Chrysotile 35.0 %<br>**Other Material:** Non-fibrous 65 % | | | |
| 1100-4 | 916081039-04 | *Yes* | Trace (<1 %) (by CVES) by Arturo A. Aldana on 08/02/16 |
| **Location:** Plaster, Textured White TC / Attic / Wall Material | | | |
| **Analyst Description:** Off-White, Homogeneous, Non-Fibrous, Cementitious, Plaster<br>**Asbestos Types:** Chrysotile <1. %<br>**Other Material:** Non-fibrous 100 % | | | |
| 1100-5 | 916081039-05 | *Yes* | Trace (<1 %) (by CVES) by Arturo A. Aldana on 08/02/16 |
| **Location:** Plaster, Textured White TC / Assmbly Hall / Upper Wall | | | |
| **Analyst Description:** Off-White, Homogeneous, Non-Fibrous, Cementitious, Plaster<br>**Asbestos Types:** Chrysotile <1. %<br>**Other Material:** Non-fibrous 100 % | | | |

See Reporting notes on last page

# PLM Bulk Asbestos Report

1600304; 1100 Main St. Ferndale CA

| Client No. / HGA | Lab No. | Asbestos Present | Total % Asbestos |
|---|---|---|---|
| 1100-6 | 916081039-06 | ***Yes*** | Trace (<1 %) (by CVES) by Arturo A. Aldana on 08/02/16 |
| **Location:** Plaster, Textured White TC / Assmbly Hall / Upper Wall | | | |
| **Analyst Description:** Off-White, Homogeneous, Non-Fibrous, Cementitious, Plaster<br>**Asbestos Types:** Chrysotile <1. %<br>**Other Material:** Non-fibrous 100 % | | | |
| 1100-7 | 916081039-07 | ***No*** | NAD (by CVES) by Arturo A. Aldana on 08/02/16 |
| **Location:** Plaster, Gray RC / Attic / Wall Material | | | |
| **Analyst Description:** Grey, Homogeneous, Non-Fibrous, Cementitious, Plaster<br>**Asbestos Types:**<br>**Other Material:** Non-fibrous 100 % | | | |
| 1100-8 | 916081039-08 | ***No*** | NAD (by CVES) by Arturo A. Aldana on 08/02/16 |
| **Location:** Plaster, Gray RC / Assmbly Hall / Upper Wall | | | |
| **Analyst Description:** Grey, Homogeneous, Non-Fibrous, Cementitious, Plaster<br>**Asbestos Types:**<br>**Other Material:** Non-fibrous 100 % | | | |
| 1100-9 | 916081039-09 | ***No*** | NAD (by CVES) by Arturo A. Aldana on 08/02/16 |
| **Location:** Plaster, Gray RC / Assmbly Hall / Upper Wall | | | |
| **Analyst Description:** Grey, Homogeneous, Non-Fibrous, Cementitious, Plaster<br>**Asbestos Types:**<br>**Other Material:** Non-fibrous 100 % | | | |
| 1100-10 | 916081039-10 | ***No*** | NAD (by CVES) by Arturo A. Aldana on 08/02/16 |
| **Location:** Button Board, Gypsum / Assmbly Hall / Upper Wall | | | |
| **Analyst Description:** White/Brown, Homogeneous, Fibrous, Button Board<br>**Asbestos Types:**<br>**Other Material:** Cellulose 3 %, Non-fibrous 97 % | | | |
| 1100-11 | 916081039-11 | ***No*** | NAD (by CVES) by Arturo A. Aldana on 08/02/16 |
| **Location:** Button Board, Gypsum / Attic / Wall Material | | | |
| **Analyst Description:** White/Brown, Homogeneous, Fibrous, Button Board<br>**Asbestos Types:**<br>**Other Material:** Cellulose 2 %, Non-fibrous 98 % | | | |

See Reporting notes on last page

# PLM Bulk Asbestos Report

1600304; 1100 Main St. Ferndale CA

| Client No. / HGA | Lab No. | Asbestos Present | Total % Asbestos |
|---|---|---|---|
| 1100-12 | 916081039-12 | ***No*** | NAD (by CVES) by Arturo A. Aldana on 08/02/16 |
| **Location:** CP (2x4) Holes & Fissures / Assembly Hall / Drop Ceiling | | | |
| **Analyst Description:** White/Tan, Homogeneous, Fibrous, Ceiling Panel<br>**Asbestos Types:**<br>**Other Material:** Cellulose 12 %, Fibrous glass 3 %, Non-fibrous 85 % | | | |
| 1100-13 | 916081039-13 | ***No*** | NAD (by CVES) by Arturo A. Aldana on 08/02/16 |
| **Location:** CP (2x4) Holes & Fissures / Assembly Hall / Drop Ceiling | | | |
| **Analyst Description:** White/Tan, Homogeneous, Fibrous, Ceiling Panel<br>**Asbestos Types:**<br>**Other Material:** Cellulose 12 %, Fibrous glass 3 %, Non-fibrous 85 % | | | |
| 1100-14 | 916081039-14 | ***No*** | NAD (by CVES) by Arturo A. Aldana on 08/02/16 |
| **Location:** Fiberboard, White & Brown / Assembly Hall / Ceiling Above Drop Ceiling | | | |
| **Analyst Description:** White/Brown, Homogeneous, Fibrous, Fiber Board<br>**Asbestos Types:**<br>**Other Material:** Cellulose 60 %, Non-fibrous 40 % | | | |
| 1100-15 | 916081039-15 | ***No*** | NAD (by CVES) by Arturo A. Aldana on 08/02/16 |
| **Location:** Fiberboard, White & Brown / Assembly Hall / Ceiling Above Drop Ceiling | | | |
| **Analyst Description:** White/Brown, Homogeneous, Fibrous, Fiber Board<br>**Asbestos Types:**<br>**Other Material:** Cellulose 60 %, Non-fibrous 40 % | | | |
| 1100-16 | 916081039-16 | ***Yes*** | 13 % (by CVES) by Arturo A. Aldana on 08/02/16 |
| **Location:** Caulking, Black / Boiler Room / On HVAC Duct | | | |
| **Analyst Description:** Black, Homogeneous, Non-Fibrous, Caulking<br>**Asbestos Types:** Chrysotile 13.0 %<br>**Other Material:** Non-fibrous 87 % | | | |
| 1100-17 | 916081039-17 | ***Yes*** | 13 % (by CVES) by Arturo A. Aldana on 08/02/16 |
| **Location:** Caulking, Black / Boiler Room / On HVAC Duct | | | |
| **Analyst Description:** Black, Homogeneous, Non-Fibrous, Caulking<br>**Asbestos Types:** Chrysotile 13.0 %<br>**Other Material:** Non-fibrous 87 % | | | |

See Reporting notes on last page

# PLM Bulk Asbestos Report

1600304; 1100 Main St. Ferndale CA

| Client No. / HGA | Lab No. | Asbestos Present | Total % Asbestos |
|---|---|---|---|
| 1100-18 | 916081039-18 | ***Yes*** | 20 % (by CVES) by Arturo A. Aldana on 08/02/16 |
| **Location:** TSI Gasket, Gray / Boiler Room / On Boiler | | | |
| **Analyst Description:** Grey, Homogeneous, Fibrous, Gasket<br>**Asbestos Types:** Chrysotile 15.0 %, Amosite 5.0 %<br>**Other Material:** Non-fibrous 80 % | | | |
| 1100-19 | 916081039-19 | ***No*** | NAD (by CVES) by Arturo A. Aldana on 08/02/16 |
| **Location:** TSI Insulation, Gray / Boiler Room / On Boiler | | | |
| **Analyst Description:** Grey, Homogeneous, Fibrous, Insulation<br>**Asbestos Types:**<br>**Other Material:** Fibrous glass 15 %, Non-fibrous 85 % | | | |

**Reporting Notes:**

Analyzed By: Arturo A. Aldana aaa ; Date Analyzed: 8/2/2016 8/2/16

*NAD = no asbestos detected; Detection Limit <1%; Reporting Limits: CVES = 1%, 400 Pt Ct = 0.25%, 1000 Pt Ct = 0.1%; NA = not analyzed; NA/PS = not analyzed / positive stop; NVA = No Visible Asbestos; PLM (polarized light microscopy) Bulk Asbestos Analysis by EPA 600/R-93/116, including requirements for EPA 600/M4-82-020 per 40 CFR 763 (NVLAP Lab #200346-0, CA ELAP lab #2322); Note: PLM is not consistently reliable in detecting asbestos in floor coverings and similar NOB materials. TEM is currently the only method that can be used to determine if this material can be considered or treated as non-asbestos-containing in New York State (also see EPA Advisory for floor tile, FR 59, 146, 38970, 8/1/94). NIST Accreditation requirements mandate that this report must not be reproduced except in full with the approval of the laboratory. This PLM report relates ONLY to the items tested.

Reviewed By: aaa

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Carson, California 90745
TEL: (310) 834-4868 • FAX: (310) 834-4772

# PLM Bulk Asbestos Report

Brunelle & Clark Consulting, LLC
Attn: Zindar Brunelle
1975 Ernest Way

Arcata, CA 95521

**Date Received** 08/04/16
**Date Examined** 08/05/16

**AmeriSci Job #** 916081182
**P.O. #**
**Page** 1 **of** 1

**RE:** 1600304; 1100 Main St. Ferndale CA

| Client No. / HGA | Lab No. | Asbestos Present | Total % Asbestos |
|---|---|---|---|
| 1100-4 | 916081182-01 | *Yes* | 0.3 % pc [1] (by 400 pt ct) by Paola Ducoing on 08/05/16 |

**Location:** Plaster, Textured White TC / Attic / Wall Material

**Analyst Description:** Off-White, Homogeneous, Non-Fibrous, Cementitious, Plaster
**Asbestos Types:** Chrysotile 0.3 %
**Other Material:** Non-Asbestos/Inert 64.2 %
**Comment:** Heat Sensitive (organic): 13.9%; Acid Soluble (inorganic): 21.6%; Inert (Non-asbestos): 64.2%

**Reporting Notes:**

(1) EPA 400 Point Count Analysis performed on Inert Residue remaining after 480C heat and HCl acid treatments

Analyzed By: Paola Ducoing ; Date Analyzed: 8/5/2016 8/5/16

*NAD = no asbestos detected; Detection Limit <1%; Reporting Limits: CVES = 1%, 400 Pt Ct = 0.25%, 1000 Pt Ct = 0.1%; NA = not analyzed; NA/PS = not analyzed / positive stop; NVA = No Visible Asbestos; PLM (polarized light microscopy) Bulk Asbestos Analysis by EPA 600/R-93/116, including requirements for EPA 600/M4-82-020 per 40 CFR 763 (NVLAP Lab #200346-0, CA ELAP lab #2322); Note: PLM is not consistently reliable in detecting asbestos in floor coverings and similar NOB materials. TEM is currently the only method that can be used to determine if this material can be considered or treated as non-asbestos-containing in New York State (also see EPA Advisory for floor tile, FR 59, 146, 38970, 8/1/94). NIST Accreditation requirements mandate that this report must not be reproduced except in full with the approval of the laboratory. This PLM report relates ONLY to the items tested.

Reviewed By:

| Analysis: | BRUNELLE & CLARK CONSULTING, LLC | Date: 7/28/16 |
|---|---|---|
| X Standard PLM<br>___ 400 Point Count<br>___ 1,000 Point Count<br>Turnaround Time:<br><12-hr/1-day/2-days/3-days/>3days | 2640 McDowell Ct.<br>Arcata, CA 95521<br>Ph: (707) 822-4058 Fax: (707) 630-5033<br>Cell #: (707) 672-5345<br>zbconsult@outlook.com | Site: 1100 Main St. Ferndale, CA<br>Proj.# 1600304 |

# BULK ASBESTOS SAMPLING

9160081039

| Sample No. | Sample Description | Hom, Area | Location | Mat'l Type | Mat'l Cond. | Friable |
|---|---|---|---|---|---|---|
| 1100-1 | TSI, aircell | 1 | Attic / on HVAC Duct | TSI | DG | F |
| -2 | ↓ | 1 | ↓ | ↓ | ↓ | ↓ |
| -3 | ↓ | 1 | ↓ | ↓ | ↓ | ↓ |
| -4 | Plaster, Textured white TC | 2 | ↓ / wall material | SM | ND | NF |
| -5 | ↓ | 2 | Assembly Hall / upper wall | ↓ | ↓ | ↓ |
| -6 | ↓ | 2 | ↓ | ↓ | ↓ | ↓ |
| -7 | Plaster, gray RC | 3 | Attic / wall material | ↓ | ↓ | ↓ |
| -8 | ↓ | 3 | Assembly Hall / upper wall | ↓ | ↓ | ↓ |
| -9 | ↓ | 3 | ↓ | ↓ | ↓ | ↓ |
| -10 | Buffonboard, gypsum | 4 | ↓ | MM | ↓ | ↓ |
| -11 | ↓ | 4 | Attic / wall material | ↓ | ↓ | ↓ |
| -12 | CP(2x4), holes + fissures | 5 | Assembly Hall / Drop ceilings | ↓ | ↓ | F |
| -13 | ↓ | 5 | ↓ | ↓ | ↓ | ↓ |
| -14 | Fiberboard, white & brown | 6 | / Ceiling above Drop ceilings | ↓ | ↓ | F |
| -15 | ↓ | 6 | ↓ | ↓ | ↓ | ↓ |

**Sample Abbreviations**
VFT/M = Vinyl Floor Tile & Mastic
SF = Sheet Flooring
JC/GB = Joint Compound/Gypsum Board
CT = Ceiling Tile (glued or nailed)
CP = Ceiling Panel (t-grid or drop ceil.)

**Material Type**
Thermal System Insulation = TSI
Misc. Material = MM
Surfacing Material = SM

**Material Condition**
Not Damaged = ND
Damaged = DG
Significantly Damaged – SD
Potentially Significantly Damaged = PSD

* = Stop analysis for any layer at first positive, if >1%, where indicated.

| Sampled by: Zlndar Brunelle | Received by: | 8/01/16 |
|---|---|---|
| Relinquished by: Date/Time: 7/29/16 | Date/time Date/Time: | 10:25 |

| Analysis: X Standard PLM<br>___ 400 Point Count<br>___ 1,000 Point Count<br>Turnaround Time:<br><12-hr/1-day/2-days/3-days/>3days | BRUNELLE & CLARK CONSULTING, LLC<br>2640 McDowell Ct.<br>Arcata, CA 95521<br>Ph: (707) 822-4058 Fax: (707) 630-5033<br>Cell #: (707) 672-5345<br>zbconsult@outlook.com | Date: 7/28/16<br>Site: 1100 Main St.<br>Ferndale, CA<br>Proj.# 1600304 |
|---|---|---|

# BULK ASBESTOS SAMPLING

9160810 39

| Sample No. | Sample Description | Hom, Area | Location | Mat'l Type | Mat'l Cond. | Friable |
|---|---|---|---|---|---|---|
| 1100-16 | Caulking, black | 7 | Boiler Room / on HVAC Duct | MM | ND | NF |
| -17 | ↓ | 7 | / ↓ | ↓ | ↓ | ↓ |
| -18 | TSI gasket, gray | 8 | / on Boiler | TSI | DG | F |
| -19 | TSI insulation, gray | 9 | / ↓ | ↓ | ↓ | ↓ |
| | | | | | | |
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**Sample Abbreviations**
VFT/M = Vinyl Floor Tile & Mastic
SF = Sheet Flooring
JC/GB = Joint Compound/Gypsum Board
CT = Ceiling Tile (glued or nailed)
CP = Ceiling Panel (t-grid or drop ceil.)

