COLUSA UNIFIED SCHOOL DISTRICT

PROJECT MANUAL

BID PACKAGE #16-102

FIRE ALARM REPLACEMENT PROJECTS AT

SCHOOLS	DSA Application #
Burchfield Primary School 400 Fremont Street Colusa, CA 95932	**02-114561**
Egling Middle School 813 Webster Street Colusa, CA 95932	**02-114558**
Colusa High School 901 Colusa Avenue Colusa, CA 95932	**02-114560**

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For:
Colusa Unified School District
745 Tenth Street
Colusa, CA 95932

March 3, 2014

Colusa Unified School District **ARCH | NEXUS** **Capital Program Management**

Fire Alarm Replacement Projects at Burchfield Primary School, Edling Middle School and Colusa High School

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SECTION 00 1116
INVITATION TO BID

NOTICE IS HEREBY GIVEN that sealed bids will be received by the Colusa Unified School District herein referred to as "District," at the District Office 745 10th Street Colusa CA 95932, **until 2:00 o'clock, p.m., on March 31, 2016**, for furnishing all labor, material, tax, transportation, equipment, and services necessary for the Fire Alarm Replacement Projects at Burchfield Primary School, Egling Middle School and Colusa High School (the "Project(s)") in accordance with the specifications and working details and other contract documents all of which may be examined and copies obtained at/from the District Office at the address referenced above.

Bidders shall submit bids on or before the date and time set forth above and bids shall be opened and tabulated by or on behalf of District at its offices immediately after **2:00 o'clock p.m. on March 31, 2016**.

The District holds a mandatory pre-bid walk through for all bidding contractors. All contractors who plan to bid on the Project must attend the Pre-Bid Conference meeting on **March 17, 2016 at 2:30 p.m., starting at Colusa High School, followed by visits to Burchfield Primary School and Egling Middle School.**

Each bid Proposal shall conform to the requirements of the Contract Documents, all of which may be obtained through **Signature Reprographics** at 620 Sunbeam Avenue, Sacramento, CA 95814 (contact Stan Rutledge, 916/454-0800). A total of two (2) sets of bidding documents will be made available for Prime Bidders and one (1) set for subcontractors. A deposit of $50.00 made payable to the Colusa Unified School District will be refunded for each complete set returned to **Signature Reprographics** in good condition within ten (10) calendar days of the bid.

Bids must be from an appropriately licensed contractor, must be sealed and accompanied by a cashier's check, or bid bond made payable to the District in the sum of not less than ten percent (10%) of the amount of the bid. By submitting a bid on the above-referenced project, bidder acknowledges and agrees that in the event bidder is the "successful bidder" but is unable to or refuses to execute a contract for the work, that actual damages to District will be impractical or extremely difficult to fix and therefore, bidder agrees that the sum of not less than ten (10%) percent of the amount of the bid is a reasonable estimate of damages and should the successful bidder fail to or refuse to enter into a written contract within ten (10) days after being requested to do so, the bid bond shall be forfeited to District as the stipulated amount of liquidated damages and not as a penalty. Interested bidders must be appropriately licensed. The Bid Bond form supplied by the Surety is adequate.

The bid opening and hand delivery of bids on the day of the bid opening shall take place and be made at the District Offices of the Colusa Unified School District, 745 10th Street, Colusa CA 95932.

Mailed bids must be received by the District prior to the hour and date of the bid opening and shall be addressed to the District Offices of the Colusa Unified School District, 745 10th Street, Colusa CA 95932.

Bidders are hereby notified that pursuant to section 1770 et seq. 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 workman needed to execute the contract which will be awarded to the successful bidder. Copies are on file with and available upon request from the District. While District endeavors to provide current and accurate information regarding the general prevailing rate of per diem wages, the District relies solely on information available to it from the Director of Industrial Relations and therefore, notwithstanding the availability of copies through the District of the prevailing rate of per diem wages, each bidder should verify the accuracy of the information contained in the Director of Industrial Relations reports through the Office of the Director of Industrial Relations.

In accordance with California Civil Code Section 9550, a payment bond is required for a public works contract involving expenditure in excess of twenty-five thousand dollars ($25,000). The successful bidder will be required to post a performance bond and payment bond to accompany contract in forms specified by the District, in 100% of the amount of the awarded contract.

Bidders must be registered with the Department of Industrial Relations to bid on public work contracts in accordance with California Labor Code 1720, et seq., Section 1725.5.

At the request and expense of the successful bidder, securities equivalent to the amount withheld from progress payments (i.e., retention) may be deposited with the District, or with a state or federally chartered bank as the escrow agent (the successful bidder shall bear all costs of escrow) and the District shall pay monies which would otherwise be retained to the successful bidder. The form of escrow agreement and securities eligible for investment pursuant to this option shall be governed by Public Contracts Code Section 22300 and Government Code Section 16430.

Bidders shall be required to complete, and file with District, a Statement of Experience, which if required by District, shall be submitted on the form provided by District and may include information regarding the bidder's previous experience on similar projects, experience on public works projects, history of performance and references. If a Statement of Responsibility is required by District, failure to complete any item identified on the Statement of Responsibility may render the bidder's subsequent bid non-responsive and may result in the rejection of bidder's bid.

Bids shall be made upon the form provided by the District or Architect and shall be properly completed with all items filled out; numbers shall be in writing and figures; the signatures of all persons signing shall be in longhand. No bidder may withdraw his/her bid, including Bids for Additive/Deductive Alternates, for a period of sixty (60) days after the time set for the opening of bids, and the Board of Trustees will act to accept or reject bids within that period of time.

The Board reserves the right to reject any or all bids, and further reserves the right to waive any informalities or irregularities in the bids.

By order of the Colusa Unified School District Board of Trustees,

Dated: March 4, 2016

Published:

March 4, 2016

March 11, 2016

END OF SECTION

SECTION 00 2113
INSTRUCTIONS TO BIDDERS

To be considered, proposals (bids) must be made in accordance with the following instructions:

1. Proposals/Bids

A. Proposals must be made on the form included in these bid documents. All items on the form shall be filled out, numbers shall be stated in writing and in figures, and the signatures of all individuals shall be in longhand. When requested by the District, satisfactory evidence of the authority of the person signing on behalf of the company shall be furnished. A party's failure to properly sign required forms may result in rejection of the proposal. Each proposal must give the full name and business address of the proposing party.

B. No telegraphic or telephone proposal or modifications to the form will be considered. Proposals shall not contain any recapitulation of the work to be done, and alternative proposals will not be considered unless called for.

C. Should a bidder find a discrepancy in or omissions from the documents, or should he/she be in doubt as to any meaning, he/she shall immediately notify the District no later than **March 24, 2016**, who will send written instructions to all bidders. Bidders must use the "Pre-Bid Clarification Form" provided herein for submission of inquiries. The District will not be responsible for giving any oral instructions. All inquiries will be answered in writing and distributed to all bidders in the form of addenda to the contract prior to the opening bid date.

D. All addenda or bulletins issued during the bidding period shall be included in the proposal and will become a part of the contract for the project.

E. NOTICE: Bidders shall be required to complete the Statement of Experience and, for each proposed subcontractor, require completion of the Statement of Experience Form included in the Bid Package. Bidders Statement of Experience forms shall be submitted concurrently with submission of bids in accordance with the Notice Inviting Bids. A bidder who is notified that that he/she/it is apparent low-bidder may be required, within forty-eight (48) hours of being notified by the District that he/she/it is the apparent low bidder, submit the Statement of Experience Form(s) for all listed subcontractors. Failure to timely submit a Subcontractor Statement of Experience forms may result in the rejection of a bid.

F. Pursuant to provisions of Section 4100 et seq. of the Public Contract Code, every bidder shall in his/her bid set forth:

a. The name and location of the place of business of each subcontractor who will perform work or labor or render service to the bidder in or about the work in an amount in excess of one-half of one percent of the bidder's total work.

b. The portion of the work that will be done by each subcontractor. If the bidder fails to specify a subcontractor for any portion of the work to be performed under the contract in excess of one-half of one percent of the bidder's total bid, he/she agrees to perform that portion himself/herself. The successful bidder shall not, without the consent of the District, either:

i. Permit any subcontract to be assigned or transferred or allow the work to be performed by anyone other than the original subcontractor listed in the bid.
ii. Other than in the performance of a change order, sub-let or subcontract any portion of the work in excess of one-half of one percent of the total bid as to which his/her original bid did not designate a subcontractor.

c. Proposals/bids must be accompanied by a cashier's check, or bid bond, for an amount not less than ten percent (10%) of the bid, made payable to the order of the District. A bid bond shall be secured from a surety company satisfactory to the District. The Bid Bond form supplied by the Surety is adequate. The check or bond shall be given as a guarantee that the bidder will enter into a contract if awarded the work. If the successful bidder refuses to enter into a contract within ten (10) days after being requested to do so, said bond or check shall be forfeited to the District as the stipulated amount of liquidated damages and not as a penalty.

d. Proposals must include all applicable taxes in the Proposal amount. The bidder is solely responsible for all taxes.

2. Deadline for Receipt of Proposals

Proposals must be submitted in a sealed opaque envelope clearly marked "Bid Proposal – Do Not Open" and must be received by the Colusa Unified School District, 745 10th Street, Colusa CA 95670; by **2:00 p.m. on March 31, 2016**. Proposals received after the aforementioned time may not be considered.

3. Mandatory Pre-Bid Meeting/Walk-Through

The District holds a mandatory pre-bid walk through for all bidding contractors. All contractors who plan to bid on the Project must attend the Pre-Bid Conference meeting on **March 17, 2016 at 2:30 p.m., starting at Colusa High School, followed by visits to Burchfield Primary School and Egling Middle School,** and the minutes contain an attendance log, which must be signed by the contractors present. Contractors who do not attend this pre-bid meeting/walk through may have their bid deemed non-responsive and rejected by the District. The Mandatory Pre-Bid meeting/walk through for this Project will be held at the date and time set forth in the Invitation to Bid.

4. Award or Rejection of Bids/Alternates

The Contract, if awarded, will be awarded to the lowest responsible bidder. The lowest responsible bidder shall be determined based on the lowest base bid, excluding consideration of the prices on the additive or deductive items that is in compliance with these instructions and the advertised Notice Inviting Bids or in a manner that prevents information that would identify bidders from being revealed to the public entity before ranking of bidders from lowest to highest, including consideration of the prices on the additive or deductive items. The competency and the responsibility of bidders and of their proposed subcontractors will be considered in making the award of the Contract. Any bidder before being awarded a contract may be required to furnish evidence satisfactory to District that he/she and his/her proposed contractors have sufficient means and experience in the type of work called for and to assure completion of the contract in a satisfactory manner.

The District reserves the right to reject the bid of any bidder based on non-responsibility and/or who has previously failed to perform properly on contracts with the District. The District reserves the right to reject any or all bids or alternates and waive any informality or irregularity in the bids or in the bidding.

5. Verification of Low Bidder

Once the District has determined which contractor is the apparent low bidder and is deemed to be responsible, the District shall notify the apparent low bidder and request that the apparent low bidder confirm his/her/its bid, in writing, to the District within forty-eight (48) hours of being notified by the District that he/she/it is the apparent low bidder. Failure of the apparent low bidder to timely confirm his/her/its bid may result in the District finding the apparent low bidder's bid non-responsive.

6. Bonds

The successful bidder shall furnish a Faithful Performance Bond and payment bond in the form set forth in the contract documents and included herewith.