**Material Type**
Thermal System Insulation = TSI
Misc. Material = MM
Surfacing Material = SM

**Material Condition**
Not Damaged = ND
Damaged = DG
Significantly Damaged – SD
Potentially Significantly Damaged = PSD

* = Stop analysis for any layer at first positive, if >1%, where indicated.

| Sampled by: Zindar Brunelle | Received by: |
|---|---|
| Relinquished by:<br>Date/Time: 7/29/16 | Date/time<br>Date/Time: |

# ATTACHMENT C
## NESHAP Notification Form

NORTH COAST UNIFIED AIR QUALITY MANAGEMENT DISTRICT
707 L Street, Eureka, CA 95501
Phone: (707) 443-3093 · Fax: (707) 443-3099

# COMPLIANCE ADVISORY
# ASBESTOS NESHAP APPLICABILITY
# TO DEMOLITION AND RENOVATION PROJECTS

In order to reduce the public's potential exposure to airborne asbestos, the Environmental Protection Agency (EPA) established the asbestos National Emission Standards for Hazardous Air Pollutants (NESHAP) regulation. The asbestos NESHAP regulates the demolition and renovation of buildings containing asbestos materials including, but not limited to fireproofing and insulating materials, paints, cements, joint compounds, and floor tiles. The regulation applies to commercial structures, industrial structures, and housing units having greater than four dwelling units. Single family dwellings are *generally* exempt. The following is a summary of some of the important NESHAP requirements. Other regulations may apply. For example, CAL/OSHA requires that the asbestos survey be completed by a Certified Asbestos Consultant (CAC) or by a Site Surveillance Technician, under the supervision of a CAC.

## Definitions

***Demolition*** – the wrecking or removal of any load supporting structural member of a building. Moving a structure from one location to another and the burning of a structure are also considered demolitions.

***Regulated Asbestos Containing Material*** – (a) friable asbestos material; (b) Category I non-friable material that has become friable; (c) Category I material that has or will be subjected to grinding, sanding, cutting, or abrading; (d) Category II non-friable material that has a high probability of becoming crumbled, pulverized, or reduced to powder by forces expected to act upon the material in the course of demolition or renovation operations.

***Renovation*** – altering a facility or one or more facility components in any way; this includes and is not limited to the stripping or removal or Regulated Asbestos Containing Material (RACM) from a facility component. Also included are projects on the exterior of a structure, such as façade enhancements or remodels.

Prior to beginning any demolition or renovation activity, the structure must be thoroughly surveyed for the presence of asbestos containing material. Survey must be conducted by an AHERA-accredited Building Inspector (40 CFR 763, Subpart E, App. C).

***For a renovation*** - Upon completion of the asbestos survey, determine if the combined amount of RACM to be stripped, removed, dislodged, cut, drilled or similarly disturbed during a renovation is at least 260 linear feet (on pipes), 160 square feet (i.e. flooring, drywall), or 35 cubic feet in volume whichever is least. If the amount of RACM is at least the threshold amounts, District notification prior to the removal is required.

***For a demolition*** - Upon completion of the asbestos survey, a demolition notification form must be submitted to the District at least 10 working days prior to the start date of the demolition. Notification of a demolition is required regardless of the amount of asbestos present. When asbestos-containing material of a quantity greater than or equal to the threshold amounts above will be removed prior to demolition, a separate notification is required.

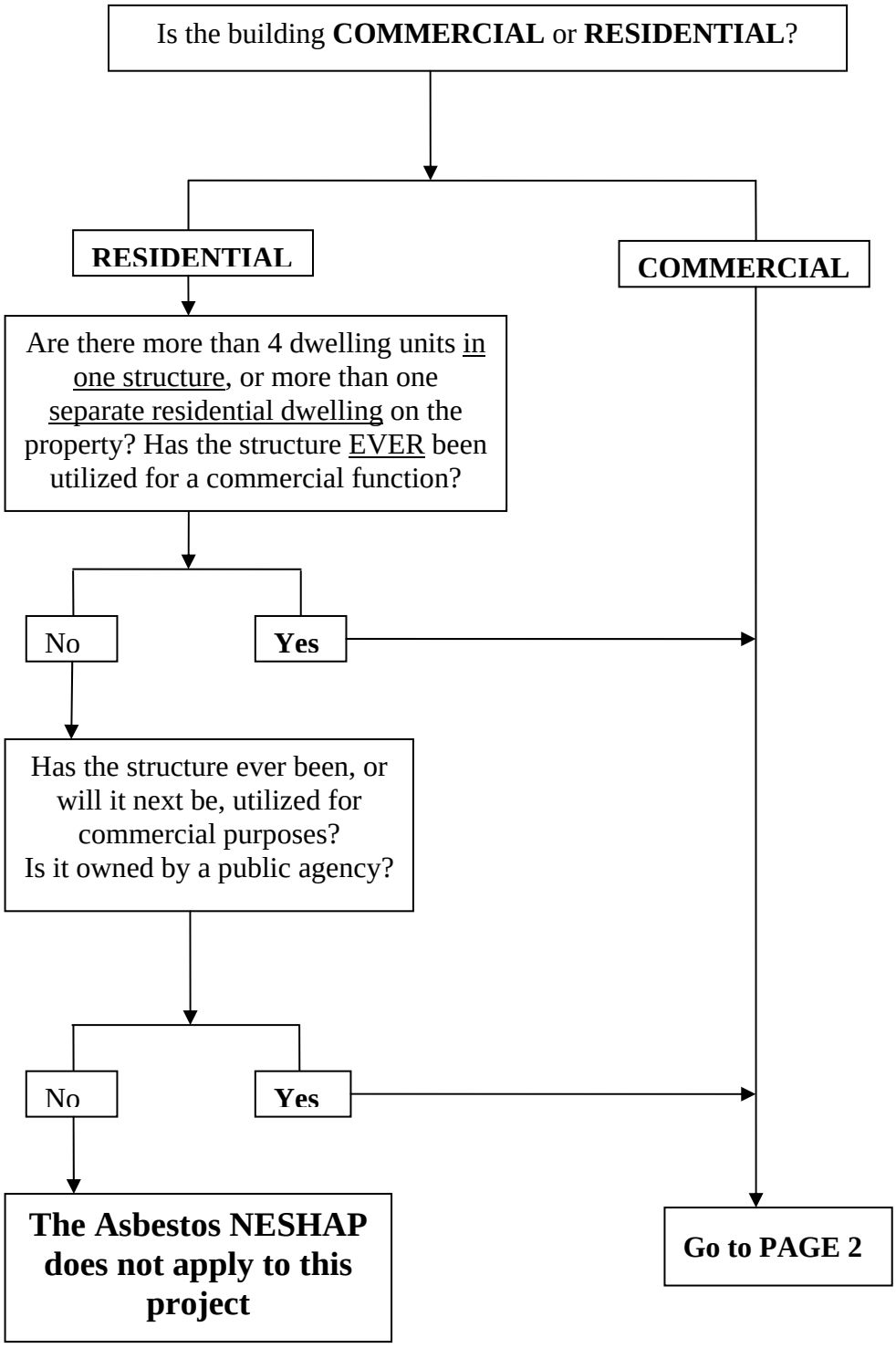
***Other Training Requirements*** – When removing or disturbing RACM, an AHERA-accredited Contractor/Supervisor must be present and all workers must be AHERA-accredited Workers (40 CFR 763, Subpart E, App. C). All training must be current.

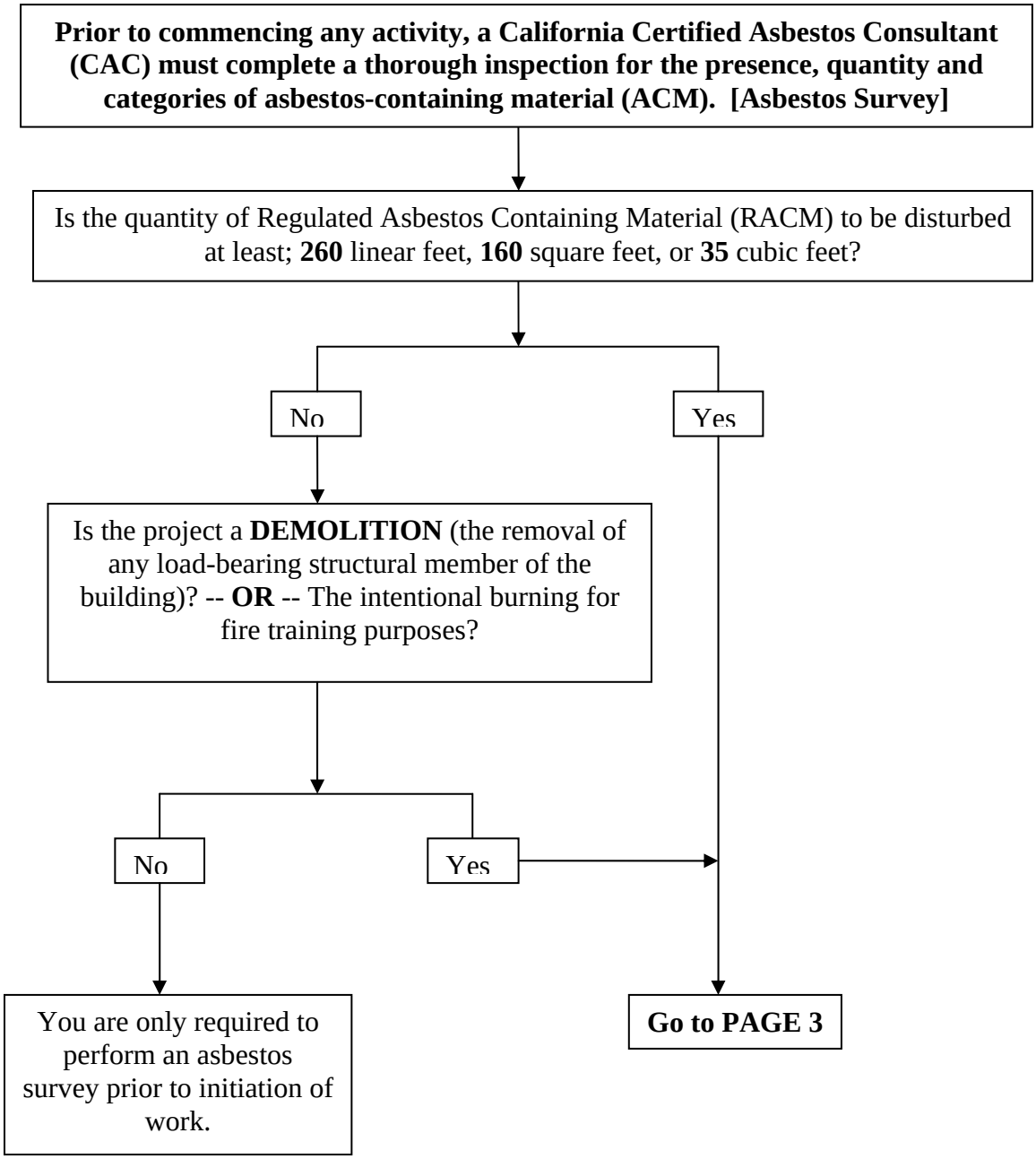
**♦Violations of NESHAP regulations can be prosecuted as felony offenses carrying penalties of $37,500 per day per offense.♦**

For further clarification or additional guidance, contact the District office at (707) 443-3093.

Rev. 8/10
Form #1502

# GUIDE TO ASBESTOS NESHAP QUESTIONS




Prior to commencing any activity, a California Certified Asbestos Consultant (CAC) must complete a thorough inspection for the presence, quantity and categories of asbestos-containing material (ACM). [Asbestos Survey]
Is the quantity of Regulated Asbestos Containing Material (RACM) to be disturbed at least; 260 linear feet, 160 square feet, or 35 cubic feet?
No
Yes
Is the project a DEMOLITION (the removal of any load-bearing structural member of the building)? -- OR -- The intentional burning for fire training purposes?
No
Yes
You are only required to perform an asbestos survey prior to initiation of work.
Go to PAGE 3

# REGULATED RENOVATIONS AND DEMOLITIONS

1) You must submit an Asbestos Survey and completed Notification Form at least 10 working days prior to initiating work on the project.
2) Demolitions:
   a) Requires a 2-**X** notification fee (unless the building is donated to a fire department for training purposes).
   b) (Regulation IV, Rule 401, §1.1.2) An additional 2-**X*** fee is added if Asbestos Abatement is required **for a <u>Demolition</u>** Project.
3) Renovations require only a 2-**X*** notification fee.
4) IF, after notification has been submitted, the quantity of asbestos containing material (ACM) changes by at least 20%, then update the notification.
5) IF, after notification has been submitted, the start date changes to a date <u>after</u> the original start date, then notify by phone as soon as possible AND provide written notice as soon as possible AND no later than original start date.
6) IF, after notification has been submitted, start date changes to a date earlier than the original start date, then provide written notice at least 10 days prior to the new start date.

**<u>IN NO EVENT SHALL A PROJECT START ON A DATE OTHER THAN THE DATE CONTAINED IN THE WRITTEN NOTIFICATION.</u>**

(40 CFR 61.145 (b) (iv) (C))

***** The X value changes annually. Call to get current value: 707-443-3093

# ASBESTOS DEMOLITION AND RENOVATION NOTIFICATION FORM
# GENERAL INFORMATION

**The Asbestos NESHAP, 40 CFR Part 61, Subpart M, requires written notification of demolition or renovation operations under Section 61.145. This form may be used to fulfill this requirement. Only complete notification forms are acceptable. Incomplete notification may result in enforcement action.**

***This notification should be typewritten and postmarked or delivered no later than ten days prior to the beginning of the asbestos removal activity (dates specified in Section VIII) or demolition (dates specified in Section IX). Please submit the form, along with the appropriate fee, to:***

**NORTH COAST UNIFIED AQMD**
**707 L STREET**
**EUREKA, CA 95501**

INSTRUCTIONS

I. Type of Notification: Enter "O" if the notification is a first time or original notification, "R" if the notification is a revision of a prior notification, or "C" if the activity has been cancelled.

II. Facility Information: Enter the names, addresses, contact persons and telephone numbers of the following:
Owner: Legal owner of the site at which asbestos is being removed or demolition planned
Asbestos Removal Contractor: Certified asbestos contractor hired to remove asbestos (include DOSH registration #)
Other Demolition or Renovation Operator: Demolition contractor, general contractor, or other person who leases, operates, controls, or supervises the site (fire dept if training burn).

III. Type of Operation: Enter "D" for facility demolition, "R" for facility renovation, "O" for ordered demolition, or "E" for emergency renovation. Fire training burns are considered facility demolitions ("D").

IV. Is Asbestos Present?: Answer "yes" or "no" regardless of the amount of asbestos present.

V. Facility Description: Provide detailed information on the areas being renovated or demolished. If applicable, provide the floor numbers and room numbers where renovations are to be conducted.
Site Location: Provide information needed to locate site in event that the address alone is inadequate.
Building Size: Provide in square meters or square feet.
No. of Floors: Enter the number of floors including basement or ground floors.
Age in Years: Enter approximate age of the facility.
Present Use / Prior Use: Describe the primary use of the facility or enter the following codes: H - hospital; S - school; P - public building; O - office; I - industrial; U - university or college; B - ship; C - commercial; or R - residential.

VI. Asbestos Detection Procedure: Describe methods and procedures used to determine whether asbestos is present at the site, including a description of the analytical methods employed. **Building inspections must be performed by an AHERA-accredited Building Inspector** (40 CFR 763, Subpart E, App. C). Include copy of current accreditation. If an inspection report has been prepared by a consultant for the facility please include a copy with the notification.

VII. Approximate Amount of Asbestos, Including: (1) Regulated asbestos containing material (RACM) to be removed (including nonfriable ACM to be sanded, ground, or abraded); (2) Category I ACM not removed ; and (3) Category II ACM not removed. For both removals and demolition, enter the amount of RACM to be removed by entering a number in the appropriate box and an "X" for the unit. For demolition only, enter the amount of Category I and II nonfriable asbestos not to be removed in the appropriate boxes. Category I nonfriable material includes packing, gasket, resilient floor covering, and asphalt roofing materials containing more than one percent asbestos. Category II nonfriable material includes any material, excluding Category I products, containing more than one percent asbestos, that when dry, cannot be crumbled, pulverized, or reduced to powder. Facilities to be used for fire training purposes must have all materials containing more than one percent asbestos removed.

VIII. Scheduled Dates of Asbestos Removal: Enter scheduled dates (month/day/year) for asbestos removal work. Asbestos removal work includes any activity, including site preparation, which may break up, dislodge, or disturb asbestos material. **These dates must be accurate.** Asbestos removal work occurring prior to the start date or after the end date is a violation and could result in substantial enforcement action. If these dates change, notify the District immediately, by submitting a revision request form.