7. Execution of Contract

The successful bidder shall, within ten (10) calendar days of receiving this notification of award of the contract, sign and deliver to the District the executed contract. In the event the party to whom an

award is made fails or refuses to execute the contract within ten (10) calendar days, the District may seek damages for breach of the contract, and may award the contract to one of the other responsible parties.

8. Withdrawal of Proposal

   Bids may be withdrawn by the bidder prior to the time fixed for opening of bids. Thereafter the proposals may not be withdrawn for a period of sixty (60) days.

9. Anti-Discrimination

   The successful bidder shall not discriminate against any employee or applicant for employment because of race, creed, color, national origin or ancestry, physical handicap, mental condition, marital status or sex. The contractor will comply with all provisions of Executive Order No. 10925 of March 6, 1961, as amended, and all rules and regulations and relevant orders of the President's Committee on Equal Employment Opportunity created thereby. The Contractor shall also comply with the California Fair Employment and Housing Act. (Gov. Code §12900 et seq.)

10. Worker's Compensation

    In accordance with the provisions of Section 3700 of the Labor Code, every contractor is required to secure payment of compensation to his employees.

    Each contractor to whom a public works contract is awarded is required to sign and file with the awarding body the following certification prior to performing the work of the contract, a copy of which is enclosed herewith.

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

11. Compliance with Laws and Regulations

    The successful bidder/contractor shall comply with all laws and regulations governing contractor's performance on a public project including, but not limited to, anti-discrimination laws, workers' compensation laws, prevailing wage laws set forth in Labor Code Section 1770 et seq., licensing laws and registration to bid on a public work contract set forth in Labor Code Section 1720 et seq.; 1725.5.

12. License Information

    Each bidder shall list his/her license number, license type and expiration date. Each bidder must be a contractor properly licensed to perform the work covered by the bid documents upon which it is bidding with an active license in good standing as of the date of receipt of bids. The license must be issued by the Contractors' State License Board (CSLB) of California and must be maintained in good standing throughout the term of the Contract.

    All subcontractors must be properly licensed by the CSLB to perform the work they will be undertaking and must maintain their licenses in good standing throughout the terms of the Contract.

    If two or more business entities submit a bid on a Project as a Joint Venture, or expect to submit a bid as part of a Joint Venture, each entity within the Joint Venture must be properly licensed by the CSLB and the bid proposal must list each entities license number, license type and expiration date on the bid proposal.

13. Non-Collusion Affidavit

    Bidders shall submit a completed non-collusion affidavit, in a form acceptable to District, a copy of which is attached hereto, with their bid.

14. Fingerprinting/Criminal Background Certification

    The successful bidder may be required to submit a Fingerprinting/Criminal Background Certification in a form acceptable to District, a copy of which is attached hereto, with their bid.

15. Site Visit Certification

Bidders shall submit a completed site visit certification, in a form acceptable to District, a copy of which is attached hereto, with their bid.

16. Child Support Compliance

For every contract in excess of $100,000.00, only the successful bidder will be required to acknowledge that he/she is aware of the State's policy regarding the importance of child and family support obligations and that to the best of his/her knowledge, he/she is fully complying with the earnings assignment order of all employees and providing the names of all new employees to the New Hire Registry maintained by the Employment Development Department. Bidders shall submit a completed child support compliance acknowledgment, in a form acceptable to the District.

17. Estimated Quantities

If the Bidding Documents provide information concerning estimated quantities of work to be performed, the estimated quantities are approximate only, being given as a basis for the comparison of bids. District does not, expressly or by implication, agree that the actual amount of work will correspond with the estimate, and District reserves the right to increase or decrease the amount of any class or portion of the work, as may be deemed necessary or advisable by District, with no adjustment to the unit price except as expressly provided in the Contract Documents.

18. Bid Protest Procedure

Any protest relating to the form or content of the bidding or Contract Documents must be submitted in writing to District at least ten (10) business days before the original date set for bid opening in the Notice to Bidders. Any bidder who submits a bid shall be deemed to have waived any protest to the form or content of the bidding or Contract Documents.

Any bid protest relating to the award of the Contract for the Project, other than a protest addressing the form or content of the bidding or Contract Documents, must be submitted in writing to District so that it is received by District before 5:00 p.m. on the third business day following the bid opening. Failure to deliver a written protest within the designated period shall constitute a waiver of the bidder's right to protest District's determination and intended action, whether administratively or through legal proceedings, and shall render District's action relative to the bids final, binding, and un-appealable by such bidder.

The initial protest document shall contain a complete statement of the basis for the protest, including the legal and factual basis for the action requested. The protest shall refer to the specific portion(s) of the Contract Documents upon which the bidder relies in support of the protest and include as exhibits all documents relied upon in support of the protest. The protest shall include the name, address, telephone, and fax numbers of the protesting party and any person representing the protesting party.

The party filing the protest shall concurrently transmit a copy of the initial protest document and any attached documentation or exhibits to all other known bidders at the address specified on District's plan holder list. The documents shall be transmitted by fax or overnight delivery service.

The procedure and time limits set forth in this paragraph are mandatory and are the bidder's sole and exclusive remedy in the event of bid protest. Failure to comply with these procedures shall constitute a waiver of any right to further pursue the bid protest, including filing a Government Code claim or legal proceedings.

19. Certification of All Claims Submitted/Notification of Enforcement of False Claims Act

The successful Bidder will be required to certify the accuracy of all claims submitted to the District, as part of the submission of such claim(s). Each claim must be accompanied by the following certification:

> I have personal knowledge of the contents of the claim being submitted to the District. I have personal knowledge that the facts contained within this claim and any supporting documentation are true and/or I am informed and believe that they are true. I declare under

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

Executed this _____ day of _____, 201__ in_____ California.

In addition, Contractor expressly acknowledges that it is aware of the provisions of the state and federal False Claims Act and is also aware that if a false claim is knowingly submitted (as the term "Claim" and "Knowingly" are defined in California Government Code Section 12650 et seq.), the District will be entitled to civil remedies set forth in the California False Claim Act. It may also be considered fraud and the Contractor may be subject to criminal prosecution.

The False claims listed in the California FCA are as follows:

1. Knowingly presents or causes to be presented to an officer or an employee of the state or any political subdivision thereof, a false claim for payment or approval. (Cal. Government Code 12651(a)(1))

2. Knowingly makes, uses or causes to be made a false record or statement to get a false claim paid or approved by the state or by any political subdivision. (Cal. Government Code 12651(a)(2))

3. Conspires to commit a violation of the False Claims Act. (Cal. Government Code 12651(a)(3))

4. Has possession, custody, or control of public property or money used or to be used by the state or by any political subdivision and knowingly delivers or causes to be delivered less property than the amount for which the person receives a certificate or receipt. (Cal. Government Code 12651(a)(4))

5. Is authorized to make or deliver a document certifying receipt of property used or to be used by the state or by any political subdivision and knowingly makes or delivers a receipt that falsely represents the property used or to be used. (Cal. Government Code 12651(a)(5))

6. Knowingly buys, or receives as a pledge of an obligation or debt, public property from any person who lawfully may not sell or pledge the property. (Cal. Government Code 12651(a)(6))

7. Knowingly makes, uses, or causes to be made or used a false record or statement to conceal, avoid or decrease an obligation to pay or transmit money or property to the state or to any political subdivision. (Cal. Government Code 12651(a)(7))

8. Is a beneficiary of an inadvertent submission of a false claim to the state or a political subdivision, subsequently discovers the falsity of the claim, and fails to disclose the false claim to the state or the political subdivision within a reasonable time after discovery of the false claim." (Cal. Government Code 12651(a)(8)) (Note: This places a burden on general contractors to exercise due diligence in reviewing subcontractor claims before passing them through to the district. If a general contractor passes through a claim and then later discovers that it is false, the general contractor must notify the district and either withdraw the claim or be subject to false claims liability.)

For illustrative purposes only, the following may constitute a violation of the False Claims Act:

1. Falsification of hours set forth in timecards;
2. Overstating wage rates;
3. Submitting billings for costs or services not actually incurred on the project;
4. Altering invoices submitted by subcontractors or suppliers;
5. Double billing for the same work;
6. Colluding with third parties to submit overstated charges;

7. Substitution of cheaper or substandard materials;
8. Invoicing for unallowable costs;
9. Submitting false subcontractor pass through claims;
10. False certifications in any area required by contract, state or federal law;
11. Deductive change orders (reverse false claim);
12 False certification for equitable reimbursement of change orders;
13. Misrepresenting that work meets contract requirements;
14. Misrepresenting that contractor is paying applicable prevailing wages;
15. Misrepresenting that contractor is paying all of its subcontractors appropriately;
16. Misrepresenting that work is subject to reimbursement, etc.

20. Indemnity

The successful proposing party must hold harmless and fully indemnify the District, its Board of Directors, officers, employees, and agents from all damages or claims for damages, costs, or expenses that may at any time arise out of the party's performance of, or failure to perform, acts required by the contract documents.

END OF SECTION

SECTION 00 4113
BID FORM

Bid Opening Date: **March 31, 2016**
Hour of Bid Opening: **2:00 p.m.**

TO THE HONORABLE:

Board of Trustees
Colusa Unified School District
745 10th Street
Colusa CA 95932

Dear Board Members:

Pursuant to the Notice Inviting Bids, and in compliance with the instructions to Bidders, having reviewed all contract documents and the site(s) of the work, the undersigned hereby proposes to furnish all work, labor, materials, transportation, equipment and services necessary for the Fire Alarm Replacement Projects at Burchfield Primary School, Egling Middle School and Colusa High School Project all in accordance with the specifications and working details and all other contract documents.

In submitting this Bid, Bidder represents that:

(a) Bidder has examined copies of all Contract Documents, including the Invitation to Bid, the Instructions to Bidders, and the following addenda:

Addenda Numbers: _____ _____ _____ _____

(b) Bidder has examined the site and locality where the work is to be performed, the legal requirements (federal, state and local laws, ordinances, rules and regulations) and the conditions affecting cost, progress or performance of the work and has made such independent investigations as Bidder deems necessary;

Bidder will complete the work for the following price(s):

Item A: All associated work in the Contract Documents enumerated in Article 3 of the Agreement Form **specific to the Burchfield Primary School.**

1) Item A Bid Amount (in words): _____

2) Item A Bid Amount (in numbers): $ _____

Item B: All associated work in the Contract Documents enumerated in Article 3 of the Agreement Form **specific to Egling Middle School.**

3) Item B Bid Amount (in words): _____

4) Item B Bid Amount (in numbers): $ _____

Item C: All associated work in the Contract Documents enumerated in Article 3 of the Agreement Form **specific to Colusa High School.**

5) Item C Bid Amount (in words): _____

6) Item C Bid Amount (in numbers): $ _____

Item D: Allowance to be used at the Owner's sole discretion

in the amount of $ 15,000

TOTAL Bid Amount equals sum of Items A-D, above

7) **TOTAL Bid Amount (in words): _____**

8) **TOTAL Bid Amount (in numbers): $_____**

The District reserves the right to accept, during any phase of the project, by change order, any additive or deductive alternate(s), in whole or in part, not incorporated into the contract at the time of execution of the contract. If the District elects at any time to accept an additive or deductive alternate, or any portion thereof, the deduction taken or increase incurred shall be that which was originally set forth in the bid. Further, the District reserves the right to add back into the project or to delete from the project, as applicable, during any phase of the project, by change order, any additive or deductive alternate(s) taken at the time of execution of the contract, in whole or in part. If the District elects at any time to add back into the contract a deductive alternate previously taken, the additional cost to the District shall be limited to that set forth in the original bid. If the District elects at any time to delete an additive alternate previously taken, the reduction in contract price shall be the amount set forth in the original bid for the alternate.