IX. Scheduled Dates of Demo/Renovation: Enter scheduled dates (month/day/year) for beginning and ending of the planned demolition or renovation. For fire training burns this is the time period when the actual fire training burn will take place. **These dates must be accurate.** Demolition or renovation activity occurring prior to the start date or after the end date is a violation and could result in substantial enforcement action. If these dates change, notify the District immediately, by submitting a revision request form.

X. Description of Planned Demolition or Renovation Work, and Method(s) to be Used: Include here a description of the overall work being done and the techniques being used. A work plan can be attached to address this item.

XI. Description of Engineering Controls and Work Practices to be Used to Control Emissions of Asbestos at the Demolition or Renovation Site: Describe the work practices and engineering controls selected to ensure compliance with the requirements of the regulation, including removal and waste handling emission control procedures. A work plan can be attached to address this item.

XII. Waste Transporter(s): Enter the name, addresses, contact persons and telephone numbers of the persons or companies responsible for transporting ACM from the removal site to the waste disposal site. If the removal contractor or owner is the waste transporter, state "same as owner" or "same as removal contractor".

XIII. Waste Disposal Site: Identify the waste disposal site, including the complete name, location, and telephone number of the facility. If ACM is to be disposed of at more than one site, provide complete information on an additional sheet submitted with the form.

XIV. If Demolition Ordered by a Government Agency: Provide the name of the responsible official, title and agency, authority under which the order was issued, the dates of the order and the dates of the ordered demolition. Include a copy of the order with the notification.

XV. Emergency Renovation Information: Provide the date and time of the emergency, a description of the event and a description of unsafe conditions, equipment damage or financial burden resulting from the event. The information should be detailed enough to evaluate whether a renovation falls within the emergency exception.

XVI. Description of Procedures to be Followed in the Event that Unexpected Asbestos is Found or Previously Nonfriable Asbestos Material Becomes Crumbled, Pulverized, or Reduced to Powder: Provide adequate information to demonstrate that appropriate actions have been considered and can be implemented to control asbestos emissions adequately, including at a minimum, conformance with applicable work practice standards. Typically these will include a work stoppage, wetting of material, and notification to the District.

XVII. Certification of Presence of Trained Supervisor: Certify that a person trained in asbestos removal procedures and the provisions of this regulation will be on-site and supervise the demolition or renovation. **When handling RACM, the supervisor must be a current AHERA-accredited contractor/supervisor, and the workers must be AHERA-accredited workers** (40 CFR 763 Subpart E App. C). The supervisor is responsible for the activity on-site. Evidence that the training has been completed by the supervisor must be available for inspection during normal business hours.

XVIII. Verification: Please certify the accuracy and completeness of the information provided by signing and dating the notification form.

---

FEES AND OTHER REQUIREMENTS

Demolition - **OR** - Renovation Notifications …….. **2 X**
Asbestos Abatement (**with** Demolition Projects) ….……..…….... **4 X** (Regulation IV, Rule 401, §1.1.2)

- All fees must accompany the notification form.
- Notification forms must be mailed or hand delivered to the District office; faxes are acceptable, if followed by the original within three (3) days.
- Notifications must be received or post-marked at least 10 business days prior to the start of demolition or renovation.
- Incomplete forms will be returned for correction. The 10 day clock does not start until a correctly completed notification is received by the District office.
- If a person cancels a notification, they may request a fee refund provided:
    1. the fee has been paid,
    2. the District has not performed an inspection,
    3. the request is in writing,
    4. and the request is made within ten days following cancellation.
- When a Fire Department receives a fee or donation from the property owner of a structure that is to be used for fire training purposes, the notification/inspection fee noted above shall be paid. Coordinated Burn Authorization Permits are required for Fire Department training burns; however they are exempt from the permit fees (Regulation II, Rule 201, 6.2).
- **Rule 401**
  **§1.1.2** Where a demolition project includes the removal of Regulated Asbestos Containing Material from a facility prior to the wrecking of the structure, the *removal is treated as a separate renovation project for the purposes of fees*, although they may be included in a single notification. This requires a **second** **$200.00 fee**.
- Any demolition or renovation project that requires physical barriers for the purpose of controlling asbestos emissions (containment) shall install transparent viewing ports which allow observation, to the extent possible, of all stripping and removal of regulated asbestos containing material from outside the containment area.

Questions on completing the asbestos demolition / notification form, or on the NESHAP regulations covering asbestos, can be directed to District staff at (707) 443-3093.

# NORTH COAST UNIFIED AIR QUALITY MANAGEMENT DISTRICT

**NOTIFICATION OF DEMOLITION OR RENOVATION SUBJECT TO NESHAP's (40 CFR PART 61.145)**

***IMPORTANT*: Notifications must be signed in ink. All numbered items must be addressed, regardless of applicability – e.g., enter N/A where numbered items don't apply to your project. Only originals accepted.**

| Operator Project # | Postmark | Date Received | Notification # |
|---|---|---|---|
| | | | |

**I. TYPE OF NOTIFICATION** Circle One: **O** = Original **R** = Revised **C** = Canceled

**II. FACILITY INFORMATION** (*Identify owner, removal contractor and any other contractors*)

| | | | |
|---|---|---|---|
| OWNER NAME: | | | |
| Address: TBD | | | |
| City: | State: | Zip: | |
| Contact: | Tel: | | |
| ASBESTOS REMOVAL CONTRACTOR: | | DOSH Reg # | |
| Address: | | | |
| City: | State: | Zip: | |
| Contact: | Tel: | | |
| OTHER DEMOLITION OR RENOVATION OPERATOR: | | | |
| Address: | | | |
| City: | State: | Zip: | |
| Contact: | Tel: | | |

**III. TYPE OF OPERATION** Circle One: **D** = Demolition **O** = Ordered Demolition **R** = Renovation **E** = Emergency Renov.

**IV. IS ASBESTOS PRESENT** Circle One: (**Y**es **N**o)

**V. FACILITY DESCRIPTION** (*Include building name, number and floor or room numbers*)

| | | |
|---|---|---|
| Bldg. Name: | | |
| Address: | | |
| City: | State: | County: |
| Site Location: | | |
| Building Size: | # of Floors: | Age in Years: |
| Present Use: | Prior Use: | |

**VI. PROCEDURE USED TO DETECT THE PRESENCE OF ASBESTOS MATERIAL** {An asbestos survey performed by a California "Certified Asbestos Consultant", is required to process this notification}

| **VII. APPROXIMATE AMOUNT OF ASBESTOS, INCLUDING**:<br>1. Regulated ACM to be Removed<br>2. Category I ACM to be Removed<br>3. Category II ACM to be Removed | RACM To Be Removed | | Nonfriable Asbestos Material To Be Removed | | Indicate Unit of Measurement Below | |
|---|---|---|---|---|---|---|
| | | | Category I | Category II | Units | |
| Pipes | | | | | Ln Ft: | Ln m: |
| Surface Area | | | | | Sq Ft: | Sq m: |
| Vol. RACM Off Facility Component | | | | | Cu Ft: | Cu m: |

| | | |
|---|---|---|
| **VIII. SCHEDULED DATES ASBESTOS REMOVAL** (*MM/DD/YY*) | **Start:** | **Complete** |
| **IX. SCHEDULED DATES DEMO/RENOVATION** (*MM/DD/YY*) | **Start:** | **Complete** |

**X. DESCRIPTION OF PLANNED DEMOLITION OR RENOVATION WORK, AND METHOD(S) TO BE USED:**

**XI. DESCRIPTION OF WORK PRACTICES AND ENGINEERING CONTROLS TO BE USED TO PREVENT EMISSIONS OF ASBESTOS AT THE DEMOLITION OR RENOVATION SITE (*attach work plan, if appropriate*):**

**XII. WASTE TRANSPORTER #1**

| | | |
|---|---|---|
| Name: | | |
| Address: | | |
| City: | State: | Zip: |
| Contact Person: | Tel: | |

**WASTE TRANSPORTER #2**

| | | |
|---|---|---|
| Name: | | |
| Address: | | |
| City: | State: | Zip: |
| Contact Person: | Tel: | |

**XIII. WASTE DISPOSAL SITE**

| | | |
|---|---|---|
| Name: | Tel: | |
| Address: | | |
| City: | State: | Zip: |

**XIV. IF DEMOLITION ORDERED BY A GOVERNMENT AGENCY PLEASE IDENTIFY THE AGENCY BELOW (*attach copy of demolition order*):**

| | |
|---|---|
| Name: | Title |
| Authority | |
| Date of Order (*MM/DD/YY*): | Date Ordered to Begin (mm/dd/yy): |

**XV. FOR EMERGENCY RENOVATIONS**

Date and Hour of Emergency (*mm/dd/yy*):

Description of the Sudden, Unexpected Event:

Explanation of how the event caused unsafe conditions or would cause equipment damage or an unreasonable financial burden:

**XVI. DESCRIPTION OF PROCEDURES TO BE FOLLOWED IN THE EVENT THAT UNEXPECTED ASBESTOS IS FOUND, OR PREVIOUSLY NONFRIABLE ASBESTOS MATERIAL BECOMES FRIABLE:**

**XVII.** I CERTIFY THAT AN INDIVIDUAL TRAINED IN THE PROVISIONS OF THIS REGULATION (40 CFR PART 61, SUBPART M) WILL BE ON-SITE DURING ALL ASBESTOS ABATEMENT, AND EVIDENCE THAT THE REQUIRED CERTIFICATION ACCOMPLISHED BY THIS PERSON WILL BE AVAILABLE FOR INSPECTION BY REGULATING AUTHORITIES DURING NORMAL BUSINESS HOURS.

(Print Name of Owner/Operator) (Signature of Owner/Operator)

**XVIII. I CERTIFY THAT THE ABOVE INFORMATION IS CORRECT.**

(Print Name of Owner/Operator) (Signature of Owner/Operator)

*Any owner or operator of a demolition or renovation project which is subject to 40 CFR-61, Subpart M (NESHAPS) for asbestos and is required to submit a written notification of the demolition/renovation to the District shall submit with the notification form the following fee:*

**SINGLE DEMOLITION – OR – RENOVATION PROJECTS . . . . . 2 X**

**ASBESTOS ABATEMENT accompanying a demolition (Regulation IV, Rule 401, §1.1.2) . . . . . 4 X**

*Fire Department training burns shall be exempted from the fees noted above.*

# ATTACHMENT D
## Consultant Certifications

State of California
Division of Occupational Safety and Health
**Certified Asbestos Consultant**

**Zindar Brunelle**
Name

Certification No. **14-5295**

Expires on **10/15/16**

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.

State of California Department of Public Health

Lead-Related Construction Certificate

| Certificate Type | Expiration Date |
|---|---|
| Inspector/Assessor | 09/02/2016 |
| Supervisor | 09/02/2017 |

Zindar Brunelle ID #: 25819

# Certificate of Training

This Certifies that

Zindar Brunelle

has successfully completed 4 hours training entitled

**Asbestos Building Inspector Refresher**

Toxic Substances Control Act, Title II (AHERA)

This is an annual certification. It must be renewed.

Environmental
Safety
Training
Professionals Ltd.

3140 Gold Camp Drive #130
Rancho Cordova, CA 95670
Phone 916 638-5550
Fax 916 638-5551
Division Approval #CA-006-06

By Neta Snider
Authorized Signature: Neta Snider

I.D. #: 7598
Certification #: 18775
Course Date: 05/06/16

Expiration Date: 05/06/17

# Brunelle & Clark Consulting, LLC

May 7, 2018 1800316

To: Humboldt County
Dept. of Public Works
Attn: Mr. Jake Johnson
1106 Second Street
Eureka, CA 95501

**Re: Limited Asbestos & Paint Sampling, Re-Painting Project, Ferndale Veteran's Building, 1100 Main Street, Ferndale, CA.**

On April 20, 2018, this firm conducted an exterior paint screening for lead, and a limited asbestos sampling survey of window putty, at the above referenced address. The building is scheduled for re-painting which will require paint stabilization and repair of damaged window putty. See attached Figures 1-3, Attachment A.

The asbestos survey was limited to the window putty materials on exterior windows and did not include any other materials on the interior or exterior of the building.

The asbestos survey was conducted to identify any materials that contain asbestos pursuant to the requirements of the California Health & Safety Code and for compliance with Cal/OSHA regulations (8 CCR 1529) for worker protection. This report will also provide compliance with the EPA National Emission Standards for Hazardous Air Pollutants (NESHAP) regulations concerning renovation activities (40 CFR, Part 61, Subpart M). As a "public" site this structure is subject to NESHAP regulation.

The paint screening included exterior siding and trim component only. Paint screening and was conducted using a portable X-ray fluorescence (XRF) paint analyzer and the collection of paint chip samples for the laboratory analyses of lead. During this survey, twenty-one building components were sampled for lead using a Heuresis Corporation, Pb200i XRF Lead Paint Analyzer. For compliance with Cal OSHA Lead in Construction Standard 8 CCR 1532.1, three representative paint chip samples were collected and submitted to an accredited laboratory for the analysis of lead in paint.

The person completing this survey and report is certified through the Division of Occupational Safety & Health (DOSH) as an Asbestos Building Inspector and a Certified Asbestos Consultant (CAC), and is certified by the California Department of Public Health (CDPH) as a Lead Inspector/Assessor/Supervisor.

The exterior of the building is finished with two types of painted wood siding; batt & board, and lap. The windows and doors are finished with painted wood trim. All windows in the building have window putty, with the exception of three upper windows that have wooden stops (see Figure 2).

**Asbestos Survey:**

A total of six (6) samples of window putty were collected for the analysis of asbestos content, as follows:

5 Window putty, gray
1 Window putty, gray & tan

6 samples total

The asbestos samples were submitted to an accredited laboratory for the initial analysis of asbestos content by Polarized Light Microscopy (PLM). A summary of the analytic data is included under Table 1, Attachment B. The sample Chain of Custody and Laboratory Report are also included in Attachment B. The sample locations are indicated on Figure 1, Attachment A.

The following definitions are referred to in this report.

- ***Asbestos Containing Construction Materials (ACCM)*** contain asbestos in amounts between 0.1% and 1.0%.
- ***Asbestos Containing Materials (ACM)*** *are materials that contain >1% asbestos.*
- ***Presumed Asbestos Containing Material (PACM)*** *is material presumed to be >1% asbestos.*
- ***Regulated Asbestos Containing materials (RACM)*** *refers to regulated ACM, a category of ACM that is subject to NESHAP regulation.*
- ***"Friable"*** *asbestos material is defined as: material containing >1% asbestos, that when dry, may be crumbled, pulverized, or reduced to powder by hand pressure.*

Asbestos was detected as present, at <1%, in one of the six samples of window putty. That sample, and all window putty in this structure, are herein presumed to be ACM (>1% asbestos), as listed below:

**ACM**

- **Exterior window putty, found on most windows throughout the structure.**

During this asbestos survey, the presence of Transite (asbestos-concrete) piping was noted on an exterior wall of the building. This is presumed to be ACM (PACM) without sampling/testing and is summarized below.

**PACM**

- **Transite (asbestos-concrete) piping, three pipes on north exterior wall.**

  **Note that while intact Transite piping can typically be re-painted however, scraping of any loose or flaking paint from the Transite might release airborne asbestos fibers. Any paint scraping or disturbance of the Transite pipes must be performed by persons specifically trained and qualified to conduct asbestos abatement work.**

**Complete abatement and replacement of the Transite piping is not required however, abatement is a recommended option.**

The locations of project ACM and PACM are shown on Figure 3, Attachment A. See Table 2, in Attachment B, for quantities, agency categorizations, abatement and disposal requirement for the project ACM.

**EPA NESHAP:** As a public building, this building is subject to the EPA NESHAP regulations concerning renovation and/or demolition work, as enforced by the North Coast Unified Air Quality Management District (NCUAQMD) located in Eureka, California. NESHAP requires an asbestos survey to identify the possible presence of any *regulated asbestos containing materials* (RACM), as defined under NESHAP, prior to any renovation and/or demolition work at "subject" sites. That requirement has been met with this report.