If awarded the contract, the undersigned will begin work not later than ten (10) days after being notified in writing by the District's Representative to commence work on the project. The undersigned will complete the work above described within sixty-seven (67) calendar days after the date of commencement.

Enclosed is a ( ) cash deposit, ( ) cashier's check, or ( ) surety bid bond (check as appropriate) of the _____ (Name of Surety if bid bond submitted) in an amount not less than ten (10%) percent of the amount bid.

The undersigned agrees that the enclosed cash deposit, cashier's check, or surety bond shall be left on deposit with Colusa Unified School District and that it's amount is the measure of the damages which the District will sustain by failure of the undersigned to sign and deliver the above agreement and bonds within ten (10) days of written notice of the award of the contract and that in the event the undersigned fails to or refuses to enter into a written contract within ten (10) days after being requested to do so, said money, check, or surety bond shall be forfeited to District as the stipulated amount of liquidated damages and not as a penalty.

By submission of a bid, a bidder certifies possession of a duly issued and valid contractor's license issued by the State of California, which license authorizes bidder to contract to perform the type of work required by the specifications. Should the bidder fail to provide the information requested below concerning State Contractor's license number and classification, the District may reject the bid as non-responsive.

CONTRACTOR: _____

By: _____

Title: _____

Mailing Address: _____

_____

_____

Telephone No.: _____

State License No: _____

State License Classification: _____

Expiration Date: _____

DIR Registration No. _____

Expiration Date: _____

Dated this _____day of_____, 2016

(**Note to Bidders**: No bid shall be valid unless signed by the person making the bid. If the party is an individual, the same shall be signed by the individual; if the party is a partnership, the same shall be signed by a valid partner; and if the party is a corporation, the same shall be signed by its properly authorized officer or officers.)

SECTION 00 4313
BID SECURITY FORM

(USE ONLY WHEN NOT USING A BID BOND)

Accompanying this proposal is a cashier's check payable to the order of the Colusa Unified School District or a certified check payable to the order of the Colusa Unified School District in an amount equal to ten percent (10%) of the base bid and alternates ($_____).

The proceeds of this check shall become the property of said Owner, if, this proposal shall be accepted by the Owner through the Owner's Board of Trustees, and the undersigned fails to execute a Contract with and furnish the sureties required by the Owner within the required time; otherwise, said check is to be returned to the undersigned.

_____
Bidder

Note: Use this form, in lieu of Bid Bond form, when a cashier's check or certified check is accompanying the bid

SECTION 00 4336
PROPOSED SUBCONTRACTORS FORM

TO BE EXECUTED BY BIDDER AND SUBMITTED WITH BID

In compliance with the Subletting and Subcontracting Fair Practices Act (California Public Contract Code Sections 4100 et. seq.,) and any amendments thereof, each Bidder shall set forth below: (a) the name, license number, and location of the place of business of each subcontractor who will perform work or labor or render service to the Contractor, who will perform work or labor or work or improvement to be performed under this Contract, or a subcontractor licensed by the State of California who, under subcontract to the Contractor, specially fabricates and installs a portion of the work or improvements according to detailed drawings contained in the Plans and Specifications in an amount in excess of one-half of one percent of the Contractor's total bid; and (b) the portion and description of the work which will be done by each subcontractor under this Act. The Contractor shall list only one subcontractor for each such portion as is defined by the Contractor in this bid. All subcontractors shall be properly licensed by the California State Licensing Board.

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

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

Subletting or subcontracting of any portion of the work in excess of one-half of one percent of the Contractor's total bid where no subcontractor was designated in the original bid shall only be permitted in cases of public emergency or necessity, and then only after a finding, reduced to writing as a public record, of the authority awarding this Contract setting forth the facts constituting the emergency or necessity.

All subcontractors (of any tier) performing any portion of the Work must comply with the Labor Code sections 1725.5 and 1771.1 and must be properly and currently registered with the California Department of Industrial Relations and qualified to perform public works pursuant to Labor Code section 1725.5 throughout the duration of the Project.

NOTE: If alternate bids are called for and bidder intends to use different or additional subcontractors on the alternates, a separate list of subcontractors must be provided for each such Alternate.

SECTION 00 43 36
PROPOSED SUBCONTRACTORS FORM

TO BE EXECUTED BY BIDDER AND SUBMITTED WITH BID

Description & Portion of Work	Name of Subcontractor	Location & Place of Business	License Type and Number	*E-Mail & Telephone**	*DIR Registration Number**

Description & Portion of Work	Name of Subcontractor	Location & Place of Business	License Type and Number	*E-Mail & Telephone**	*DIR Registration Number**

* This information must be provided at the time of submission of bid or must be provided within 24 hours after the time set for the opening of bids. Bidders who choose to provide this information within 24 hours after the time set for the opening of bids are solely responsible to ensure the District receives this information in a timely manner. The District is not responsible for any problems or delays associated with emails, faxes, delivery, etc. Absent a verified fax or email receipt date and time by the District, the District's determination of whether the information was received timely shall govern and be determinative. Bidder shall not revise or amend any other information in this form submitted at the time of bid. The information submitted at the time of bid shall govern over any conflicts, discrepancies, ambiguities or other differences in any subsequent Subcontractor Designation Forms submitted by the bidder.

Proper Name of Bidder: _____

Date: _____

Name: _____

Signature of Bidder Representative: _____

Address: _____

Phone: _____

SECTION 00 4339
MINORITY BUSINESS ENTERPRISE AFFIDAVIT

TO BE EXECUTED BY BIDDER AND SUBMITTED WITH BID

Contractor hereby acknowledges that in accordance with Education Code Section 17076.11 that any school district using funds allocated pursuant to Chapter 12.5, Leroy F. Greene School Facilities Act, for the construction or modernization of a school building shall have a participation goal of at least 3% per year, of the overall dollar amount expended each year by the school district for Disabled Veteran Business Enterprises. If this contract is funded all or in part by Chapter 12.5 funding, contractor will be notified accordingly and shall provide certification of all joint venture partners, contractors, subcontractors, material men and suppliers that are certified as Disabled Veterans Business Enterprise and/or certify its good faith effort to advertise and retain Disabled Veterans Business Enterprises for this project.

By: _____

Name: _____

Title _____

Date: _____

SECTION 00 4393
BID SUBMITTAL CHECKLIST

(For Contractor's use and reference only. Additional documents may be required so bidders should carefully review all Contract Documents and Bid Documents)

- ❑ Bid Form
- ❑ Bid Bond (or Bid Guarantee form if Security is other than Bid Bond)
- ❑ Proposed Subcontractors Form
- ❑ Contractor's Certification Regarding DVBE Certification Requirements
- ❑ Bidder's Qualifications (Include separate Statement for each subcontractor if applicable)
- ❑ Non-Collusion Affidavit
- ❑ Contractor Certification Regarding Attendance at Pre-Bid Site Meeting
- ❑ Contractor Certification Regarding DIR Registration Requirements

SECTION 00 4513
BIDDER'S QUALIFICATIONS

TO BE EXECUTED BY BIDDER AND SUBMITTED WITH BID

(If additional space is required for your response, please use the attached continuation page)

1. Name of Firm: _____
2. Address of Firm: _____

   _____

   _____

   Telephone Number: _____
3. How many years has your organization been in business as a Contractor under its present name?

   _____ years

   Under what other names has your organization operated?

4. Type of Organization:
   - o Corporation
   - o Partnership
   - o Individual
   - o Joint Venture
   - o Other
5. If a corporation, answer the following:
   a. Date of Incorporation: _____
   b. State of Incorporation: _____
   c. President's name: _____
   d. Vice President's name(s): _____
   e. Treasurer's name: _____
   f. List of shareholders and their respective ownership interest:

Name	Ownership Interest
6. If an individual or partnership, answer the following:
   a. Date organized: _____

b. Name and address of all Partners:

Name	Title	General/Limited Partner

7. If other than a corporation or partnership, describe organization and name principals (i.e., subsidiary, joint venture, etc.):

a. List all joint venture arrangements in which organization has engaged during the past 3 years, and the projects completed (and their location) under such agreements.

8. List the state and categories which your organization is legally qualified to do business. Indicate registration or license numbers if applicable. List states in which partnership or trade name is filed.

State	Category	License/Registration No.

9 Specify type and percent of work performed with own workforce.

10. Have you ever failed to complete any work awarded to you? If so, note when, where and why and provide the name and business address of Owner.

11. Within the past five years, has any officer or partner of your organization ever been an officer or partner of another organization when it failed to complete a construction contract? If so, attach a separate sheet of explanation?

☐ Attached

12. Within the past ten years, has the Contractor or officers of principals of the organization been defaulted on a public works project? If so, note when, the project name, the project owner and under what circumstances.

13. Has the Contractor or officer or principals of the organization filed for, or been adjudged bankrupt, either voluntary or involuntary bankruptcy, within the past 10 years? If so, give the case number and the date on which the petition was filed, and attach a copy of the Bankruptcy Court's discharge order, or of any other document that ended the case. If no discharge order was issued.

14. Has the Contractor or officer or principals of the organization ever had a license suspended? If so, give the date, place, under what name and under what circumstances.

15. Has the Contractor or officer or principals of the organization ever been debarred, disqualified, removed or otherwise prevented from bidding on, or completing, any government agency or public works project for any reason? State whether the firm involved was the firm applying for pre-qualification here or another firm. Identify by name of the company, the name of the person within your firm who was associated with that company, the year of the event, the owner of the project, the project and the basis for the action.

16. In the last five years has your firm been denied an award of a public works contract based on a finding by a public agency that your company was not a responsible bidder? If so, identify the year of the event, the owner, the project and the basis for the finding by the public agency.

17. At any time in the last five years has your firm been assessed and paid liquidated damages after completion of a project under a construction contract with either a public or private owner? If so, identify all such projects by owner, owner's address, and the date of completion of the project, amount of liquidated damages assessed and all other information necessary to fully explain the assessment of liquidated damages.

18. Has the Contractor or officer or principals of the organization been indicted for or convicted of any felony within the past 10 years? If so, give for each case (1) date (2) charge (3) place (4) court and (5) action taken. Attach any explanation deemed necessary.

○ Attached

19. On a separate sheet (form attached), list all construction projects your organization has in progress giving the name and location of the project, owner, architect, contract amount, percent complete and scheduled completion date.

○ Attached

20. On a separate sheet (form attached), list all public works project your organization has completed in the past ten years, giving the name of the project, location, owner, architect, contract amount, percent complete and completion date.

○ Attached

21. On a separate sheet (form attached), list all public works projects your organization has in progress giving the name of the project, location, owner, architect, contract amount, percent complete and completion date.

○ Attached

22. On a separate sheet, list the construction experience of key individuals in your organization. Key personnel shall include principal(s), or officer(s) having overall project responsibility, as well as on-site project manager(s), superintendent(s), project controls engineer(s), schedule manager(s), and all others involved in the management of the project.

○ Attached

23. Give the name and address of all bonding companies and agents with whom Contractor has done business during the last 5 years.

Bonding Co.	Address	Agent	Amount of Bonding

24. If your firm was required to pay a premium of more than one percent (1%) for a performance and payment bond on any project(s) on which your firm worked at any time during the last three years, state the percentage that your firm was required to pay. You may provide an explanation for a percentage rate higher than one per cent, if you wish to do so.

25. During the last five years, has your firm ever been denied bond coverage by a surety company, or has there ever been a period of time when your firm had no surety bond in place during a public construction project when one was required? If so, provide details indicating the date when your firm was denied coverage and the name of the company or companies which denied coverage, the reason for denial of coverage and the period during which you had no surety bond in place.

26. Has the Contractor or officers or principals of the organization been involved in litigation or other claims regarding any project worked on in the past five years? If so, please state the following:

Plaintiff	Defendant	Amount	Court	Disposition

27. Are there now pending or in the preceding five years have there been any actions against you or have you had to pay back wages, either because of a settlement or judgment with the California State Department of Labor Standards Enforcement for failure to pay prevailing wages? If none, so state.

Name of Project	Date Filed	Disposition	Explain

28. At any time during the past five years, has any surety company made any payments on your firm's behalf as a result of a default, to satisfy any claims made against a performance or payment bond issued on your firm's behalf, in connection with a construction project, either public or private? If so, state the amount of each such claim, the name and telephone number of the claimant, the date of the claim, the grounds for the claim, the present status of the claim, the date of resolution of such claim if resolved, the method by which such was resolved if resolved, the nature of the resolution and the amount, if any, at which the claim was resolved.

29. In the last five years has any insurance carrier, for any form of insurance, refused to renew the insurance policy for your firm? If so, state the name of the insurance carrier, the form of insurance and the year of the refusal and the reason for refusal.

30. Please list the Financial Institution where line(s) of credit have been established:

Name	Contact Pers.	Phone	Amount

Attachment for Item 19

PROJECT NAME	NAME OF OWNER AND ARCHITECT WITH CONTACT AND PHONE #	ADDRESS OF OWNER AND ARCHITECT	CONTRACT AMOUNT	% COMPL.	SCHED. COMPL. DATE

PROJECT NAME	NAME OF OWNER AND ARCHITECT WITH CONTACT AND PHONE #	ADDRESS OF OWNER AND ARCHITECT	CONTRACT AMOUNT	% COMPL.	SCHED. COMPL. DATE

Attachment for Item 21

PROJECT NAME	NAME OF OWNER AND ARCHITECT WITH CONTACT AND PHONE #	ADDRESS OF OWNER AND ARCHITECT	CONTRACT AMOUNT	% COMPL.	SCHED. COMPL. DATE

CERTIFICATION
FOR
STATEMENT OF EXPERIENCE

TO BE EXECUTED BY BIDDER AND SUBMITTED WITH BID

State of California
County of

(Name) _____, declares under penalty of perjury:

That(s) he as (title) _____, is the party making the statement of experience and that such statement is true and correct.

Sign on appropriate line below and notarize:

_____ Signature of: Bidder, if the Bidder is an individual;

_____ Partner, if the Bidder is a partnership;

_____ Officer, if the Bidder is a Corporation.

Subscribed and sworn to before me

this _____ day of _____, 20__.

My commission expires _____, 20__.

NOTARY PUBLIC

SECTION 00 4519
NON-COLLUSION AFFIDAVIT

TO BE EXECUTED BY BIDDER AND SUBMITTED WITH BID

STATE OF _____]
] ss.
County of _____]

_____, being first duly sworn, deposes and says that he or she is _____ of _____ the party making the foregoing bid 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 a sham bid; that the bidder has not directly or indirectly induced or solicited any other bidder to put in a false or sham bid, and has 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 his or her 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.

Subscribed and sworn to (or affirmed) before me this _____ day of _____, 2016 by _____ personally known to me, or proved to me on the basis of satisfactory evidence, to be the person(s) who appeared before me.

Signature _____

SECTION 00 4526
WORKERS' COMPENSATION CERTIFICATE SCHEDULE

TO BE EXECUTED BY WINNING BIDDER AND
SUBMITTED WITH SIGNED CONTRACT

In accordance with the provisions of Section 3700 of the Labor Code, every contractor is required to secure payment of compensation to the contractor's employees.

Each contractor to whom a public works contract is awarded is required to sign and file with the awarding body the following certification prior to performing the work of the contract.

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

By: _____

Name: _____

Title _____

Date: _____

SECTION 00 4527
CONTRACTOR CERTIFICATION REGARDING
ATTENDANCE AT PRE-BID SITE MEETING/INSPECTION

TO BE EXECUTED BY BIDDER AND SUBMITTED WITH BID

In accordance with the requirements set forth in the Notice Inviting Bids regarding a mandatory pre-bid site meeting/inspection, the undersigned hereby certifies a designated and qualified representative, authorized to act on behalf of bidder, attended the mandatory pre-bid site meeting/inspection on **March 17, 2016 at 2:30 p.m., starting at Colusa High School, followed by visits to Burchfield Primary School and then Egling Middle School.** Bidder acquired and assembled all information provided, examined the site and made relevant inquiries and is satisfied that bidder is thoroughly familiar with, and understands the physical characteristics of the site, the site location and the requirements of the plans and specifications.

By:_____

Name: _____

Title _____

Date: _____

SECTION 00 4528
CONTRACTOR CERTIFICATION REGARDING
DEPARTMENT OF INDUSTRIAL RELATIONS REGISTRATION REQUIREMENTS

TO BE EXECUTED BY BIDDER AND SUBMITTED WITH BID

In accordance with Public Contracts Code Section 1720, et seq. and 1725.5, contractor hereby certifies that he/she/it is registered with the Department of Industrial Relations in the manner prescribed by the Department in accordance with California Labor Code Section 1725.5.

By: _____

Name: _____

Title _____

Date: _____

00 4529

CONTRACTOR CERTIFICATION REGARDING CHILD AND FAMILY SUPPORT ENFORCEMENT

TO BE EXECUTED BY WINNING BIDDER AND SUBMITTED WITH SIGNED CONTRACT

In accordance with the provisions of Public Contracts Code Section 7110, every contractor who enters into a contract with the District shall recognize the importance of child and family support obligations and shall fully comply with all applicable state and federal laws relating to child and family support enforcement, including but not limited to, disclosure of information and compliance with earnings assignment orders, as provided in Chapter 8 (commencing with Section 5200) of Part 5 of Division 9 of the Family Code.

Every written contract in excess of $100,000.00 executed between a contractor and the District requires the contractor to execute the following acknowledgment.

> I/we hereby acknowledge the policy of the State of California as set forth in Public Contracts Code Section 7110, recognizing the importance of child and family support obligations. I/we will fully comply with all applicable state and federal laws relating to child and family support enforcement, and to the best of my/our knowledge, I/we are fully complying with the earnings assignment orders of all employees and we are providing the names of all new employees to the new hire registry maintained by the Employment Development Department.

By: _____

Name: _____

Title _____

Date: _____

SECTION 00 5213
AGREEMENT FORM

THIS CONTRACT made on _____ by and between the Colusa Unified School District, a political subdivision of the State of California, hereinafter called the "District", and _____ hereinafter called "Contractor".

District and Contractor, for valuable consideration, hereby agree as follows:

1. THE CONTRACT DOCUMENTS: The complete Contract consists of the following documents incorporated herein by this reference: (Check all that apply)

____Notice Inviting Bids
____Instructions to Bidders
____Accepted Bid
____General Construction Contract
____General Conditions
____Payment Bond to Accompany Contract
____Performance Bond to Accompany Contract
____Warranty Maintenance Bond
____Certification Regarding Workers' Compensation
____Certification Regarding Child and Family Support Enforcement
____Certification Regarding Workers' Compensation
____Project Manual and Specifications
____Working Details and Plans
____Addenda
____Supplemental General Conditions

Any and all obligations of the District and the Contractor are fully set forth and described therein.

All of the above documents are intended to cooperate so that any work called for in one and not mentioned in the other or vice versa is to be executed the same as if mentioned in all documents. The documents comprising the complete contract are sometimes referred to as the Contract Documents. In case of conflict between the plans and specifications on the one hand, and remaining contract documents on the other, the document shall be read and interpreted as a whole, and in a manner to give effect to the intent of the District and the Architect in the original design and construction scheme. If there is conflict between the Engineer's and Architect's interpretations, the Architect's interpretations shall govern. If there is any conflict between the plans and the specifications, the contractor will bring the conflict to the attention of the Architect/District, and the Architect in consultation with the District shall resolve the conflict, and the contractor shall follow the Architect/District's instructions.

2. THE WORK. Contractor agrees to furnish all tools, equipment, apparatus, facilities, labor, transportation and material necessary to perform and complete in a good and workmanlike manner, the Fire Alarm Replacement Projects at Burchfield Primary School, Egling Middle School and Colusa High School Project as called for, and in the manner designated in, and in strict conformity with, the Plans and Specifications prepared by Architectural Nexus Architects, and adopted by the District, which Plans and Specifications are entitled, respectively Fire Alarm Replacement Projects at Burchfield Primary School, Egling Middle School and Colusa High School Project and which Plans and Specifications are identified by the signatures of the parties to this Contract. It is understood and agreed that all tools, equipment, apparatus, facilities, labor, transportation, and material shall be furnished and all work performed and completed as required in the Plans and Specifications under the sole direction and control of the Contractor, and subject to inspection and approval of the District, or its representatives. The District hereby designates as its representative for the purpose of this Contract the following named person: Dwayne Newman, Superintendent.

3. CONTRACT PRICE: The District agrees to pay and the Contractor agrees to accept, in full payment for the work; Fire Alarm Replacement Projects at Burchfield Primary School, Egling Middle School, and Colusa High School, agreed to be done, the sum of Dollars ($_____) subject to additions and deductions as provided in the Contract Documents.

4. GOVERNING TERMS AND CONDITIONS. The documents identified in paragraph 1 above, constitute the entire contract between District and Contractor. Contractor and District have significant rights and responsibilities pursuant to this Agreement. Specifically, Contractor performance, rights and obligations hereunder are governed by all contract documents and significant obligations and rights are set forth in the General Conditions and Supplemental Conditions, if any. By executing this Agreement, Contractor acknowledges that he/she/it has read and reviewed all of the contract documents including the General Conditions and Supplemental Conditions, if any, and that he/she/it is fully aware and understands the contents of the contract documents.

5. POST-AWARD SUBMITTAL REQUIREMENTS: In addition to the submission of the required payment and performance bonds and the certificate of insurance, the Contractor shall also submit to District, within ten (10) calendar days of execution of this Agreement the following to include but not be limited to:

a. Section 00 7200 - General Conditions, Article 15.7 Water Pollution Prevention Plan
b. Section 00 7200 - General Conditions Article 37 Progress Schedule
c. Section 00 7200 - General Conditions Article 42 Schedule of Values
d. Section 00 7200 - General Conditions Article 47 Project Superintendent; Project Manager; Foreman Submission

District: Contractor:

Colusa Unified School District
745 10th Street
Colusa CA 95932

IN WITNESS WHEREOF, identical counterparts of this Contract, each of which shall for all purposes be deemed an original thereof, have been duly executed by the parties hereinabove named, on the day and year first herein written.

Attest:

Colusa Unified School District
745 10th Street
Colusa CA 95932

By:_____
Name:_____
Title:_____

Approved as to form:

By:_____
Law Offices of Robert E. Thurbon
Attorneys for the District

Contractor:

By:_____
Name:_____
Title:_____

SECTION 00 6113.13
PERFORMANCE BOND FORM

PERFORMANCE BOND TO ACCOMPANY CONTRACT

Contractors must use this form, not a Surety Company form. Bond shall be issued by a Surety Company which is rated Best's A or better.