The ACM window putty identified herein is not defined as RACM. Therefore, a NESHAP notification for the *abatement* of RACM does not need be filed. The damaged ACM window putty can be abated by properly trained and certified asbestos abatement contractors and/or workers, using proper abatement methods, at any time.

**Cal/OSHA:** All employees are covered by OSHA regulations. The disturbance of ACM or ACCM is subject to Cal/OSHA worker (employee) protection regulations for asbestos related work. The Cal/OSHA regulations require that "any activities disturbing" ACM or ACCM materials must be done by properly trained and certified asbestos abatement contractors & workers, using proper abatement methods. It is therefore necessary to abate ACM and ACCM from buildings prior to the disturbance of such materials by renovation or demolition activities.

**City/County Building Department:** If you are required to obtain a permit from a local or county building department you will need to file this report with them.

**Project ACCM:** The regulatory requirements for the ACCM identified in this survey are discussed below.

**ACM Window Putty:** In preparation for re-painting, all damaged and loose ACM window putty should be properly abated. Where it is intact and undamaged, the existing window putty may remain in place, with new putty patching as needed. Any abatement or disturbance of the ACM window putty as identified in this report must be done by a licensed asbestos abatement contractor or persons otherwise trained, equipped, and qualified for asbestos abatement using Class II methods, with disposal as "non-friable" asbestos.

**ACM Transite Piping:** Any abatement or disturbance of the Transite panels as identified in this report must be done by a licensed asbestos abatement contractor or persons otherwise trained, equipped, and qualified for asbestos abatement using Class II methods, if done "intact," with disposal as "non-friable" asbestos, or using Class I measures if the material will become "friable," with disposal as "friable" asbestos waste.

This data and conclusion is only applicable to the sampled/surveyed spaces/materials and should not be used to assess materials elsewhere in or on the building. If suspect materials that were not

covered by this survey are encountered by the contractor during this project, the disturbance of such materials should cease until such materials are surveyed and/or sampled for asbestos. (Note: un-sampled materials must be presumed to contain asbestos until sampled and proven otherwise).

**Paint Sampling/Analyses:**

Screening for lead in paint was conducted using a portable Heuresis Corporation, Pb200i XRF (X-ray fluorescence) Lead Paint Analyzer. The XRF was used to measure lead content in paint coatings of twenty-one (21) exterior siding components. A description of sampled components, sample locations, and XRF data is contained in Table 4, Attachment B. The XRF sample locations are shown on Figure 2, Attachment A. The sampled components are summarized below:

**XRF Sampled Components**

| | |
|---|---|
| 5 | Wall, wood lap |
| 3 | Wall, wood batt & board |
| 2 | Door |
| 1 | Door trim |
| 4 | Window frame |
| 2 | Window sill |
| 1 | Window jamb |
| 1 | Window trim |
| 1 | Railing |
| 1 | Fascia |

XRF analysis results of ≥1.0 mg/cm$^2$ are defined as "Lead Based Paint" (LBP). XRF results of ≥ 0.1 mg/cm$^2$ & <1.0 mg/cm$^2$ are considered "Lead Containing Surface Coating" (LCSC). XRF results of <0.1 mg/cm$^2$ are considered negative for detectable lead.

By XRF analyses, ten (10) sampled components contain LBP, one (1) sampled component has LCSC, and ten (10) were found to be "negative" for lead.

During this survey, three representative paint chip samples were collected from exterior components and were submitted to an accredited laboratory for the analyses of lead content. All paint chip sample locations are shown on Figure 2, Attachment A. The results are summarized in Table 3, Attachment B. The Laboratory Report is also contained in Attachment B. The sampled components are summarized below:

**Paint Chip Sampled Components**

| | |
|---|---|
| 1 | Siding, batt & board |
| 1 | Siding, wood lap |
| 1 | Fascia |

All paint chip analyses was performed by a laboratory that complies with and is certified under the Environmental Laboratory Accreditation Program (ELAP) of the California Department of

Health Services. The paint chip samples were analyzed for lead in paint by EPA SW-846 method 3050B/7000B.

Analytic results of <100 ppm (parts per million) lead are deemed to be "undetectable" for lead, or "lead free." Samples that range between 100 ppm and 4,999 ppm lead are defined as "Lead Containing Surface Coatings" (LCSC). Paints with a lead content at or above 5,000 ppm are defined as Lead Based Paint (LBP).

Two of the paint chip samples tested as LCSC, with lead contents ranging from 300 ppm up to 1,600 ppm. One sample tested as LBP, with 51, 000 ppm lead.

**Cal/OSHA Compliance Measures for Lead Related Construction Work:** The disturbance of any LBP and/or LCSC by Cal/OSHA defined "trigger tasks" requires compliance with the Cal/OSHA Lead Construction Standard (Title 8 CCR 1532.1) for worker protection. The Cal/OSHA "trigger tasks" include various actions that would disturb LBP or LCSC paint including, but not limited to, manual demolition, scraping, sanding, cutting, sawing, and torch cutting. Some key compliance measures are summarized below (see Title 8 CCR 1532.1 for all Cal/OSHA requirements).

Any contractor performing any of the Cal/OSHA trigger tasks must comply with the provisions of the Cal/OSHA Lead Construction Standard (Title 8 CCR 1532.1). More specifically, an Exposure Assessment must be performed at the start of any trigger task activities. This assessment involves the collection of personal air samples to be submitted for the laboratory analyses of lead content to determine if the Action Level (AL) or the Permissible Exposure Limit (PEL) for airborne lead will be met or exceeded during the work. Pending that assessment, the contractor must provide interim protective measures, including but not limited to; respirators, protective clothing, and training.

If initial assessment demonstrates the possibility that the AL will be met or exceeded during the work, continued worker exposure monitoring must be conducted. If initial assessment demonstrates the possibility that the PEL will be exceeded during the work Cal/OSHA requirements include but are not limited to: establishment of regulated areas, continued use of respirators, continued personal air monitoring, protective clothing, hygiene facilities, medical surveillance, and training certified by the California Department of Public Health (CDPH).

In addition, the disturbance of lead containing materials in excess of 100 square feet will require a contractor to file a "Lead-Work Pre-Job Notification" with Cal/OSHA at least 24 hours prior to performing any trigger tasks.

**Title 17 Compliance Measures For Lead Related Construction Work & Lead Abatement:** In California, lead activities are regulated by the California Code of Regulations Title 17, CCR 35000-36100, which include, but are not limited to, requirements for lead related construction work, lead abatement, worker training, and worker certification. Title 17 regulatory requirements for worker certification, and work practices are enforced by the California Department of Public Health (CDPH).

Title 17 defines "Lead Activities" as "abatement, lead hazard evaluation, lead-related construction work, or any activity which disturbs lead-based paint, presumed lead-based paint, or creates a lead hazard (17 CCR 35032). Title 17 defines "Lead Related Construction Work," as "any construction, alteration, painting, demolition, salvage, renovation, repair, or maintenance of any residential or public building, including preparation and cleanup, that, by using or disturbing lead-containing material or soil, may result in significant exposure of adults or children to lead (17 CCR 35040). Title 17 defines "Abatement" as "any set of measures designed to reduce or eliminate lead hazards or lead-based paint for public and residential buildings, but does not include containment or cleaning" (17 CCR 35001). See 17 CCR 35000-36100 for all Title 17 regulatory requirements for lead activities.

Title 17 fully incorporates work practices defined by the "Guidelines for the Evaluation and Control of Lead-Based Paint Hazards in Housing," U.S. Department of Housing and Urban Development (HUD), June 1995.

Any contractor performing any lead activities must use "Lead-Safe Work Practices" (17 CCR 36050), which include: use of containment (17 CCR 35016), no visible dust or debris remaining at completion of work, and demonstrate compliance to the CDPH if requested.

If lead abatement is conducted during this project, Title 17 requirements for lead abatement must be followed. Title 17 abatement requirements include, but are not limited to: a certified lead supervisor and certified lead workers, using work practices defined by the HUD Guidelines, use of containment, an abatement plan prepared by a properly certified individual, notification to the CDPH using the CDPH Form 8551, and posting of the CDPH Form 8551. See 17 CCR 36100 for all Title 17 abatement requirements, and the "Guidelines for the Evaluation and Control of Lead-Based Paint Hazards in Housing," U.S. Department of Housing and Urban Development, June 1995 for incorporated HUD work practice requirements.

**Lead Containing Waste**: Lead Containing Waste: All paint debris/waste must be effectively collected (using impermeable drop cloths), containerized, tested for lead waste characterization, and properly transported/disposed at an accepting waste disposal site in accordance with State and Federal laws.

**Disclaimer:**

The sole purpose of this investigation and of this report is to assess the site with respect to asbestos and lead as requested by the client. Brunelle & Clark Consulting, LLC is not responsible for locating asbestos in inaccessible areas such as behind walls, above hard ceilings, beneath flooring or underground. The passage of time, manifestation of latent conditions, or occurrence of future events may require further exploration at the site, the reevaluation of the data and findings, observations, conclusions, and recommendations expressed in the report.

Should you have any questions, please contact this office.

Sincerely

Zindar Brunelle
Certified Asbestos Consultant, #14-5295
Certified Lead Inspector/Assessor, #25819

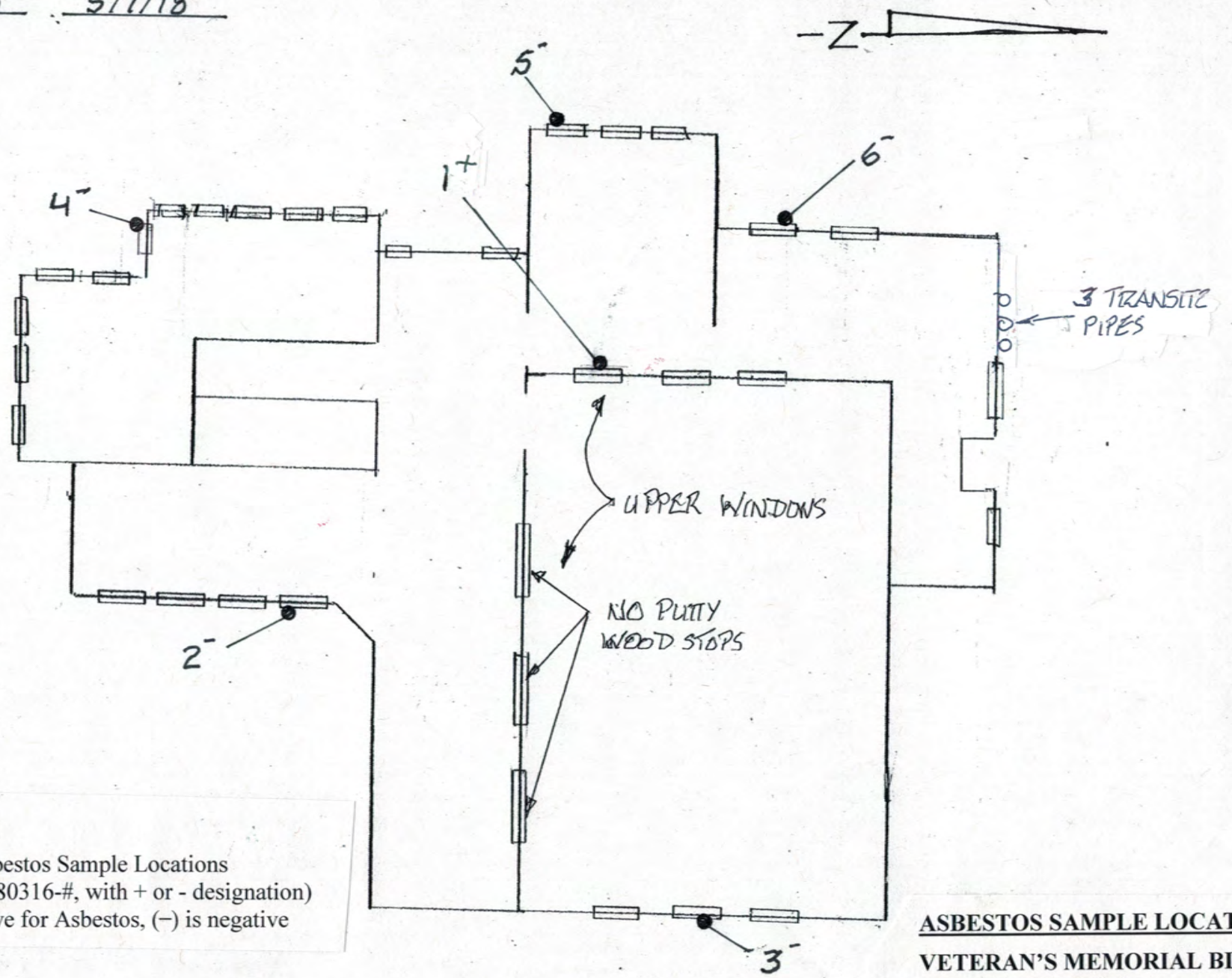
Attachments: A: Figures 1-3
B: Tables 1-4, Laboratory Reports
C: Consultant Certifications.

Ph: (707) 822-4058 Cell: (707) 672-5345
P.O. Box 1138, Arcata, CA 95518
zbconsult@outlook.com

# ATTACHMENT A
## Figures

BRUNELLE & CLARK CONSULTING, LLC
P. O. Box 1138
Arcata, California 95518

180316 5/7/18




**LEGEND**

●—# Asbestos Sample Locations
(Prefixed 180316-#, with + or - designation)
(+) is positive for Asbestos, (−) is negative

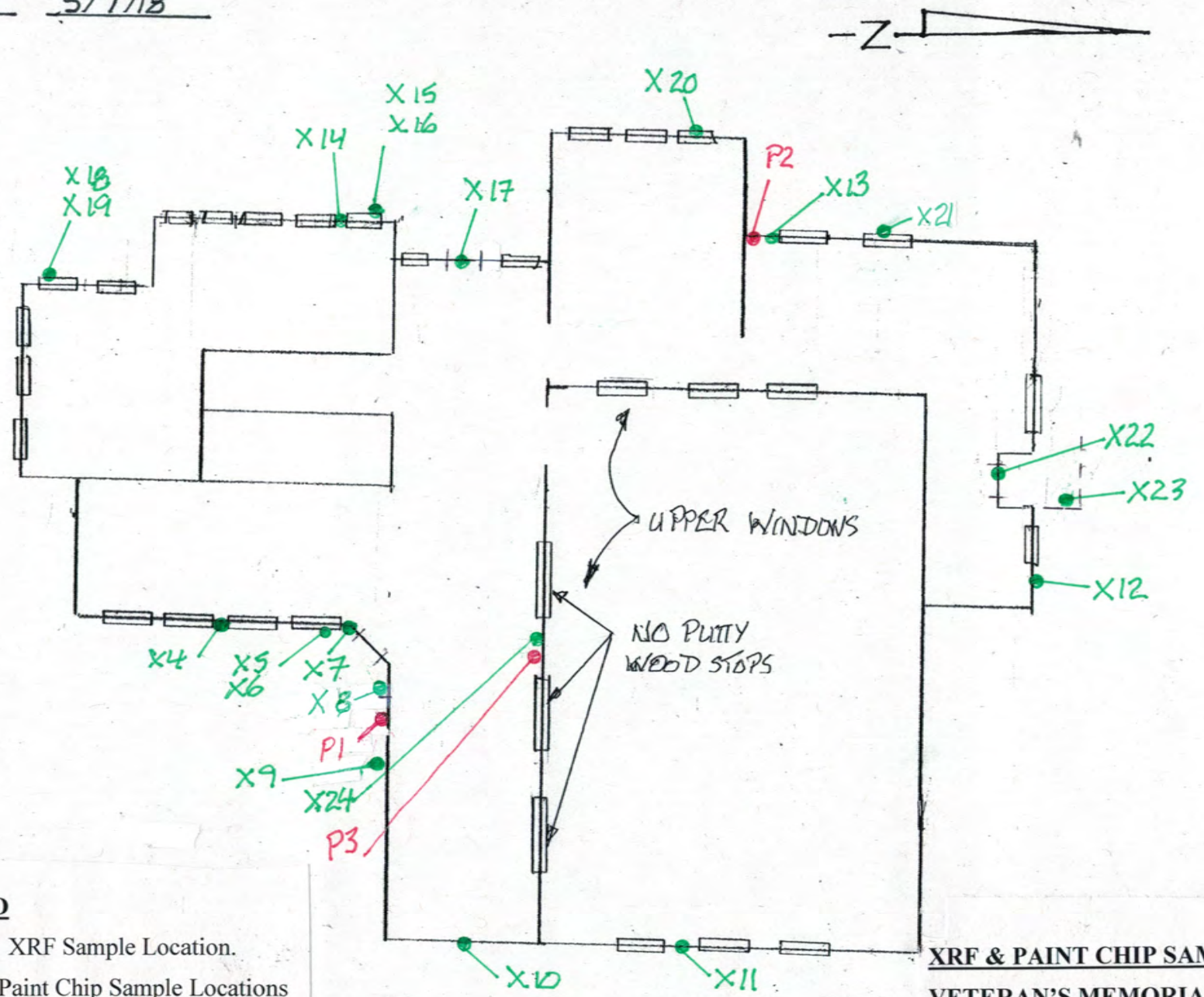
**ASBESTOS SAMPLE LOCATIONS**

**VETERAN'S MEMORIAL BLDG.**
**1100 MAIN STREET**
**FERNDALE, CA**

**FIG. 1**

BRUNELLE & CLARK CONSULTING, LLC
P. O. Box 1138
Arcata, California 95518

180316 5/7/18




**LEGEND**

X# XRF Sample Location.