KNOW ALL MEN BY THESE PRESENTS: that where, the Colusa Unified School District (hereinafter designated as "District") has awarded to _____ (hereinafter designated as "Principal" or "Contractor") a contract for the work described as follows: the Fire Alarm Replacement Projects at Burchfield Primary School, Egling Middle School and Colusa High School Project.

WHEREAS, Principal is required to furnish a bond in connection with the contract, guaranteeing the faithful performance of the contract;

NOW, THEREFORE, we, the undersigned Principal and Surety are held and firmly bound unto the District in the sum of _____ dollars ($_____), lawful money of the United States of America, for 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 present.

The condition of this obligation is such.

That if the Contractor, his/her/it's heirs, executors, administrators, successors or assigns, shall abide by and in well and truly keep and perform the covenants, conditions and agreements in the foregoing contract and any alteration thereof as therein provided, on his/her/their part to be kept and performed at the time and in the manner therein specified, the Surety shall have no obligation pursuant to this bond except to participate in conferences provided in subparagraph 1.1, otherwise, the Surety's obligation under this bond shall arise after:

1. The Surety's obligation:

   1.1 The District has notified the Contractor and the Surety that the District is considering declaring the Contractor in default and has requested and attempted to arrange a conference with the Contractor and the Surety to be held not later than seven (7) calendar days after receipt of such notice to discuss methods of performing the construction contract. If the District, the Contractor and the Surety agree, the Contractor shall be allowed a reasonable time to perform the construction contract, but such agreement shall not waive the District's right to subsequently declare the Contractor in default; and

   1.2 The District has declared the Contractor in default and formally terminated the Contractor's right to complete the contract. Default shall not be declared early than seven (7) calendar days after the Contractor and the Surety have received notice as provided in subparagraph 1.1; and

   1.3 The District has agreed to pay the balance of the contract price to the Surety in accordance with the terms of the construction contract or to a contractor selected to perform the construction contract in accordance with the terms of the contract with the District.

2. When the District has satisfied the conditions of paragraph 1, the Surety shall immediately and at the Surety's expense take the following actions:

2.1 Undertake to perform and complete the construction contract itself, through its agents or through independent contractors. Surety shall not undertake to perform and complete the construction contract by employing, authorizing or utilizing the services of the principal contractor or affiliated organization without the written consent of the District; or

2.2 Retain a qualified contractor acceptable to the District for performance and completion of the construction project/contract. The contractor shall be selected with the District's concurrence and his/her/it's performance shall be secured with performance and payment bonds executed by a qualified Surety equivalent to the bonds issued for the original construction contract, and sufficient to pay to District the amount of damages as described in paragraph 4 et seq. resulting from the Contractor's default; or

2.3 Waive it's right to perform and complete, arrange for completion, or obtain a new contractor by determining the amount of which it may be liable to the District and as soon as practicable after the amount is determined, tender payment thereof to the District.

2.4 Surety shall proceed in accordance with paragraph 2 not later than fifteen (15) calendar days after written notice that Contractor is declared to be in default. In an emergency situation, or if time is of the essence in the underlying contract, District may take all reasonable actions necessary to protect the work of improvement and/or to continue the construction process pending Surety's investigation and action pursuant to paragraph 2. Cost incurred by District in protecting the work of improvement or continuing the construction process pending Surety action shall be the joint and several responsibilities of Surety and Contractor.

3. If Surety does not proceed as provided in paragraph 2 et seq., Surety shall be in default on this bond and the District shall be entitled to enforce any remedy available to District. In the event suit is brought upon this bond, Surety or Sureties will pay all court costs, expenses, and reasonable attorney fees fixed by the court.

4. After District terminates the Contractor's right to complete the construction contract,

the responsibilities of the Surety to the District shall not be greater than those of the contractor under the construction contract, and responsibilities of the District to the Surety shall not be greater than those of the District under the construction contract. To the limit of the amount of this bond, but subject to commitment by the District of the balance of the contract price to mitigation of costs and damages on the construction contract, the Surety is obligated without duplication for:

4.1 The responsibilities of the Contractor for correction of defective work and completion of the construction contract.

4.2 Additional legal, design professional and delay costs resulting from the Contractor's default, and resulting from the actions or failure to act as required in paragraphs 2 and 3.

4.3 Liquidated damages, or if no liquidated damages are specified in the construction contract, then actual damages caused by the delayed performance or non-performance of the Contractor.

5. Surety hereby waives notice of any change, including changes of time, to the construction contract or to related subcontracts, purchase orders and other obligations.

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

7. This bond, the rights and obligations hereunder and the interpretation of any provision contained herein, shall be governed by the laws of the State of California and Surety, by submission of this bond to District, shall be deemed to have submitted to the jurisdiction of California courts. Surety's obligations to District pursuant to this bond are subject to the covenant of good faith and fair dealing and Surety's breach of said covenant shall give rise to a cause of action by District for damages caused by Surety's breach of said covenant.

8. For the purposes of this bond, the construction contract shall be defined as all of the documents in the agreement between District and Contractor.

9. Surety, for value received, hereby stipulates and agrees that in accordance with California Civil Code Section 8152 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 or payment for non-conforming or defective work or materials, except for final payment upon contract completion shall in any way affect Surety's obligations or exonerate Surety on this bond, and Surety hereby waives 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, or of payment for defective work or non-conforming work or materials.

IN WITNESS WHEREOF, identical counterparts of this bond, each of which shall for all purposes be deemed an original thereof, have been duly executed by the Principal and Surety above-named on the _____ day of _____, 2016.

To be signed by Principal and Surety and Notarial Acknowledgment and Seal attached.

CONTRACTOR (Name and Address)
_____
_____
_____
_____

DISTRICT:
Colusa Unified School District
745 10th Street
Colusa, CA 95932

SURETY (Name and Principal place of business)
_____
_____
_____
_____

CONTRACTOR AS PRINCIPAL
COMPANY:_____ (Corporate Seal)
By:_____
Name:_____
Title:_____

SURETY COMPANY:_____ (Corporate Seal)
By:_____
Name:_____
Title:_____
Attorney in Fact

THIS IS A REQUIRED FORM

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

Any claims under this bond may be addressed to:
(Name and Address of Surety)

_____

_____

_____

Telephone: _____

(Name and Address of agent or representative for service of process in California)

_____

_____

_____

Telephone: _____

State of California
County of _____)

On _____ before me, _____, a Notary Public, in and for said State, personally appeared _____, who proved to me on the basis of satisfactory evidence to be the person(s) whose name(s) is/are subscribed to the within instrument as the Attorney-in-Fact of the _____(Surety) and acknowledged to me that he/she/they subscribed the name of the _____(Surety) thereto and his/her own name as Attorney-in-Fact on the executed instrument.

I certify under PENALTY OF PERJURY under the laws of the State of California that the foregoing paragraph is true and correct.

WITNESS my hand and official seal.

_____ (Seal)
Notary Public in and for said State

Commission expires: _____

Note: A copy of the power-of-attorney to local representative of the bonding company must be attached hereto.

END OF SECTION

SECTION 00 61 13.16
PAYMENT BOND FORM

PAYMENT BOND TO ACCOMPANY CONTRACT

Contractors must use this form, not a Surety Company form. Bond shall be issued by a Surety Company which is rated Best's A or better.

Know All Men by These Presents: THAT WHERE, the Colusa Unified School District (hereinafter designated as "District") has awarded to _____, as principal, hereinafter designated as the "Contractor", a contract for the work described as follows: The Fire Alarm Replacement Projects at Burchfield Primary School, Egling Middle School and Colusa High School Project.

AND WHEREAS, Contractor is required by the provisions of Section 9550 et seq., Civil Code, to furnish a bond in connection with the contract;

NOW, THEREFORE, We the undersigned Contractor and surety are held and firmly bound unto the District in the sum of _____ Dollars ($_____), said sum is consistent with the provisions of Section 9554 of the Civil Code, for which payment well and truly to be made we bind ourselves, our heirs, executors and administrators, successors and assigns, jointly and severally, firmly by these presents.

THE CONDITION OF THIS OBLIGATION IS SUCH,

That if Contractor, his/her/it's heirs, executors, administrators, successors or assigns, or subcontractors, shall fail to pay any materials, provisions, provender, or other supplies or teams, implements or machinery used in, upon, for, or about the performance of the work contracted to be done, or for any work or labor thereon of any kind, or for amounts due under the Unemployment Insurance Act with respect to such work or labor, as required by the provisions of Section 9650 et seq. of the Civil Code, and provided that the claimant shall have complied with the provisions of said Code, the surety or sureties hereon will pay for the same in an amount not exceeding the sum specified in this bond, otherwise the above obligation shall be void. In case suit is brought upon this bond the surety or sureties will pay all court costs, expenses and the reasonable attorneys' fees fixed by the court and the application and interpretation of the rights and obligations hereunder shall be pursuant to California law. Surety's obligation to the Colusa Unified School District pursuant to this bond is subject to the covenant of good faith and fair dealing.

This bond shall inure to the benefit of any and all persons, companies or corporations entitled to file claims under Section 9100 of the Civil Code, so as to give a right of action to them or their assigns in any suit brought upon this bond.

Surety, for value received, hereby stipulates and agrees that in accordance with California Civil Code section 8152 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 or payment for defective work or materials, except for final payment upon contract completion, shall in any way affect Surety's obligations or exonerate Surety on this bond, and Surety hereby waives 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 of, or payment for defective work or materials.

IN WITNESS WHEREOF, identical counterparts of this bond, each of which shall for all purposes be deemed an original thereof, have been duly executed by the Principal and Surety above-named on the _____ day of _____, 2016.

[Signatures on Following Page]

CONTRACTOR (Name and Address)
_____
_____
_____

DISTRICT:
Colusa Unified School District
745 10th Street
Colusa, CA 95932

SURETY (Name and Principal place of business)
_____
_____
_____
_____

CONTRACTOR AS PRINCIPAL
COMPANY:_____ (Corporate Seal)
By:_____
Name:_____
Title:_____

SURETY COMPANY:_____ (Corporate Seal)
By:_____
Name:_____
Title:_____
Attorney in Fact

THIS IS A REQUIRED FORM

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

Any claims under this bond may be addressed to: (Name and Address of Surety)	(Name and Address of agent or representative for service of process in California)
_____	_____
_____	_____
_____	_____
Telephone: _____	Telephone: _____

State of California
County of _____)

On _____ before me, _____, a Notary Public, in and for said State, personally appeared _____, who proved to me on the basis of satisfactory evidence to be the person(s) whose name(s) is/are subscribed to the within instrument as the Attorney-in-Fact of the _____(Surety) and acknowledged to me that he/she/they subscribed the name of the _____(Surety) thereto and his/her own name as Attorney-in-Fact on the executed instrument.

I certify under PENALTY OF PERJURY under the laws of the State of California that the foregoing paragraph is true and correct.

WITNESS my hand and official seal.

_____ (Seal)
Notary Public in and for said State

Commission expires: _____

Note: A copy of the power-of-attorney to local representative of the bonding company must be attached hereto.

END OF SECTION

SECTION 00 6119
WARRANTY MAINTENANCE BOND

WARRANTY MAINTENANCE BOND TO ACCOMPANY CONTRACT

KNOW ALL MEN BY THESE PRESENTS: that whereas, the Colusa Unified School District (hereinafter designated as "District") has awarded to _____ (hereinafter designated as "Principal or Contractor") a contract for the work described as follows: The Fire Alarm Replacement Projects at Burchfield Primary School, Egling Middle School and Colusa High School project.