P# Paint Chip Sample Locations (Prefixed 180316-P#)

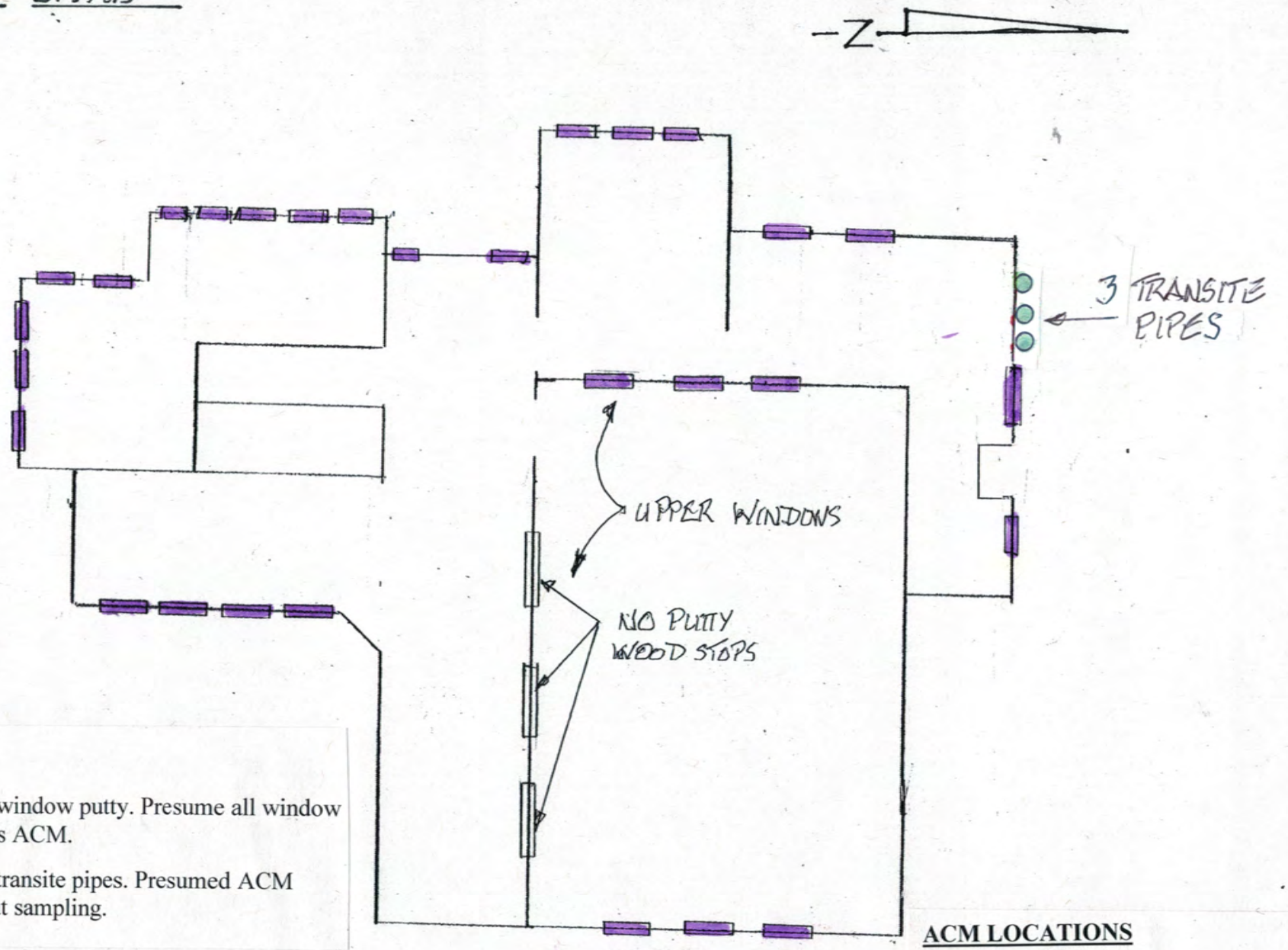
**XRF & PAINT CHIP SAMPLE LOCATIONS**

**VETERAN'S MEMORIAL BLDG.**
**1100 MAIN STREET**
**FERNDALE, CA**

**FIG. 2**

BRUNELLE & CLARK CONSULTING, LLC
P. O. Box 1138
Arcata, California 95518

1800316 5/7/18




**LEGEND**

- ACM window putty. Presume all window putty is ACM.
- ACM transite pipes. Presumed ACM without sampling.

**ACM LOCATIONS**

**VETERAN'S MEMORIAL BLDG.**
**1100 MAIN STREET**
**FERNDALE, CA**

**FIG. 3**

# ATTACHMENT B

## Tables & Laboratory Reports

# TABLE 1
# SUMMARY OF ANALYTIC DATA

**Ferndale Veteran's Memorial Building**
**1100 Main Street, Ferndale, CA**

**BOLD TYPE used to highlight asbestos.** Note: Some samples had multiple layers, as analyzed

| Sample Number | Sample Description (each layer) | Location | Asbestos % and Type | Friable vs. Non-Friable | Comments |
|---|---|---|---|---|---|
| **18316-1** | **Window Putty, gray** | **Exterior, upper west window** | **<1% CH** | **Non-Friable** | **PACM** |
| 18316-2 | Window Putty, gray | Exterior, east window | None Detected | Non-Friable | |
| 18316-3 | Window Putty, gray | Exterior, east window, tall | None Detected | Non-Friable | |
| 18316-4 | Window Putty, tan | Exterior, S-W corner window | None Detected | Non-Friable | |
| 18316-5 | Window Putty, gray | Exterior, west window | None Detected | Non-Friable | |
| 18316-6 | Window Putty, gray | Exterior, west window | None Detected | Non-Friable | |

CH = Chrysotile asbestos

<1% CH* = Trace amount, less than 1% asbestos, as visually estimated by initial PLM. Requires verification by more accurate point count analyses.

ACM = Asbestos containing material.

PACM= Presumed ACM. See below.

NA/PS = Not analyzed, Positive stop: Stopped analysis after 1st positive test for identical material (see prev. sample).

# TABLE 2
# ASBESTOS IDENTIFICATIONS & CLASSIFICATIONS

**Ferndale Veteran's Memorial Building**
**1100 Main Street, Ferndale, CA**

| MATERIAL | LOCATION | QUANTITY | ASBESTOS CONTENT & TYPE | OSHA CLASSIFICATION | NESHAP CATEGORY | WASTE DISPOSAL CLASSIFICATION |
|---|---|---|---|---|---|---|
| Window Putty, gray | All windows | Quantity TBD for repair and re-painting | <1% CH | PACM, Class II abatement required where disturbed | Category II Non-friable Not RACM* | Non-friable asbestos waste |
| Transite Piping (10"x2" oval) | 3 pipes, along North exterior wall<br>Note: Transite pipes run into the building | Approx. 20 LF exposed on exterior of building, Quantity to be abated TBD | Presumed ACM | PACM, Class II abatement required where disturbed | Category II Non-friable Not RACM* | Non-friable asbestos waste |

SF = Square Feet LF = Lineal Feet CF = Cubic Feet
CH = Chrysotile asbestos
ACM = Asbestos Containing Materials, containing >1% asbestos
ACCM = Asbestos Containing Construction Materials, asbestos content of 0.1% to 1.0%
PACM= Presumed ACM
RACM = Regulated ACM under NESHAP regulations
RACM* = Not considered as RACM if asbestos content is 1% or less, or if not made friable by disturbance
TBD = Abatement quantity to be determined for actual remediation work

# TABLE 3
# PAINT ANALYSES

**Ferndale Veteran's Memorial Building**
**1100 Main Street, Ferndale, CA**

| SAMPLE ID | LOCATION | MATERIAL | COLOR* | SUBSTRATE | LEAD CONTENT by weight % | LEAD CONTENT parts per million (ppm) or mg/kg |
|---|---|---|---|---|---|---|
| 18316-P1 | Exterior, south wall, bat & board siding | Paint | Tan | Wood | 0.030 | 300 |
| 18316-P2 | Exterior west wall, lap siding | Paint | Tan | Wood | 0.16 | 1,600 |
| 18316-P3 | Exterior, south side, upper fascia | Paint | Dark tan | wood | 5.1 | 51,000 |

Color* = Colors noted by layers where possible, in descending order separated by slashes.

Analysis by Lead in Paint USEPA Method 3050B/7000B

Parts per million (ppm) = milligrams per kilogram (mg/kg)

Lead content at 5,000 ppm (or 0.5% by wt.) or greater is defined as "Lead Based Paint", materials with lesser amounts of detectable lead over 600 ppm are described as "Lead Containing Surface Coatings" (LCSC).

**TABLE 4**
**XRF PAINT SAMPLING DATA**
**Ferndale Veteran's Memorial Building**
**1100 Main Street  Ferndale, CA**

**XRF Lead Paint Analyzer:**
Company  Heuresis Corp.
Model  Pb200i
Type  XRF Lead Paint Analyzer
Serial #  1566

**Calibration:**
Standard Reference Material: 1.04 mg/cm2  +/-0.064
Response Verification Check Range: 0.8 to 1.2 mg/cm2
Note: for Performance Characteristic Sheet (PCS) compliance, the average of three calibration readings must fall within the "Response Verification Check Range".

| Reading # | Sample Location | Component Description | Lead Concentration (mg/cm2) | Paint Classification | Surface Coating Material | Color | Substrate |
|---|---|---|---|---|---|---|---|
| 1 | Calibration | Standard Reference Material | 1 | - | - | - | - |
| 2 | Calibration | Standard Reference Material | 0.9 | - | - | - | - |
| 3 | Calibration | Standard Reference Material | 1 | - | - | - | - |
| 4 | Exterior, east wall | lap siding | 0 | NEG | paint | tan | wood |
| 5 | Exterior, east wall | window frame | -0.1 | NEG | paint | red | wood |
| 6 | Exterior, east wall | window sill | 3 | LBP | paint | dark tan | wood |
| 7 | Exterior, east wall | lap siding | -0.1 | NEG | paint | tan | wood |
| 8 | Exterior, south wall | door trim | -0.1 | NEG | paint | dark tan | wood |
| 9 | Exterior, south wall | bat & board siding | -0.1 | NEG | paint | tan | wood |

**TABLE 4**
**XRF PAINT SAMPLING DATA**
**Ferndale Veteran's Memorial Building**
**1100 Main Street Ferndale, CA**

| Reading # | Sample Location | Component Description | Lead Concentration (mg/cm2) | Paint Classification | Surface Coating Material | Color | Substrate |
|---|---|---|---|---|---|---|---|
| 10 | Exterior, east wall | bat & board siding | -0.2 | NEG | paint | tan | wood |
| 11 | Exterior, east wall | bat & board siding | -0.2 | NEG | paint | tan | wood |
| 12 | Exterior, north wall | lap siding | -0.2 | NEG | paint | tan | wood |
| 13 | Exterior, west wall | lap siding | -0.1 | NEG | paint | tan | wood |
| 14 | Exterior, west wall | lap siding | -0.2 | NEG | paint | tan | wood |
| 15 | Exterior, west wall | window frame | 3.6 | LBP | paint | red | wood |
| 16 | Exterior, west wall | window trim | 3.1 | LBP | paint | dark tan | wood |
| 17 | Exterior, west wall | door | 5 | LBP | paint | red | wood |
| 18 | Exterior, west wall | window frame | 1.7 | LBP | paint | red | wood |
| 19 | Exterior, west wall | winow jamb | 2.8 | LBP | paint | dark tan | wood |
| 20 | Exterior, west wall | window frame | 4.2 | LBP | paint | red | wood |
| 21 | Exterior, west wall | window sill | 4.5 | LBP | paint | dark tan | wood |
| 22 | Exterior, north wall | door | 4.9 | LBP | paint | red | wood |
| 23 | Exterior, north wall | railing | 0.5 | LCSC | paint | dark tan | metal |
| 24 | Exterior, south wall | fascia | 4 | LBP | paint | dark tan | wood |
| 25 | Calibration | Standard Reference Material | 0.9 | - | - | - | - |

**TABLE 4**
**XRF PAINT SAMPLING DATA**
**Ferndale Veteran's Memorial Building**
**1100 Main Street  Ferndale, CA**

| Reading # | Sample Location | Component Description | Lead Concentration (mg/cm2) | Paint Classification | Surface Coating Material | Color | Substrate |
|---|---|---|---|---|---|---|---|
| 26 | Calibration | Standard Reference Material | 0.9 | - | - | - | - |
| 27 | Calibration | Standard Reference Material | 0.9 | - | - | - | - |

NEG = Negative (<0.1 mg/cm2)
LCSC = Lead Containing Surface Coating (≥ 0.1 mg/cm2 & <1.0 mg/cm2)
LBP = Lead Based Paint (≥ 1.0 mg/cm2)
Note: Zero or negative XRF readings can contain trace ammounts of lead.
Paint chip sample analysis is necessary for negatve lead determinations.