WHEREAS, Principal is required to furnish a bond in connection with the contract, guaranteeing the faithful performance of Principal's obligations pursuant to a 2-year warranty period as set forth in the contract;

NOW, THEREFORE, we, the undersigned Principal and _____ _____ as Surety are held and firmly bound unto District in the sum of _____lawful money of the United States of America, for 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 present.

The condition of this obligation is such.

That if the Contractor, his/her/its heirs, executors, administrators, successors or assigns, shall abide by and in well and truly keep and perform the covenants, conditions and agreements of the warranties set forth in the subject contract and any alteration thereof as therein provided, on his/her/its part to be kept and performed at the time and in the manner therein specified, the Surety shall have no obligation pursuant to this bond, otherwise the Surety's obligation under this bond shall arise after:

A. The District has notified the Contractor of defects in material or workmanship and Contractor has refused to correct, or failed to adequately correct defective materials or workmanship consistent with the obligation set forth in the warranty provision of the subject contract, and/or has failed to compensate District for consequential damages suffered as a result of the defective material and/or workmanship.

Then:

B. The surety shall immediately and at the Surety's expense, undertake to perform and complete repairs/replacement of defective materials or workmanship through its agents or through independent contractors or Surety may waive its right to perform as set forth above by determining the amount of which Surety may be liable to the District and as soon as practicable after the amount is determined, tender payment thereof to District.

Surety shall proceed in accordance with the obligation set forth herein, not later than seven (7) calendar days after written notice that Contractor has refused or failed to perform his/her/its obligations pursuant to the warranty provisions of the subject contract and in an emergency situation, or if time is of the essence in the underlying contract, District may take all reasonable actions necessary to protect the subject work of improvement and/or commence immediate repairs to protect the health and safety of the public or to continue the operation of the District and costs incurred by District in protecting the work of improvement or commencing emergency repairs for the protection of the public or the continued operation of the district shall be the joint and several responsibility of Surety and /Contractor.

If Surety does not proceed as provided herein, Surety shall be in default on this bond and the District shall be entitled to enforce any remedy available to District. In the event suit is brought upon this bond, Surety or Sureties will pay all courts costs, expenses and reasonable attorney fees fixed by the court.

This bond, the rights and obligations hereunder and the interpretation of any provision contained herein, shall be governed by the laws of the State of California and /Surety, by submission of this bond to District, shall be deemed to have submitted to the jurisdiction of California courts.

For the purposes of this bond, the contract and warranty provisions contained therein shall be defined as all of the documents constituting the complete construction contract by and between District and Contractor.

Surety hereby stipulates and agrees that this bond shall remain in full force and effect until expiration of the warranty period as set forth in the contract documents.

IN WITNESS WHEREOF, identical counterparts of this bond, each of which shall for all purposes be deemed an original thereof, have been duly executed by the principal in surety above-named on the _____ day of _____, 2016.

CONTRACTOR (Name and Address)

DISTRICT:
Colusa Unified School District
745 10th Street
Colusa, CA 95932

SURETY
(Name and principle place of business)

CONTRACTOR AS PRINCIPAL
COMPANY:

(Corporate Seal)

_____
Name and Title

SURETY COMPANY:

(Corporate Seal)

_____
Attorney in Fact

THIS IS A REQUIRED FORM

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

Any claims under this bond may be addressed to: (Name and Address of Surety)	(Name and Address of agent or representative for service of process in California)
_____	_____
_____	_____
_____	_____
Telephone: _____	Telephone: _____

State of California
County of _____)

On _____ before me, _____, a Notary Public, in and for said State, personally appeared _____, who proved to me on the basis of satisfactory evidence to be the person(s) whose name(s) is/are subscribed to the within instrument as the Attorney-in-Fact of the _____(Surety) and acknowledged to me that he/she/they subscribed the name of the _____(Surety) thereto and his/her own name as Attorney-in-Fact on the executed instrument.

I certify under PENALTY OF PERJURY under the laws of the State of California that the foregoing paragraph is true and correct.

WITNESS my hand and official seal.

_____ (Seal)
Notary Public in and for said State

Commission expires: _____

Note: A copy of the power-of-attorney to local representative of the bonding company must be attached hereto.

END OF SECTION

SECTION 00 6241
CONTRACTOR CERTIFICATION REGARDING BACKGROUND CHECKS

TO BE EXECUTED BY WINNING BIDDER AND SUBMITTED WITH SIGNED CONTRACT

_____ certifies that it has performed one of the following:

☐ Pursuant to Education Code Section 45125.1, Contractor has conducted criminal background checks, through the California Department of Justice, of all employees providing services to the Colusa Unified School District, pursuant to the contract/purchase order dated _____, and that none have been convicted of serious or violent felonies, as specified in Penal Code Sections 1192.7(c) and 667.5(c), respectively.

As further required by Education Code Section 45125.1, attached hereto as Attachment "A" is a list of the names of the employees of the undersigned who may come in contact with pupils.

OR

☐ Pursuant to Education Code Section 45125.2, Contractor will ensure the safety of pupils by one or more of the following methods:

1. The installation of a physical barrier at the worksite to limit contact with pupils.

2. Continual supervision and monitoring of all employees of the entity by an employee of the entity whom the Department of Justice has ascertained has not been convicted of a violent or serious felony.

I declare under penalty of perjury under the laws of the United States that the foregoing is true and correct.

Date _____, 2016

_____

By its: _____

ATTACHMENT A:

CONTRACTOR CERTIFICATION REGARDING BACKGROUND CHECKS

(INSERT NAMES OF EMPLOYEES WHO MAY COME IN CONTACT WITH PUPILS)

SECTION 00 6313
REQUEST FOR INTERPRETATION FORM

FOR CONTRACTOR'S USE PRIOR TO SUBMISSION OF BID

PROJECT NAME: BID #:	Fire Alarm Replacement Projects at Burchfield Primary School, Egling Middle School and Colusa High School		
TO:	Wallace E. Browe	EMAIL:	wally@capitalpm.com

DATE:			
FROM:		EMAIL:	
DOCUMENT/DIVISION NUMBER:		DRAWING NUMBER:	

REQUESTED CLARIFICATION:

RESPONSE TO CLARIFICATION:

00 7200 GENERAL CONDITIONS

TABLE OF USE – INSERTS

A. RATES FOR SERVICES – NON-CONFORMING WORK Pg. 1

B. ARCHITECT IDENTIFICATION Pg. 3

C. LIMITED MARKUP/RATES Pg. 6

D. DATE OF COMPLETION Pg. 9

E. LIQUIDATED DAMAGES Pg. 24

F. WARRANTIES (2 YEAR) Pg. 41

00 7200 - GENERAL CONDITIONS

1. ACCEPTANCE OF NON-CONFORMING WORK: District reserves the right to accept non-conforming work, in consultation with the Architect, and in such case, acceptance of non-conforming work shall result in an equitable adjustment in the total contract price reflecting the reduced value of the non-conforming work as determined by mutual agreement between District and Contractor.

   1.1 REJECTION OF NON-CONFORMING WORK: The Contractor shall promptly correct all work rejected by the Architect as defective or failing to conform to the Contract Documents whether observed before or after substantial completion and whether or not fabricated, installed, or completed. The Contractor shall bear all costs of correcting such rejected work, including, but not limited to, re-inspection, redesign, and as applicable the following costs:

   a. Owner: PM/CM: 4-hour minimum @ $166.00 per hour or current rate in effect at time of correction;

   b. Architect: Office/Field: 4-hour minimum @ $166.00 per hour or current rate in effect at time of correction;

   c. Project Inspector: 4-hour minimum @ $150.00 per hour or current rate in effect at time of correction;

   d. Test Lab: 4-hour minimum @ $150.00 per hour or current rate in effect at time of correction.

   1.2 FINAL INSPECTION – REINSPECTIONS: When Contractor believes the Work, including the punch list, is complete, it shall submit written certification of the same pursuant to Closeout Procedures. Thereafter, the Work shall be inspected by the District and Architect. If Architect and District determine that the Work is not complete, or is defective or otherwise in need of correction, the Contractor shall be notified of the same and if any further inspections, approvals, testing, reviews, et cetera, need to be performed by the District and Architect as a result thereof, such work may, at the District's discretion, be back charged to the Contractor.

2. ACCIDENT PREVENTION: Precaution shall be exercised at all times for the protection of persons (including employees) and property. The safety provisions of applicable laws, building and construction codes shall be observed. Machinery and equipment shall be guarded and other hazards shall be eliminated in accordance with the safety provisions of the Construction Safety Orders issued by the Industrial Accident Commission of the State of California.

3. ARBITRATION: This contract is subject to Public Contracts Code §20104. Specifically, claims for three hundred and seventy-five thousand ($375,000.00) dollars or less which arise between the Contractor and the District shall be resolved as follows:

   3.1 Definition: "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 District.

3.2 For any claim subject to this article, the following requirements apply:

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. This provision shall not extend the time limit or otherwise supersede notice requirements set forth in other provisions of the contract documents.

b. For claims of less or equal to than fifty thousand ($50,000.00) dollars, the District shall respond in writing to any written claim within forty-five (45) days receipt of the claim or may request, in writing, within thirty (30) days of receipt of the claim, any additional documentation supporting the claim or relating to defenses or claims the District may have against the claimant. If additional information is thereafter required, it shall be requested and provided upon mutual agreement by the District and the claimant. The District's written response to the claim, as further documented, shall be submitted to the claimant within fifteen (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. For claims over fifty thousand ($50,000.00) dollars and less than or equal to three hundred and seventy-five thousand ($375,000.00) dollars, the District shall respond in writing to all written claims within sixty (60) days of receipt of the claim, or may request, in writing, within thirty (30) days receipt of the claim, any additional documentation supporting the claim or relating to defenses or claims the District may have against the claimant. If additional information is thereafter required, it shall be requested and provided upon mutual agreement of the District and the claimant. The District's written response to the claim as further documented shall be submitted to the claimant within thirty (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 District's written response, or if the District fails to respond within the time prescribed, the claimant may so notify the District in writing either within fifteen (15) days of receipt of the District's response or within fifteen (15) days of the District's failure to respond within the time prescribed, respectively, and demand an informal conference to meet and confer for settlement of the issues in dispute. Upon a demand, the District shall schedule a meet and confer conference within thirty (30) days.

e. If, following the meet and confer conference, the claim or any portion remains in dispute, the claimant may file a claim pursuant to Government Code §900 et seq.

f. If claimant's claim is not resolved pursuant to his/her filing of the claim pursuant to Government Code §900 et seq., claimant may proceed with a civil action which shall be governed by the provisions of Public Contracts Code §20104.4. Specifically, the court will submit the matter to non-binding mediation unless the District and claimant waive non-binding mediation and thereafter, if the matter remains in dispute, the case shall be submitted to judicial arbitration pursuant to Chapter 2.5 (commencing with section 1141.10) of Title 3 of Part 3 of the Code of Civil Procedure.

4. ARCHITECT/ENGINEER: The District has retained **Architectural Nexus as Architect/Engineer** for this project. The Architect/Engineer will advise and consult with the District, and all of the District's instructions to the Contractor shall be issued through the Architect/Engineer. The Architect is responsible for the overall design of the project and the final authority, in consultation with the District, in judgments of aesthetic consideration. The drawings, specifications, sketches and other data necessary to define the work covered by these contract documents have been prepared by the Architect. The Architect shall observe the construction to determine general

compliance with the contract documents and the Architect shall interpret the drawings and specifications consistent with the intent of the drawings and specifications. The Architect shall evaluate and review shop drawings, samples and other submittals required and maintain an up-to-date log of all such as items processed. The Architect shall consult with the District, Contractor(s) and any state or city agency having jurisdiction over the work whenever necessary to further the best interest of the project.

5. AS-BUILT DRAWINGS: The Contractor will be given one extra set of Drawings and Specifications by the Architect which shall be kept at the site of the work at all times. As built drawings required to be kept on site include a complete set of drawings for all trades including, but not necessarily limited to, civil, structural, architectural, electrical, plumbing, mechanical, landscape, auxiliary such Enviroplex. Exact locations of all pipes and conduits and all changes in construction and details shall be indicated and dimensioned upon these drawings, and all changes in materials and equipment installed shall be indicated in these Specifications. As-builts drawings shall be updated on a monthly basis. Progress payments to the Contractor shall be withheld by the District until as-built documents are up to date. Upon completion of the work, the "as-built" Drawings and Specifications shall be returned to the District prior to final payment. Contractor guarantees the accuracy of the "as-built drawings" and Contractor shall indemnify District from any loss incurred as a result of inaccurately submitted "as-built drawings". The warranty of accuracy of the as-built drawings shall survive the completion of Contractor's obligations hereunder and shall be in effect for the useful life of the completed project, excepting that destruction of the project or revision or reconstruction of the building after completion of the project shall relieve Contractor of his/her obligation of accuracy in the as-built drawings regarding the portion(s) of systems or building change or altered by subsequent reconstruction.

6. ASSIGNMENT: Neither party to the Contract shall assign the Contract as a whole without the written consent of the other, nor shall the Contractor assign any monies due or to become due to him/her hereunder, without the previous written consent of the District. Assignment of this contract or any part thereof without the prior written consent of the District shall constitute a material breach of this Agreement and entitle District to exercise any and all rights provided for by this Agreement or by law for such material breach.

7. ATTORNEYS' FEES: In the event of any action or proceeding, brought by any party against any other party pursuant to this Agreement, the prevailing party shall be entitled to recover all costs and expenses, including the actual fees of its attorneys, incurred for prosecution, defense, consultation or advice in such action or proceeding, not limited to but including cost of expert witnesses, attorney preparation, and cost of discovery and investigation. In awarding attorney fees, the court will not be bound by any court fee schedule but shall, if it is in the interest of justice to do so, award the full amount of cost, expenses, attorney fees paid or incurred in good faith. This provision shall not be applicable to the alternative dispute resolution set forth in Public Contracts Code §20104 et seq., until such time as the case is assigned to judicial arbitration, by a court of competent jurisdiction or, if not assigned for judicial arbitration, when the case is heard before a court of competent jurisdiction.

8. AUDIT: District may at all times review and audit Contractor's cost accounting records and other job records and Contractor will afford District reasonable facilities for such audits.

   Contractor shall preserve all job records for at least five (5) years after the completion of the project.

9. BINDING AGREEMENT: This Agreement, including all documents compromising the complete construction contract, shall be binding upon the District and Contractor and upon their successors and assigns and shall endure to the benefit of the District and Contractor and their successors and assigns.

10. BONDS: The Contractor shall furnish the District, within three (3) days after award of the Contract by the Governing Board and prior to execution of the Contract and the beginning of work, with the following separate surety bonds:

10.1 Faithful Performance Bond: Said bond shall be in an amount equal to one hundred percent (100%) of the Contract price, shall be for the faithful performance of the Contract, shall be approved by the District, and shall be secured from an admitted surety or sureties satisfactory to District. An admitted surety is an insurance organization authorized by the Insurance Commissioner to transact surety business in the State of California during this calendar year.

10.2 Payment Bond: Said bond shall be in an amount equal to one hundred percent (100%) of the Contract price, shall be approved by the District, and shall be secured from an admitted surety or sureties satisfactory to District. An admitted surety is an insurance organization authorized by the Insurance Commissioner to transact surety business in the State of California during this calendar year. Each bond shall be in the form set forth in the contract documents.

11. CHANGE ORDERS:

11.1 District, without invalidating contract, and as provided by law, may order extra work or make changes by altering, adding to, or deducting from work, with contract sum being adjusted accordingly. All such work shall be executed under conditions of original contract. Contractor shall increase the amounts of his payment and performance bonds in proportion to any increase in price. In giving instructions, Architect, with the prior approval of District, shall have authority to make minor changes in work not involving change in cost and not inconsistent with purposes of building. Otherwise, except in an emergency endangering life or property, no extra work or change shall be made except in pursuance of a written change order from the District, and no claim for addition to contract sum shall be valid unless so ordered.

11.2 If the contractor is delayed in completing the work by reason of any change made pursuant to this Article, the time for completion of the work shall be extended by the same change order for a period commensurate with such delay, without additional compensation, and Contractor shall not be subject to liquidated damages for this extension. No extension of time will be granted for change orders that, in the opinion of the Architect, do not affect the critical path of the project.

11.3. All change orders shall be signed by District and the Architect.

11.4. Value of any such extra work, change, or deduction shall be determined at the sole discretion of the District in either of the two following ways set forth in subsection 11.4.a. or 11.4.b. Contractor understands and agrees that regardless of which process District elects to utilize that when submitting any change order proposal that such change order shall be broken down separately to itemize labor, by trade and hourly rate, for any trade performing work on the project and materials for any one activity. Contractor also understands and agrees that when submitting its itemized change order proposal, that Contractor shall only be allowed to submit a cost proposal for labor that reflects the wage rates set forth in the Schedule of Values for the trade that is currently on file with the District and Architect at the time the change order proposal is submitted.

a. Acceptable lump sum proposal from Contractor properly itemized and supported by sufficient substantiating data to permit evaluation with a combined mark-up for all overhead and profit based on the formula set forth in section B. (5) of this Article. Contractor's written proposal must be broken down and submitted, in writing, in the format set forth in Section 11.4.b.1 through 11.4.b.7.

b. Time and Material: "Force Account" for direct costs for labor, material, and equipment rental plus markups for overhead and profit for Prime Contract, Subcontractor, and Sub-subcontractors as applicable. (Supervision is to be included in markup unless specifically agreed to in advance that special supervision is required.)

1. *Labor: Attach itemized direct hourly rates in accordance with certified payroll records times total hours expended. Separately show dollar amount for employer-paid payroll taxes/insurance benefits.*

Enter total as direct labor item. _____

2. *Material: Attach receipts, invoices or itemized quantity units costs plus tax and delivery.*

Enter total as material item. _____

3. *Equipment: Attach receipts, invoices, or tear tickets indicating unit costs and total hours or loads charged. (Small tools with a value of less than $500.00 are to be included in markup.)*

Enter total as rental item. _____

4. *SUBTOTAL (Lines 1+2+3)*

5. Combined Markup: FOR ALL OVERHEAD AND PROFIT SHALL BE BASED ON THE FOLLOWING:

i. For the Prime Contractor, for work performed by his forces, fifteen (15%) percent of his direct subtotal cost. This fifteen (15%) markup represents payment for profit, overhead, insurance, taxes, indirect supervision, bonds, warranty and any other costs incurred by Contractor in connection therewith.

ii. For the Prime Contractor, for work performed by a Subcontractor's forces, five (5%) percent of the direct subtotal cost due the Subcontractor, with no mark-up on mark-up. This five (5%) markup represents payment for profit, overhead, insurance, taxes, indirect supervision, bonds, warranty and any other costs incurred by Contractor in connection therewith.

iii. For a Subcontractor or Sub-subcontractor, for work performed by their own forces, fifteen (15%) percent of their own direct subtotal costs. This fifteen (15%) markup represents payment for profit, overhead, insurance, taxes, indirect supervision, bonds, warranty and any other costs incurred by sub-contractor in connection therewith.

iv. For a Subcontractor, for work performed by a Sub-subcontractor, five (5%) percent of the direct subtotal cost due the Sub-subcontractor. This five (5%) markup represents payment for profit, overhead, insurance, taxes, indirect supervision, bonds, warranty and any other costs incurred by Contractor in connection therewith.

6. SUBTOTAL (Lines 4+5) _____

7. TOTAL CHANGE ORDER REQUEST: _____

a. If the Contractor should claim that any instruction, request, drawing, specification, action, condition, omission, default or other situation obligates the District to pay additional compensation to the Contractor or to grant an extension of time for the completion of the contract, or constitutes a waiver of any provision in the contract, he shall notify the District, in writing, of such claim within ten (10) days from the date he has actual or constructive notice of the factual basis supporting the claim. The Contractor's failure to notify the District within such period shall be deemed a waiver and relinquishment of the claim against the District. If such notice be given within the specified time, the procedure shall be as stated above in this Article.

b. Contractor Initiated Change Orders: Contractor understands that with respect to Contractor initiated change orders, that Contractor shall be solely responsible for all costs associated with the review process including, but not limited to, Architect review, engineers review, inspection, DSA approvals, et cetera.

c. Back Charge for Failure to Timely Submit Information for Proposed Change Orders: Contractor understands that it shall, within ten (10) calendar days of receipt of a demand by District, provide to District, in writing, an itemized list of all costs and/or credits (as applicable) for any Contractor initiated change orders. Contractor further understands that a failure to comply with this provision will result in the District obtaining the necessary information and back charging the Contractor for all costs incurred in having to take this action.

d. All costs for supervision shall be part of the Contractor's or subcontractor's overhead including, but not limited to, cost of bond, office/clerical support, home office overhead, administrative expenses, profit, overhead, insurance, taxes, indirect supervision, bonds, warranty and any other costs incurred by Contractor in connection therewith.

12. CLEANUP:

12.1 The Contractor shall protect and preserve the work from all damage or accident, providing any temporary roofs, window and door coverings, boxing's, or other construction as required. This shall include any adjoining property of the District or others affected by the work of the Contractor. Contractor shall, on a daily basis, maintain the site in a reasonably clean condition and shall at the conclusion of each construction day ensure that dirt, debris, refuse, etc., deposited or left outside of the general construction area on any grounds or facilities occupied or used by the public or district staff, is cleaned-up and removed from the facility occupied or used by the public and/or district staff.

12.2 In the event work performed by the Contractor or any subcontractor creates dust or other airborne debris, Contractor shall provide daily "dust control" sufficient to prevent dust accumulation on grounds or buildings occupied or used by the public or district staff.

12.3 The Contractor shall assume full responsibility for all glass and plastic glazing installed under this Contract against damage from any source during construction. He/she shall replace all broken, cracked or scratched glass or plastic without expense to the District until date of Final Completion.

12.4 The Contractor shall, at completion of the work, remove all marks, stains, fingerprints, dust, dirt, and paint drippings from all surfaces, wash tile, plumbing and other fixtures

clean. Clean and polish all hardware and other unpainted metals. Remove all temporary labels, tags and paper coverings. Clean all concrete and asphalt surfaces.

12.5 Cleaning, polishing, sealing, waxing and all other such finish operations indicated on the Drawings or required in the Specifications shall be taken to produce the required condition at the time of acceptance of all work under the Contract.

12.6 Before final acceptance, employ professional window cleaners to clean all plastic and glass surfaces and mirrors of putty, paint materials, stains and dirt, without scratching or injuring the plastic and glass. Leave the work bright, clean and polished.

13. COMMENCEMENT OF WORK AND TIMELY COMPLETION: Contractor understands and acknowledges that **time is of the essence** for completion of this project. The Contractor shall commence work on this project within ten (10) ten calendar days from and after the date of written notice by District to the Contractor to begin work. Upon receipt of such notice, Contractor shall begin work and shall prosecute the work diligently to completion. No work shall be commenced before the contract is signed.