**AmeriSci Los Angeles**
24416 S. Main Street, Ste 308
Carson, California 90745
TEL: (310) 834-4868 • FAX: (310) 834-4772

# PLM Bulk Asbestos Report

Brunelle & Clark Consulting, LLC
Attn: Zindar Brunelle
PO Box 1138

Arcata, CA 95518

**Date Received** 04/23/18
**Date Examined** 04/23/18

**AmeriSci Job #** 918041559
**P.O. #**
**Page** 1 **of** 2

**RE:** 1800316; Ferndale Veterans Bldg.; 1100 Main St. Ferndale CA

| Client No. / HGA | Lab No. | Asbestos Present | Total % Asbestos |
|---|---|---|---|
| 18316-1<br>1 | 918041559-01<br>**Location:** Window Putty, Gray / West Upper Window | *Yes* | Trace (<1 %)<br>(by CVES)<br>by John A. Lopez<br>on 04/23/18 |
| **Analyst Description:** Beige/White, Homogeneous, Non-Fibrous, Window Putty<br>**Asbestos Types:** Chrysotile <1. %<br>**Other Material:** Non-fibrous 100 % | | | |
| 18316-2<br>1 | 918041559-02<br>**Location:** Window Putty, Gray / SE Window | *No* | NAD<br>(by CVES)<br>by John A. Lopez<br>on 04/23/18 |
| **Analyst Description:** White/Grey, Homogeneous, Non-Fibrous, Window Putty<br>**Asbestos Types:**<br>**Other Material:** Non-fibrous 100 % | | | |
| 18316-3<br>1 | 918041559-03<br>**Location:** Window Putty, Gray / NE Window | *No* | NAD<br>(by CVES)<br>by John A. Lopez<br>on 04/23/18 |
| **Analyst Description:** Off-White/Red, Homogeneous, Non-Fibrous, Window Putty<br>**Asbestos Types:**<br>**Other Material:** Non-fibrous 100 % | | | |
| 18316-4<br>1 | 918041559-04<br>**Location:** Window Putty, Gray / SW Window | *No* | NAD<br>(by CVES)<br>by John A. Lopez<br>on 04/23/18 |
| **Analyst Description:** Off-White/Red, Homogeneous, Non-Fibrous, Window Putty<br>**Asbestos Types:**<br>**Other Material:** Non-fibrous 100 % | | | |
| 18316-5<br>1 | 918041559-05<br>**Location:** Window Putty, Gray / West Window | *No* | NAD<br>(by CVES)<br>by John A. Lopez<br>on 04/23/18 |
| **Analyst Description:** White/Red, Homogeneous, Non-Fibrous, Window Putty<br>**Asbestos Types:**<br>**Other Material:** Non-fibrous 100 % | | | |

See Reporting notes on last page

# PLM Bulk Asbestos Report

1800316; Ferndale Veterans Bldg.; 1100 Main St. Ferndale CA

| Client No. / HGA | Lab No. | Asbestos Present | Total % Asbestos |
|---|---|---|---|
| 18316-6 | 918041559-06 | ***No*** | NAD<br>(by CVES)<br>by John A. Lopez<br>on 04/23/18 |

**Location:** Window Putty, Gray -Tan / NW Window

**Analyst Description:** Off-White/Red, Homogeneous, Non-Fibrous, Window Putty
**Asbestos Types:**
**Other Material:** Non-fibrous 100 %

**Reporting Notes:**

Analyzed By: John A. Lopez _____; Date Analyzed: 4/23/2018 4-23-18

*NAD = no asbestos detected; Detection Limit <1%; Reporting Limits: CVES = 1%, 400 Pt Ct = 0.25%, 1000 Pt Ct = 0.1%; NA = not analyzed; NA/PS = not analyzed / positive stop; NVA = No Visible Asbestos; PLM (polarized light microscopy) Bulk Asbestos Analysis by EPA 600/R-93/116, including requirements for EPA 600/M4-82-020 per 40 CFR 763 (NVLAP Lab #200346-0, CA ELAP lab #2322); Note: PLM is not consistently reliable in detecting asbestos in floor coverings and similar NOB materials. TEM is currently the only method that can be used to determine if this material can be considered or treated as non-asbestos-containing in New York State (also see EPA Advisory for floor tile, FR 59, 146, 38970, 8/1/94). NIST Accreditation requirements mandate that this report must not be reproduced except in full with the approval of the laboratory. This PLM report relates ONLY to the items tested.

Reviewed By: _____

| Analysis: X Standard PLM<br>___ 400 Point Count<br>___ 1,000 Point Count<br>Turnaround Time:<br>Rush/1-day/2-days/3-days/5-days | BRUNELLE & CLARK CONSULTING, LLC<br>P.O. Box 1138<br>Arcata, CA 95518<br>Ph: (707) 822-4058 Cell #: (707) 672-5345<br>zbconsult@outlook.com | Date: 4/20/18<br>Site: Ferndale Veterans Bldg.<br>1100 Main St., Ferndale, CA<br>Proj.# 1800316 |
|---|---|---|

# BULK ASBESTOS SAMPLING 9180415S9

| Sample No. | Sample Description | Hom, Area | Location | Mat'l Type | Mat'l Cond. | Friable |
|---|---|---|---|---|---|---|
| 18316-1 | Window Putty, gray | 1 | West upper window | MM | DG | NF |
| -2 | Window Putty, gray | 1 | S-E window | | | |
| -3 | | 1 | N-E window | | | |
| -4 | | 1 | S-W window | | | |
| -5 | | 1 | West window | | | |
| -6 | Window Putty, gray-tan | 2 | N-W window | | ND | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |

**Sample Abbreviations**
VFT/M = Vinyl Floor Tile & Mastic
SF = Sheet Flooring
JC/GB = Joint Compound/Gypsum Board
CT = Ceiling Tile (glued or nailed)
CP = Ceiling Panel (t-grid or drop ceil.)

**Material Type**
Thermal System Insulation = TSI
Misc. Material = MM
Surfacing Material = SM

**Material Condition**
Not Damaged = ND
Damaged = DG
Significantly Damaged – SD
Potentially Significantly Damaged = PSD

* = Stop analysis for any layer at first positive, if >1%, where indicated.

| Sampled by: Zindar Brunelle | Received by: |
|---|---|
| Relinquished by: Zindar Brunelle 4/21/18 | Date/time Date/Time: 4/23/18 9:10 |

**AmeriSci Los Angeles**
24416 S. Main Street, Ste 308
Carson, California 90745
TEL: (310) 834-4868 • FAX: (310) 834-4772

**AmeriSci Job #:** 418041276

**Date Received:** 04/23/18
**Date Analyzed:** 04/25/18

## Lead Analysis Results

Paint

EPA Method 3050B/7000B

**Brunelle & Clark Consulting, LLC**

Arcata, CA

Job Site: 1800316; Ferndale Veterans Building; 1100 Main St. Ferndale CA

| AmeriSci # 418041276 | Client Number | Sample Location | % Lead (w/w) | Lead Content (mg/kg = ppm) |
|---|---|---|---|---|
| 01 | 18316-P1 | Siding / Tan | 0.030 | 300 |
| 02 | 18316-P2 | Siding / Tan | 0.16 | 1,600 |
| 03 | 18316-P3 | Fascia / Dk. Tan | 5.1 | 51,000 |

AmeriSci Reporting Limit is 0.01%, or 100mg/kg prior to any dilutions due to high analyte concentrations or matrix interferences. AmeriSci does not correct sample results by the blank value. All analytical batch data met quality control criteria unless otherwise noted. CA ELAP No. 2322.

**Reviewed by:** _____

**Analyzed by:** _____
Taylor Ngan

**ELAP No:** CA 2322

AMERI SCI

# CHAIN OF CUSTODY RECORD


AMERISCI LOS ANGELES
24416 South Main St., Suite 308
888.724.5226 Toll Free
310.834.4868 Phone~310.834.4772 Fax
www.amerisci.com


AMERISCI JOB NO: 418041270

PAGE 1 OF 1

DUE DATE:

TEMP UPON RECEIPT:

☐ 1 DAY ☒ 2 DAY ☐ 3 DAY ☐ 5 DAY ☐ 7 DAY ☐ 10 DAY

DATA PACKAGE:

P.O.#

COMPANY: BRUNELLE & CLARK CONSULTING, LLC

ADDRESS: P.O. Box 1138, Arcata, CA 95518

PHONE: (707) 822-4058 | FAX 1: (707) 630-5033 | CELL: (707) 672-5345

CLIENT CONTACT: Zindar Brunelle | EMAIL: zbconsult@outlook.com

PROJECT NAME: 1100 Main St., Ferndale, CA | PROJECT NUMBER: 1800316 | PROJECT STATE: CA

MATRIX: A-WATER S-SOIL/SOLIDS SL-SLUDGE OIL-OIL CH-CHIPS WI-WIPES C-CASSETTES W-WASTE O-OTHER

CONTAINER: P-PLASTIC G-GLASS V-VOA

| LAB ID | CLIENT SAMPLE IDENTIFICATION | MATRIX | CONTAINER SIZE | CONTAINER TYPE | CONTAINER # | SAMPLING INFORMATION DATE | SAMPLING INFORMATION TIME | SAMPLING INFORMATION TECH | GRAB (G) OR COMPOSITE (C) | PRESERVATIVES | SAMPLE pH AT LOGIN | Lead in Paint | Notes: |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 18316-P1 | Siding | CH | S | P | | 4/20/18 | NA | Zindar Brunelle | | | | X | Tan |
| 18316-P2 | ↓ | ↓ | ↓ | ↓ | | ↓ | ↓ | ↓ | | | | X | Tan |
| 18316-P3 | Fascia | ↓ | ↓ | ↓ | | ↓ | ↓ | ↓ | | | | X | DK. Tan |

| | | | |
|---|---|---|---|
| SAMPLED BY: (PRINT) Zindar Brunelle | DATE: 4/20/18 | RECEIVED BY: (PRINT) | DATE: 4/23/18 |
| (SIGN) Zindar Brunelle | TIME: NA | (SIGN) | TIME: 0910 |
| RELINQUISHED BY: (PRINT) Zindar Brunelle | DATE: 4/21/18 | RECEIVED BY: (PRINT) | DATE: |
| (SIGN) Zindar Brunelle | TIME: NA | (SIGN) | TIME: |
| RELINQUISHED BY: (PRINT) | DATE: | RECEIVED FOR LABORATORY BY: | DATE: |
| (SIGN) | TIME: | (SIGN) | TIME: |

# ATTACHMENT C
## Consultant Certifications

State of California
Division of Occupational Safety and Health
**Certified Asbestos Consultant**

**Zindar Brunelle**
Name

Certification No. **14-5295**

Expires on **10/15/18**

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.

State of California Department of Public Health

Lead-Related Construction Certificate

| Certificate Type | Expiration Date |
|---|---|
| Inspector/Assessor | 09/02/2018 |
| Supervisor | 09/02/2018 |

Zindar Brunelle ID #: 25819

# Certificate of Training

This Certifies that

Zindar Brunelle

has successfully completed 4 hours training entitled

**Asbestos Building Inspector Refresher**

Toxic Substances Control Act, Title II (AHERA)

This is an annual certification. It must be renewed.

**E**nvironmental
**S**afety
**T**raining
**P**rofessionals Ltd.

3140 Gold Camp Drive #130
Rancho Cordova, CA 95670
Phone 916 638-5550
Fax 916 638-5551
Division Approval #CA-006-06

I.D. #: 7598
Certification #: 23128
Course Date: 03/08/18

Expiration Date: 03/08/19

By _____
Authorized Signature: Brandy Snider

# Brunelle & Clark Consulting, LLC

February 20, 2018 1800307

To: Humboldt County
Dept. of Public Works
Attn: Mr. Jake Johnson
1106 Second Street
Eureka, CA 95501

**Re: Limited Asbestos Survey & Representative Paint Sampling For Enclosed Patio Door Replacement, Ferndale Veterans Building, 1100 Main Street, Ferndale, CA.**

Dear Mr. Johnson:

On February 2, 2018, this firm conducted a limited asbestos sampling survey of building materials to be disturbed during the replacement of the door between the Covered Exterior Patio and the Assembly Hall, at the address specified above. This survey also includes representative paint sampling for lead. This survey does not include any other materials in any other areas on the interior or exterior of the building. See attached Figure 1.

This asbestos survey was conducted to identify any asbestos containing materials pursuant to the requirements of the California Health & Safety Code and for compliance with Cal/OSHA regulations (8 CCR 1529) for worker protection. This report will also provide compliance with the EPA National Emission Standards for Hazardous Air Pollutants (NESHAP) regulations concerning renovation activities (40 CFR, Part 61, Subpart M). As a public building, this structure is subject to NESHAP regulation.

To provide data for compliance with the Cal/OSHA Lead in Construction Standard Title 8, CCR Section 1532.1, and for compliance with California Code of Regulations Title 17, CCR 35000-36100, representative paint sampling was conducted using the collection of paint chip samples for laboratory analysis.

The person completing this survey and report is certified through the Division of Occupational Safety & Health (DOSH) as an Asbestos Building Inspector and a Certified Asbestos Consultant (CAC), and is certified by the California Department of Public Health (CDPH) as a Lead Inspector/Assessor.

The surveyed area includes the Exterior Covered Patio/Assembly Hall door, interior and exterior wall materials immediately around the door frame, and the concrete sab to the exterior of the door.

**Asbestos Survey:**

A total of four (4) samples were collected, as follows:

| | |
|---|---|
| 2 | Gypsum board |
| 2 | Concrete |

Total= 4 samples

All samples were submitted to an accredited laboratory for the analysis of asbestos content by Polarized Light Microscopy (PLM). The sample Chain of Custody and Laboratory Report is attached. The sample locations are indicated on attached Figure 1.

**All surveyed materials were found to be non-detect for asbestos however, asbestos containing plaster is present on the upper walls in the Assembly Hall room. The plaster was sampled and identified in the report titled "Asbestos Sampling For The Boiler, Furnaces & Ducting Removal Project And The Assembly Room Ceiling, Ferndale Veteran's Memorial Building, 1100 Main Street, Ferndale, CA," dated August 18, 2016.**

**The above-mentioned plaster was found to contain <1% asbestos by 400 Point Count analyses and is defined as ACCM. While the ACCM designation excludes this material from regulation under NESHAP, Cal/OSHA requires Class II methods for abatement/disturbance of the ACCM plaster materials by a licensed asbestos abatement contractor. *If disturbed, it is recommended herein to augment the standard Class II abatement with negative air containment of the abatement area.***

This data and conclusion is only applicable to the sampled/surveyed spaces/materials and should not be used to assess materials elsewhere in or on the building. If suspect materials that were not covered by this survey are encountered by the contractor during this project, the disturbance of such materials should cease until such materials are surveyed and/or sampled for asbestos. (Note: un-sampled materials must be presumed to contain asbestos until sampled and proven otherwise).

As a commercial and/or public building, this building is subject to the EPA NESHAP regulations concerning renovation and/or demolition work, as enforced by the North Coast Unified Air Quality Management District (NCUAQMD) located in Eureka, California. NESHAP requires an asbestos survey to identify the possible presence of any *regulated asbestos containing materials* (RACM), as defined under NESHAP, prior to any renovation and/or demolition work at "subject" sites. That requirement has been met with this report.

Since no Regulated Asbestos Containing Material (RACM) was found in project materials, a NESHAP Notification for abatement will not be required however; if the proposed renovations or repairs will disturb any "*load bearing*" members the work is considered "demolition" work. A NESHAP Notification is <u>always</u> required prior to any "demolition" work. If the work does involve removal of any "load bearing member," a NESHAP Notification will need to be filed with the NCUAQMD, along with a copy of this report and a $262 filing fee, at least ten working days prior to any "demolition" work.

This office cannot make determinations concerning the possible "load bearing" members; that determination should be made by the project architect or other project contractors. Contact the NCUAQMD (443-3093) if any questions arise.

All employees are covered by OSHA regulations. The disturbance of any materials containing asbestos is subject to Cal/OSHA worker (employee) protection regulations for asbestos related work (8 CCR 1529). The Cal/OSHA regulations require that "any activities disturbing" materials containing "any amount of asbestos" must be done by properly trained and certified asbestos abatement contractors & workers, using proper abatement methods. It is therefore necessary to

abate asbestos containing materials from buildings prior to the disturbance of such materials by renovation or demolition activities.

If you are required to obtain a permit from a local or County building department you will need to file this report with them.

**Paint Sampling/Analyses:**

A total of five paint/surfacing samples were collected from representative building components, as listed below:

- Door jamb (x1)
- Door trim (x2)
- Door (x1)
- Siding (x1)

All paint analyses was performed by a laboratory that complies with and is certified under the Environmental Laboratory Accreditation Program (ELAP) of the California Department of Health Services. The sample Chain of Custody and Laboratory Report is attached. The sample locations are indicated on attached Figure 1.

Analytic results of <100 ppm are deemed to be "undetectable" or lead, or "lead free". Samples that range between 100 ppm and 4,999 ppm are defined as "Lead Containing Surface Coatings" (LCSC). Paints with a lead content at or above 5,000 ppm are defined as Lead Based Paint (LBP).

**Two of the five paint samples were found to be LBP, with lead content of 51,000 ppm and 32,000 ppm. Three of the samples are LCSC, with a lead content ranging from 170 ppm to 3,500 ppm.**

The disturbance of any LBP and/or LCSC by Cal/OSHA defined "trigger tasks" requires compliance with the Cal/OSHA Lead Construction Standard (Title 8 CCR 1532.1) for worker protection. The Cal/OSHA "trigger tasks" include various actions that would disturb LBP/LCSC paint including, but not limited to, manual demolition, scraping, sanding, cutting, sawing, and torch cutting. Some key compliance measures are summarized below (see Title 8 CCR 1532.1 for all Cal/OSHA requirements).

Any contractor performing any of the Cal/OSHA trigger tasks must comply with the provisions of the Cal/OSHA Lead Construction Standard (Title 8 CCR 1532.1). More specifically, an Exposure Assessment must be performed at the start of any trigger task activities. This assessment involves the collection of personal air samples to be submitted for the laboratory analyses of lead content to determine if the Action Level (AL) or the Permissible Exposure Limit (PEL) for airborne lead will be met or exceeded during the work. Pending that assessment, the contractor must provide interim protective measures, including but not limited to; respirators, protective clothing, and training.

If initial assessment demonstrates the possibility that the AL will be met or exceeded during the work, continued worker exposure monitoring must be conducted. If initial assessment demonstrates the possibility that the PEL will be exceeded during the work Cal/OSHA requirements include but are not limited to: establishment of regulated areas, continued use of respirators, continued personal air monitoring, protective clothing, hygiene facilities, medical surveillance, and training certified by the California Department of Public Health (CDPH).

In addition, the disturbance of lead containing materials in excess of 100 square feet will require a contractor to file a "Lead-Work Pre-Job Notification" with Cal/OSHA at least 24 hours prior to performing any trigger tasks.

In California, lead activities are regulated by the California Code of Regulations Title 17, CCR 35000-36100, which include, but are not limited to, requirements for lead related construction work, lead abatement, worker training, and worker certification. Title 17 regulatory requirements for worker certification, and work practices are enforced by the California Department of Public Health (CDPH).

Title 17 defines "Lead Activities" as "abatement, lead hazard evaluation, lead-related construction work, or any activity which disturbs lead-based paint, presumed lead-based paint, or creates a lead hazard (17 CCR 35032). Title 17 defines "Lead Related Construction Work," as "any construction, alteration, painting, demolition, salvage, renovation, repair, or maintenance of any residential or public building, including preparation and cleanup, that, by using or disturbing lead-containing material or soil, may result in significant exposure of adults or children to lead (17 CCR 35040). Title 17 defines "Abatement" as "any set of measures designed to reduce or eliminate lead hazards or lead-based paint for public and residential buildings, but does not include containment or cleaning" (17 CCR 35001). See 17 CCR 35000-36100 for all Title 17 regulatory requirements for lead activities.

Title 17 fully incorporates work practices defined by the "Guidelines for the Evaluation and Control of Lead-Based Paint Hazards in Housing," U.S. Department of Housing and Urban Development (HUD), June 1995.

Any contractor performing any lead activities must use "Lead-Safe Work Practices" (17 CCR 36050), which include: use of containment (17 CCR 35016), no visible dust or debris remaining at completion of work, and demonstrate compliance to the CDPH if requested.

Both State and Federal laws regulate the disposal of lead containing materials in landfills. In California, the disposal of lead containing materials is regulated by the Department of Toxic Substance Control (DTSC). If demolition debris potentially contains lead containing material; the waste stream must be tested for lead content, and characterized for proper waste disposal. Completion of a 'waste profile" requires that at least one representative bulk sample of the waste stream be collected and submitted for laboratory analysis of lead content for waste characterization. The results of the lead waste characterization determine the "level" of waste, which can range between unrestricted "general construction debris" and highly restrictive Resource Conservation and Recovery Act (RCRA) federal "hazardous" waste.

The sole purpose of this investigation and of this report is to assess the site with respect to asbestos and lead as requested by the client. Brunelle & Clark Consulting, LLC is not responsible for locating asbestos in inaccessible areas such as behind walls, above hard ceilings, beneath flooring or underground. The passage of time, manifestation of latent conditions, or occurrence of future events may require further exploration at the site, the reevaluation of the data and findings, observations, conclusions, and recommendations expressed in the report.

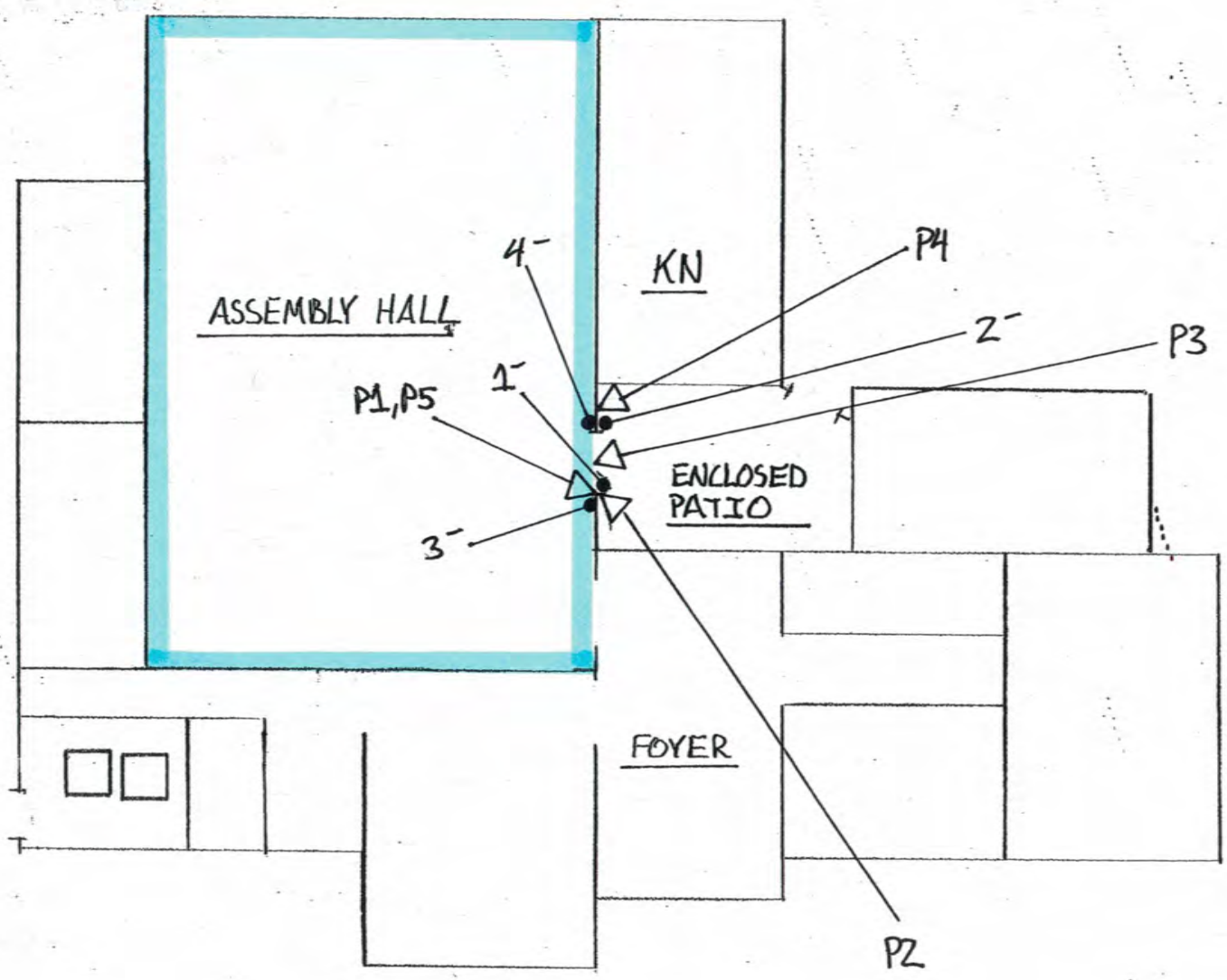
Should you have any questions, please contact this office.

Sincerely

Zindar Brunelle
Certified Asbestos Consultant, #14-5295 (Exp. 10/15/18)
Certified Lead Inspector/Assessor, #25819 (Exp. 09/02/18)

Attachments: Figure 1, and Laboratory Reports

Ph: (707) 822-4058 Cell: (707) 672-5345
P.O. Box 1138, Arcata, CA 95518
zbconsult@outlook.com




**LEGEND**

- # Asbestos Sample Locations (Prefixed 1100- #, with + or − designation) (+) is positive for Asbestos, (−) is negative
- ACCM Plaster, textured top coat, on upper walls in assembly room
- P# Paint Samples

BRUNELLE & CLARK CONSULTING, LLC
P. O. Box 1138
Arcata, California 95518

1800307 2/20/18

Ferndale Veterans Building
1100 Main Street
Ferndale, CA

FIG. 1

**AmeriSci Los Angeles**
24416 S. Main Street, Ste 308
Carson, California 90745
TEL: (310) 834-4868 • FAX: (310) 834-4772

# PLM Bulk Asbestos Report

Brunelle & Clark Consulting, LLC
Attn: Zindar Brunelle
PO Box 1138

Arcata, CA 95518

**Date Received** 02/05/18 **AmeriSci Job #** 918021115
**Date Examined** 02/05/18 **P.O. #**
**Page** 1 **of** 2

**RE:** 1800307; Ferndale Veterans Bldg.; 1100 Main St. Ferndale, CA

| Client No. / HGA | Lab No. | Asbestos Present | Total % Asbestos |
|---|---|---|---|
| 1100-1 | 918021115-01 | *No* | NAD (by CVES) by Arturo A. Aldana on 02/05/18 |
| **Location:** Concrete, Gray / Ext. / Enclosed Patio / Slab At South Entry To Assembly Hall | | | |
| **Analyst Description:** Grey, Homogeneous, Non-Fibrous, Cementitious, Concrete | | | |
| **Asbestos Types:** | | | |
| **Other Material:** Non-fibrous 100 % | | | |
| 1100-2 | 918021115-02 | *No* | NAD (by CVES) by Arturo A. Aldana on 02/05/18 |
| **Location:** Concrete, Gray / Ext. / Enclosed Patio / Slab At South Entry To Assembly Hall | | | |
| **Analyst Description:** Grey, Homogeneous, Non-Fibrous, Cementitious, Concrete | | | |
| **Asbestos Types:** | | | |
| **Other Material:** Non-fibrous 100 % | | | |
| 1100-3 | 918021115-03 | *No* | NAD (by CVES) by Arturo A. Aldana on 02/05/18 |
| **Location:** Gypsum Board / Assembly Hall / Wall At South Entry Door | | | |
| **Analyst Description:** Light Pink/Brown, Homogeneous, Fibrous, Gypsum Board | | | |
| **Asbestos Types:** | | | |
| **Other Material:** Cellulose 5 %, Non-fibrous 95 % | | | |
| 1100-4 | 918021115-04 | *No* | NAD (by CVES) by Arturo A. Aldana on 02/05/18 |
| **Location:** Gypsum Board / Assembly Hall / Wall At South Entry Door | | | |
| **Analyst Description:** Light Pink/Brown, Homogeneous, Fibrous, Gypsum Board | | | |
| **Asbestos Types:** | | | |
| **Other Material:** Cellulose 5 %, Non-fibrous 95 % | | | |

See Reporting notes on last page

# PLM Bulk Asbestos Report

1800307; Ferndale Veterans Bldg.; 1100 Main St. Ferndale, CA

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**Reporting Notes:**

Analyzed By: Arturo A. Aldana ; Date Analyzed: 2/5/2018 2/5/18

*NAD = no asbestos detected; Detection Limit <1%; Reporting Limits: CVES = 1%, 400 Pt Ct = 0.25%, 1000 Pt Ct = 0.1%; NA = not analyzed; NA/PS = not analyzed / positive stop; NVA = No Visible Asbestos; PLM (polarized light microscopy) Bulk Asbestos Analysis by EPA 600/R-93/116, including requirements for EPA 600/M4-82-020 per 40 CFR 763 (NVLAP Lab #200346-0, CA ELAP lab #2322); Note: PLM is not consistently reliable in detecting asbestos in floor coverings and similar NOB materials. TEM is currently the only method that can be used to determine if this material can be considered or treated as non-asbestos-containing in New York State (also see EPA Advisory for floor tile, FR 59, 146, 38970, 8/1/94). NIST Accreditation requirements mandate that this report must not be reproduced except in full with the approval of the laboratory. This PLM report relates ONLY to the items tested.

Reviewed By:

9180211115

| Analysis: X Standard PLM<br>___ 400 Point Count<br>___ 1,000 Point Count<br>Turnaround Time:<br>Rush/1-day/2-days/3-days/5-days | BRUNELLE & CLARK CONSULTING, LLC<br>P.O. Box 1138<br>Arcata, CA 95518<br>Ph: (707) 822-4058 Cell #: (707) 672-5345<br>zbconsult@outlook.com | Date: 2/2/18<br>Site: Ferndale Veterans Bldg.<br>1100 Main St.<br>Ferndale, CA<br>Proj.# 1800307 |
|---|---|---|

# BULK ASBESTOS SAMPLING

| Sample No. | Sample Description | Hom, Area | Location | Mat'l Type | Mat'l Cond. | Friable |
|---|---|---|---|---|---|---|
| 1100-1 | Concrete, gray | 1 | Ext. Patio / Enclosed Slab at South entry to Assembly Hall | MM | ND | NF |
| -2 | ↓ | 1 | ↓ | ↓ | ↓ | ↓ |
| -3 | Gypsum board | 2 | Assembly Hall / Wall at South Entry door | ↓ | ↓ | ↓ |
| -4 | ↓ | 2 | ↓ | ↓ | ↓ | ↓ |
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**Sample Abbreviations**
VFT/M = Vinyl Floor Tile & Mastic
SF = Sheet Flooring
JC/GB = Joint Compound/Gypsum Board
CT = Ceiling Tile (glued or nailed)
CP = Ceiling Panel (t-grid or drop ceil.)

**Material Type**
Thermal System Insulation = TSI
Misc. Material = MM
Surfacing Material = SM

**Material Condition**
Not Damaged = ND
Damaged = DG
Significantly Damaged – SD
Potentially Significantly Damaged = PSD

* = Stop analysis for any layer at first positive, if >1%, where indicated.

| Sampled by: Zindar Brunelle | Received by: |
|---|---|
| Relinquished by: Zindar Brunelle Date/Time: 2/3/18 | Date/time Date/Time: 2/5/18 @ 0911 |

**AmeriSci Los Angeles**
24416 S. Main Street, Ste 308
Carson, California 90745
TEL: (310) 834-4868 • FAX: (310) 834-4772

**AmeriSci Job #:** 418021028

**Date Received:** 02/05/18
**Date Analyzed:** 02/05/18

## Lead Analysis Results

Paint

EPA Method 3050B/7000B

**Brunelle & Clark Consulting, LLC**

Arcata, CA

Job Site: 1800307; Ferndale Veterans Bldg.; 1100 Main St. Ferndale, CA

| AmeriSci # 418021028 | Client Number | Sample Location | % Lead (w/w) | Lead Content (mg/kg = ppm) |
|---|---|---|---|---|
| 01 | 1100-P1 | Assembly Hall / S. Entry / Door Jamb / White. Tan | 0.054 | 540 |
| 02 | 1100-P2 | Enclosed Patio / Door Trim / Gray, White | 5.1 | 51,000 |
| 03 | 1100-P3 | Enclosed Patio / Door / Red, Green | 3.2 | 32,000 |
| 04 | 1100-P4 | Enclosed Patio / Siding / Tan | 0.35 | 3,500 |
| 05 | 1100-P5 | Assemby Hall / S. Entry / Door Trim / Tan | 0.017 | 170 |

AmeriSci Reporting Limit is 0.01%, or 100mg/kg prior to any dilutions due to high analyte concentrations or matrix interferences. AmeriSci does not correct sample results by the blank value. All analytical batch data met quality control criteria unless otherwise noted. CA ELAP No. 2322.

**Reviewed by:** _____

**Analyzed by:** _____
for **Thu M. Nguyen**

**ELAP No:** CA 2322

AMERI SCI

# CHAIN OF CUSTODY RECORD


**AMERISCI LOS ANGELES**
24416 South Main St., Suite 308
888.724.5226 Toll Free
310.834.4868 Phone~310.834.4772 Fax
www.amerisci.com


**AMERISCI JOB NO:** 418021028 | **PAGE** 1 **OF** 1

**DUE DATE:** ☒ 1 DAY ☐ 2 DAY ☐ 3 DAY ☐ 5 DAY ☐ 7 DAY ☐ 10 DAY

**TEMP UPON RECEIPT:**

**DATA PACKAGE:** | **P.O.#**

**COMPANY:** BRUNELLE & CLARK CONSULTING, LLC

**ADDRESS:** P.O. Box 1138, Arcata, CA 95518

**PHONE:** (707) 822-4058 | **FAX 1:** (707) 630-5033 | **CELL:** (707) 672-5345

**CLIENT CONTACT:** Zindar Brunelle | **EMAIL:** zbconsult@outlook.com

**PROJECT NAME:** Ferndale Veterans Bldg. 1100 Main St, Ferndale, CA | **PROJECT NUMBER:** 1800307 | **PROJECT STATE:** CA

MATRIX: **A**-WATER **S**-SOIL/SOLIDS **SL**-SLUDGE **OIL**-OIL **CH**-CHIPS **WI**-WIPES **C**-CASSETTES **W**-WASTE **O**-OTHER

CONTAINER: **P**-PLASTIC **G**-GLASS **V**-VOA

| LAB ID | CLIENT SAMPLE IDENTIFICATION | MATRIX | CONTAINER SIZE | CONTAINER TYPE | CONTAINER # | SAMPLING INFORMATION DATE | SAMPLING INFORMATION TIME | SAMPLING INFORMATION TECH | GRAB (G) OR COMPOSITE (C) | PRESERVATIVES | SAMPLE pH AT LOGIN | Lead in Paint | | | | | | Notes: |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1100-P1 | Assembly Hall / S. Entry / Door Jamb | CH | S | P | | 2/2/18 | NA | ZBrunelle | | | | X | | | | | | white, tan |
| -P2 | Enclosed Patio / Door trim | | | | | | | | | | | X | | | | | | gray, white |
| -P3 | / Door | | | | | | | | | | | X | | | | | | red, green |
| -P4 | / siding | | | | | | | | | | | | | | | | | Tan |
| -P5 | Assembly Hall / S. Entry / Door Trim | | | | | | | | | | | | | | | | | Tan |

| | | | | | |
|---|---|---|---|---|---|
| SAMPLED BY: (PRINT) | Zindar Brunelle | DATE: 2/2/18 | RECEIVED BY: (PRINT) | | DATE: |
| (SIGN) | ZBrunelle | TIME: NA | (SIGN) | | TIME: |
| RELINQUISHED BY: (PRINT) | Zindar Brunelle | DATE: 2/3/18 | RECEIVED BY: (PRINT) | | DATE: |
| (SIGN) | ZBrunelle | TIME: NA | (SIGN) | | TIME: |
| RELINQUISHED BY: (PRINT) | | DATE: | RECEIVED FOR LABORATORY BY: | Kristina Martinez | DATE: 2/5/18 |
| (SIGN) | | TIME: | (SIGN) | | TIME: 0910 |

A5.602
*CALGreen* VERIFICATION GUIDELINES
MANDATORY MEASURES CHECKLIST

**Application:** This checklist shall be used for nonresidential projects that meet one of the following: new construction, building additions of 1,000 square feet or greater, or building alterations with a permit valuation of $200,000 or more pursuant to Section 301.3 AND do not trigger a Tier 1 or Tier 2 requirement:

**Y** = Yes (section has been selected and/or included)
**N/A** = Not Applicable (code section does not apply to the project—mainly used for additions and alterations)
**O** = Other (provide explanation)
**[N]** = New construction pursuant to Section 301.3
**[A]** = Additions and/or Alterations pursuant to Section 301.3

| CHAPTER 5 DIVISIONS | | SECTION TITLE | CODE SECTION | Y | N/A | O | PLAN SHEET, SPEC OR ATTACH REFERENCE |
|---|---|---|---|---|---|---|---|
| **DIVISION 5.1 Planning and Design** | Mandatory | Deconstruction and reuse of existing structures, Scope with Exception | 5.105.1 | | X | | |
| | Mandatory | Reuse of existing building & Verification of compliance with note | 5.105.2 and 5.105.2.1 | | | | |
| | Mandatory | Storm water pollution prevention for projects that disturb less than 1 acre of land | 5.106.1 through 5.106.2 | | | | |
| | Mandatory | Short-term bicycle parking (with exception) | 5.106.4.1.1 | | | | |
| | Mandatory | Long-term bicycle parking | 5.106.4.1.2 through 5.106.4.1.5 | | | | |
| | Mandatory | Electric vehicle (EV) charging [N] with Section 5.106.3.1, 5.106.5.3.2 and associated Table 5.106.5.3.1<br><br>OR<br>Power Allocation Method:<br>Section 5.106.5.3.6 and associated Table 5.106.5.3.6 | 5.106.5.3.1, 5.106.5.3.2, Table 5.106.5.3.1, 5.106.5.3.2.1, 5.106.5.3.2.2, 5.106.5.3.3, 5.106.5.3.4 and 5.106.5.3.5<br>OR<br>5.106.5.3.6, Table 5.106.5.3.6, 5.106.5.3.3, 5.106.5.3.4 and 5.106.5.3.5 | | | | |
| | Mandatory | Additions or Alterations to existing buildings or parking facilities [A] with Exceptions | 5.106.5.4 | | | | |
| | Mandatory | Existing buildings or parking areas without previously installed EV capable infrastructure [A] | 5.106.5.4.1 | | | | |
| | Mandatory | Existing buildings or parking areas without previously installed EV capable infrastructure [A] | 5.106.5.4.2 | | | | |
| | Mandatory | Electric vehicle (EV) charging: medium-duty and heavy-duty [N] | 5.106.5.5 | | | | |
| | Mandatory | Electric vehicle charging readiness requirements for warehouses, grocery stores and retail stores, office buildings, and manufacturing facilities with planned off-street loading spaces [N] | 5.106.5.5.1 | | | | |
| | Mandatory | Table 5.106.5.5.1 | 5.106.5.5 and 5.106.5.5.1 | | | | |
| | Mandatory | Light pollution reduction [N] (with exceptions, notes and table) | 5.106.8 through 5.106.8.2 | | | | |
| | Mandatory | Grading and paving (exception for additions and alterations not altering the drainage path) | 5.106.10 | | | | |
| **DIVISION 5.2 Energy Efficiency** | Mandatory | Meet the minimum energy efficiency standard | 5.201.1 | X | | | M500; M501 |

*(continued)*

| CHAPTER 5 DIVISIONS | | SECTION TITLE | CODE SECTION | Y | N/A | O | PLAN SHEET, SPEC OR ATTACH REFERENCE |
|---|---|---|---|---|---|---|---|
| **DIVISION 5.3 Water Efficiency and Conservation** | Mandatory | Separate meters (new buildings or additions > 50,000 sf that consume more than 100 gal/day) | 5.303.1.1 | | X | | |
| | Mandatory | Separate meters (for tenants in new buildings or additions that consume more than 1,000 gal/day) | 5.303.1.2 | | | | |
| | Mandatory | Water closets shall not exceed 1.28 gallons per flush (gpf) | 5.303.3.1 | | | | |
| | Mandatory | Wall-mounted urinals shall not exceed 0.125 gpf | 5.303.3.2.1 | | | | |
| | Mandatory | Floor-mounted urinals shall not exceed 0.5 gpf | 5.303.3.2.2 | | | | |
| | Mandatory | Single showerhead shall have maximum flow rate of 1.8 gpm (gallons per minute) at 80 psi | 5.303.3.3.1 | | | | |
| | Mandatory | Multiple showerheads serving one shower shall have a combined flow rate of 1.8 gpm at 80 psi | 5.303.3.3.2 | | | | |
| | Mandatory | Nonresidential lavatory faucets | 5.303.3.4.1 | | | | |
| | Mandatory | Kitchen faucets | 5.303.3.4.2 | | | | |
| | Mandatory | Wash fountains | 5.303.3.4.3 | | | | |
| | Mandatory | Metering faucets | 5.303.3.4.4 | | | | |
| | Mandatory | Metering faucets for wash fountains | 5.303.3.4.5 | | | | |
| | Mandatory | Pre-rinse spray valve | 5.303.3.4.6 | | | | |
| | Mandatory | Food waste disposers | 5.303.4.1 | | | | |
| | Mandatory | Areas of additions or alterations | 5.303.5 | | | | |
| | Mandatory | Standards for plumbing fixtures and fittings | 5.303.6 | | | | |
| | Mandatory | Outdoor potable water use in landscape areas (with notes) | 5.304.1 | | | | |
| **DIVISION 5.4 Material Conservation and Resource Efficiency** (continued) | Mandatory | Weather protection | 5.407.1 | | | | |
| | Mandatory | Moisture control: sprinklers | 5.407.2.1 | | | | |
| | Mandatory | Moisture control: exterior door protection | 5.407.2.2.1 | | | | |
| | Mandatory | Moisture control: flashing | 5.407.2.2.2 | | | | |
| | Mandatory | Construction waste management—comply with either: Sections 5.408.1.1, 5.408.1.2, 5.408.1.3 or more stringent local ordinance | 5.408.1.1, 5.408.1.2, 5.408.1.3 | X | | | 01 74 19 EXHIBIT A |
| | Mandatory | Construction waste management: documentation | 5.408.1.4 | X | | | 01 74 19 EX.A |
| | Mandatory | Universal waste [A] | 5.408.2 | X | | | 01 74 19 (3.4) |
| | Mandatory | Excavated soil and land clearing debris (100% reuse or recycle) with Exception and Notes | 5.408.3 | | | | |
| | Mandatory | Life Cycle Assessment, Scope, Whole building life cycle assessment with Notes, Building components, Reference study period, and Verification of compliance | 5.409.1, 5.409.2, 5.409.2.1, 5.409.2.2 and 5.409.2.3 | | | | |
| | Mandatory | Life Cycle Assessment, Scope, Product GWP compliance – prescriptive path, 5.409.3.1 with Exception and Exception EQUATION, Verification of compliance and Product GWP Limits Table with Footnotes | 5.409.1, 5.409.3, 5.409.3.1, 5.409.3.2 and Table 5.409.3 | | | | |
| | Mandatory | Recycling by occupants (with exception) | 5.410.1 | | | | |
| | Mandatory | Recycling by occupants: additions (with exception) | 5.410.1.1 | | | | |
| | Mandatory | Recycling by occupants: sample ordinance | 5.410.1.2 | | | | |
| | Mandatory | Commissioning new buildings (≥ 10,000 sf) [N] | 5.410.2 | | | | |
| | Mandatory | Owner's or owner representative's Project Requirements (OPR) [N] | 5.410.2.1 | | | | |
| | Mandatory | Basis of Design (BOD) [N] | 5.410.2.2 | | | | |

*(continued)*

| CHAPTER 5 DIVISIONS | | SECTION TITLE | CODE SECTION | Y | N/A | O | PLAN SHEET, SPEC OR ATTACH REFERENCE |
|---|---|---|---|---|---|---|---|
| (continued) **DIVISION 5.4 Material Conservation and Resource Efficiency** | Mandatory | Commissioning plan [N] | 5.410.2.3 | | | | |
| | Mandatory | Functional performance testing [N] | 5.410.2.4 | | | | |
| | Mandatory | Documentation and training [N] | 5.410.2.5 | | | | |
| | Mandatory | Systems manual [N] | 5.410.2.5.1 | | | | |
| | Mandatory | Systems operation training [N] | 5.410.2.5.2 | | | | |
| | Mandatory | Commissioning report [N] | 5.410.2.6 | | | | |
| | Mandatory | Testing and adjusting for new buildings < 10,000 sf or new systems that serve additions or alterations [A] | 5.410.4 | X | | | 23 05 93 |
| | Mandatory | System testing plan for renewable energy, landscape irrigation and water reuse [A] | 5.410.4.2 | | X | | |
| | Mandatory | Procedures for testing and adjusting | 5.410.4.3 | X | | | 23 05 93 |
| | Mandatory | Procedures for HVAC balancing | 5.410.4.3.1 | | | | 23 05 93 |
| | Mandatory | Reporting for testing and adjusting | 5.410.4.4 | | | | 23 05 93 |
| | Mandatory | Operation and maintenance (O&M) manual | 5.410.4.5 | | | | 23 00 00 (1.11) |
| | Mandatory | Inspection and reports | 5.410.4.5.1 | | | | 23 00 00 |
| **DIVISION 5.5 Environmental Quality** (continued) | Mandatory | Fireplaces | 5.503.1 | | | | P100 |
| | Mandatory | Woodstoves | 5.503.1.1 | | X | | |
| | Mandatory | Temporary ventilation | 5.504.1 | | X | | |
| | Mandatory | Covering of ducts openings and protection of mechanical equipment during construction | 5.504.3 | | | | 23 00 00 3.4(B) |
| | Mandatory | Adhesives, sealants and caulks | 5.504.4.1 | | | | 07 92 00 1.2(A) |
| | Mandatory | Paints and coatings | 5.504.4.3 | | | | 09 90 00 2.1(B) |
| | Mandatory | Aerosol paints and coatings | 5.504.4.3.1 | | | | |
| | Mandatory | Aerosol paints and coatings: verification | 5.504.4.3.2 | | | | |
| | Mandatory | Carpet systems | 5.504.4.4 | | | | |
| | Mandatory | Carpet cushion | 5.504.4.4.1 | | | | |
| | Mandatory | Carpet adhesives per Table 5.504.4.1 | 5.504.4.4.2 | | | | |
| | Mandatory | Composite wood products | 5.504.4.5 | X | | | A.1 |
| | Mandatory | Composite wood products: documentation | 5.504.4.5.3 | X | | | A.1 |
| | Mandatory | Resilient flooring systems | 5.504.4.6 | | | | |
| | Mandatory | Resilient flooring: verification of compliance | 5.504.4.6.1 | | | | |
| | Mandatory | Thermal insulation | 5.504.4.7 | X | | | 07 21 00 2.1(A) |
| | Mandatory | Verification of compliance | 5.504.4.7.1 | X | | | 07 21 00 1.1(A)2. |
| | Mandatory | Acoustical ceilings and wall panels | 5.504.4.8 | X | | | 09 77 23 |
| | Mandatory | Verification of compliance | 5.504.4.8.1 | X | | | 09 77 23 |

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| CHAPTER 5 DIVISIONS | | SECTION TITLE | CODE SECTION | Y | N/A | O | PLAN SHEET, SPEC OR ATTACH REFERENCE |
|---|---|---|---|---|---|---|---|
| (continued) **DIVISION 5.5 Environmental Quality** | Mandatory | Filters (with exceptions) | 5.504.5.3 | X | | | M100; M300; M400 |
| | Mandatory | Filters: labeling | 5.504.5.3.1 | | | | |
| | Mandatory | Environmental tobacco smoke (ETS) control | 5.504.7 | X | | | COUNTY POLICY |
| | Mandatory | Indoor moisture control | 5.505.1 | | X | | |
| | Mandatory | Outside air delivery | 5.506.1 | X | | | MECH SHEETS |
| | Mandatory | Carbon dioxide ($CO_2$) monitoring | 5.506.2 | | X | | |
| | Mandatory | Acoustical control (with exception) | 5.507.4 | | | | |
| | Mandatory | Exterior noise transmission, prescriptive method (with exceptions) | 5.507.4.1 | | | | |
| | Mandatory | Noise exposure where noise contours are not readily available | 5.507.4.1.1 | | | | |
| | Mandatory | Performance method | 5.507.4.2 | | | | |
| | Mandatory | Site features | 5.507.4.2.1 | | | | |
| | Mandatory | Documentation of compliance | 5.507.4.2.2 | | | | |
| | Mandatory | Interior sound transmission (with note) | 5.507.4.3 | | | | |
| | Mandatory | Ozone depletion and greenhouse gas reductions | 5.508.1 | | | | |
| | Mandatory | Chlorofluorocarbons (CFCs) | 5.508.1.1 | | | | |
| | Mandatory | Halons | 5.508.1.2 | | | | |
| | Mandatory | Supermarket refrigerant leak reduction for retail food stores 8,000 square feet or more Sections 5.508.2 through 5.508.2.6.3 | 5.508.2 through 5.508.2.6.3 | | | | |
| | | END OF MANDATORY PROVISIONS | | | | | |

**Documentation Author's / Responsible Designer's Declaration Statement**

☒ **Mandatory:** I attest that this mandatory provisions checklist is accurate and complete.

| | |
|---|---|
| Signature: | |
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