13.1 Completion Deadline: The Project must be completed by 8/12/2016. Failure to complete the project on time will subject the successful bidder to liquidated damages as set forth in the liquidated damages provision of this Contract.

13.2 Delays: If Contractor is delayed in said work by the unforeseeable acts of District, it's officers, agents or employees, or by changes ordered in the work, or by anticipatable strikes, fire, unusual and anticipatable delay in transportation, unavoidable casualties, unusually adverse weather conditions which could not have been reasonably anticipated or by delay authorized by District, or by any cause which the District shall decide to justify the delay, then the time of completion shall be extended for such reasonable time as the District may decide. In the event Contractor is delayed by the acts of District, it's agents, officers or employees, Contractor's sole remedy is an extension of time to perform his/her obligations and Contractor shall not be entitled to recover damages unless the delay is unreasonable under the circumstances and was not within the reasonable contemplation of the Contractor and/or the District. The Contractor's right to an extension of time or to recover damages for delays indicated above is expressly subject to his/her giving seven (7) days' notice of such claim from the day he/she knew or should have known of the delay. Failure to give such notice shall constitute a waiver of an extension of time, damages, or any other remedy Contractor may have had if he/she provided proper notice pursuant to this provision. Failure to complete the project within the time specified, including extensions thereof, shall subject Contractor to the imposition of liquidated damages as set forth in the contract documents.

13.3 Substantial Completion: For the purpose of determining substantial completion if applicable to, or necessary under this contract, substantial completion shall be defined as the stage in the progress of the work when the work or designated portion thereof is sufficiently complete in accordance with the contract documents so that the Architect can certify that the work is substantially complete, and so that District can occupy or utilize the work for its intended purpose. When the Contractor considers that the work or a portion thereof which the District agrees to accept separately is substantially complete, the Contractor shall prepare and submit to the Architect the comprehensive list of items to be completed or corrected. The Contractor shall proceed promptly to complete and correct items on the list. Failure to include an item on such list does not alter the responsibility of the Contractor to complete all work in accordance with the contract documents. Upon receipt of the Contractor's list, the Architect will make an observation to determine whether the work or designated portion thereof is substantially complete. When the work or designated portion thereof is substantially complete, the Architect will prepare a certificate of substantial completion which shall establish the date of substantial completion, shall establish the responsibilities of the District and Contractor for security,

maintenance, heat, utilities, damage to the work, insurance, and shall fix the time, which shall not exceed thirty (30) days from the date of substantial completion, within in which the Contractor shall finish all items on the list accompanying the certificate. The certificate of substantial completion shall be submitted to the District and Contractor for their written acceptance of responsibilities assigned to them in such certificate. The District shall retain sufficient funds to compensate for unfinished items identified on Contractor's "punch list", and funds encumbered by filed stop notices.

It is IMPORTANT that the Contractor understands that achieving substantial completion does not relieve the Contractor from achieving final completion by the Project Completion Deadline set forth in Section 13.1. Failure to achieve final completion, as that term is defined in Section 13.4 within the Project Completion Deadline may result in the District imposing liquidated damages against the Contractor for each and every calendar day thereafter until final completion is actually achieved.

13.4 **Final completion** shall be deemed to have occurred when Contractor has completed all items on his/her "punch list" and when Contractor has fulfilled **all other obligations** set forth in the contract documents. Upon recommendation of the Architect and upon satisfactory completion of all punch list items, the District shall record a notice of completion. Approximately thirty-five (35) days after recordation of the notice of completion, the District shall process the final payment to the Contractor with offsets for the value of stop notices, or incomplete or unsatisfactory work.

13.5 **Rain Day:** Is defined as a day with 0.1 inch of measurable rain or more, as per the National Weather Service. Days exceeding the normal days of rain for this project and exceeding 0.1 inch per day will be considered a rain day. However, notwithstanding the foregoing, rain day delay claims will only be approved if the Contractor demonstrates to the satisfaction of the District that such rain days actually caused Contractor to have to cease work on the critical path of the project and actually caused a delay in completion of the project, and such delay claim is verified in writing by the Inspector of Record. Rain day delay claims can only be submitted for actual days of work scheduled to be performed and are exclusive of weekends, holidays and all other days for which work is not actually scheduled to be performed on that day. The Inspector of Record will not be authorized to approve any rain day delay claims unless the Inspector of Record certifies that the rain day actually resulted in the delay of the prosecuting of the scope of work being performed on the project at the time of the rain day. Rain day delay claims will not be approved merely to afford an extension of time of completion of the contract. Rain day delay claims must be time submitted as provided in Paragraph 13.2 above; otherwise, such claim is deemed waived.

14. COMPLETE AGREEMENT: This contract supersedes any and all agreements either oral or in writing, between the District and Contractor with respect to the subject matter herein. The District and Contractor acknowledge that no representation by any party which is not embodied herein or any other agreement, statement or promise not contained in the contract documents shall be valid and binding.

15. COMPLIANCE WITH LAWS AND REGULATIONS: Contractor shall be familiar with, and comply with, the various federal, state and local laws affecting public works, including but not limited to the following:

15.1 Prevailing Wage Law:

a. The general prevailing wage rates have been determined by the Director of the State Department of Industrial Relations and it shall be mandatory upon the Contractor to whom the Contract is awarded and upon any subcontractor to pay not less than these specified rates to all laborers, workers, and mechanics employed by them in the execution of the Contract, all in accordance with the

provisions of Sections 1770-1776, inclusive, of the Labor Code. Copies of the general prevailing wage rates are on file at the administrative office of District.

b. It shall be mandatory upon the Contractor and upon any subcontractor under him/her 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 District, forfeit the maximum allowable statutory penalty in effect, for each calendar day, or portion thereof, for each laborer, worker, or mechanic paid less than the stipulated prevailing rates for any work done under this Contract by him/her or by any subcontractor under him/her.

c. 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 determine the prevailing rate for such additional trade or occupation and shall notify the District. The District will verify the wage rate through the Office of the Labor Commissioner. 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.

15.2 Wage Records: Pursuant to Section 1776 of the Labor Code, the contractor is required to submit weekly certified payroll records to the District and/or its designee. Progress payments to the Contractor shall be withheld by the District until certified payrolls are up to date.

a. Each Contractor and 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 him/her or her in connection with the public work. Certified payroll records must be on the forms provided by the Division of Labor Standards Enforcement or must contain all information required on Division forms. Forms may be obtained from the Division of Labor Standards Enforcement.

b. The payroll record enumerated under subdivision 1. shall be certified and shall be available for inspection at all reasonable hours at the principal office of the Contractor on the following basis:

i. 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.

ii. A certified copy of all payroll records enumerated in subdivision 1. shall be made available for inspection or furnished upon request to the District, the Division of Labor Standards Enforcement, and the Division of Apprenticeship Standards of the Department of Industrial Relations.

iii. A certified copy of all payroll records enumerated in subdivision 1. 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 District, the Division of Apprenticeship Standards, or the Division of Labor Standards Enforcement. If the requested payroll records have not been provided pursuant to paragraph (2), the requesting party shall, prior to being provided the record,

reimburse costs of preparation by the Contractor, subcontractors, and 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. Each Contractor shall file a certified copy of the records enumerated in this subdivision with the entity that requested the records within ten (10) days after receipt of a written request. Contractor shall immediately forward a copy of the request to District as well as copies of all responsive documents.

d. Any copy of records made available for inspection as copies and furnished upon request to the public or any public agency by the District, 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 or performing the contract shall not be marked or obliterated.

e. The Contractor shall inform the District of the location of the records enumerated under this subdivision, including the street address, city and county, and shall, within five (5) working days, provide a notice of a change of location and address.

f. In the event of noncompliance with the requirement of this section, the Contractor shall have ten (10) days in which to comply subsequent to receipt of written notice specifying in what respects the Contractor must comply with this section. Should noncompliance still be evident after the ten (10) day period, the Contractor shall forfeit, to the District, as a penalty the maximum statutory allowable amount for each calendar day, or portion thereof, for each worker, until strict compliance is effectuated. Upon the request of the Division of Apprenticeship Standards or the Division of Labor Standards Enforcement, these penalties shall be withheld from progress payments then due.

g. The prime Contractor shall be responsible for compliance with this section.

15.3 Permits and Licenses:

a. The Contractor shall obtain and keep current (including his/her Contractor's license) all permits and licenses that are required for the performance of his/hers work by all laws, ordinances, rules and regulations, or orders of any office and/or body lawfully empowered to make or issue the same.

b. In addition, Contractor shall obtain and keep current all permits and licenses required for the work of improvement and pay all fees relating thereto, including, but not limited to, utility fees and shall provide the District with documentation of the actual costs expended by Contractor with regard to these items.

15.4 Sales and Payroll Taxes: Each Contractor, subcontractor and material supplier shall include all sales tax and payroll taxes required by law.

15.5 Responsibility for Compliance with CAL/OSHA:

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

b. Contractor warrants that he/she and each of his/hers subcontractors shall, in performance of this Contract, comply with each and every compliance order issued pursuant to Cal/OSHA. The Contractor assumes full and total responsibility for compliance with Cal/OSHA standards by his/her subcontractors

as well as himself/herself. The cost of complying with any compliance order and/or payment of any penalty assessed pursuant to Cal/OSHA shall be borne by the Contractor. contractor shall defend, save, keep and hold harmless the District, 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 a subcontractor's non-compliance or alleged non-compliance with Cal/OSHA requirements. Nothing contained herein shall be deemed to prevent the Contractor and his/her subcontractors from otherwise allocating between themselves responsibility for compliance with Cal/OSHA requirements; provided, however, that the Contractor shall not thereby be, in any manner whatsoever, relieved of his/her responsibility to the District as hereinabove set forth.

15.6 Apprentices: Contractor agrees to be bound by and comply with the provisions of Sections 1777.5 et seq. of the Labor code in respect to apprentices.

15.7 Hours of Work:

a. Eight (8) hours of labor shall constitute a legal day's work upon all work done hereunder, and it is expressly stipulated that no worker employed at any time by the Contractor or by a subcontractor or subcontractors under this Contract, upon the work or upon any part of the work contemplated by this Contract, shall be required or permitted to work here on more than eight (8) hours in any one calendar day except as provided or permitted in Sections 1810 to 1815, inclusive of the Labor Code of California, all the provisions whereof are deemed to be incorporated herein, and it is further expressly agreed that for each and every violation of this stipulation the Contractor shall forfeit to the District, as a penalty, $25.00 for each worker employed in the execution of this Contract by the Contractor or by any subcontractor for each calendar day during which such worker is required or permitted to work more than eight (8) hours in violation of the provisions of said sections of the Labor Code.

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

c. Contractor understands that the Project may dictate a non-standard work week, and if required the Project schedule and the scheduling of employees or subcontractors should be adjusted to provide for scheduled work during the non-standard work week schedule, without the incurrence of any additional charges, such as over-time, et cetera.

15.7 Water Pollution Prevention Plan: Contractor shall be responsible for paying the necessary permit fees and complying with State Water Resources Control Board Order No. 99-08-DWQ; 2009-0009-DWQ; NPDES General Permit No. CAS 000004 implementing provisions of the Clean Water Act relating to storm water discharges. Contractor must obtain the necessary permits from the State Water Resources Control Board and develop and implement a Storm Water Pollution Prevention Plan in accordance with the State Water Resources Control Board requirements prior to commencing any portion of construction which will disturb land (i.e.: excavation, grading, etc.). The plan shall address all potential sources of pollutants which may enter the storm water system, it must explain what steps will be taken during construction to minimize the risk of storm water contamination and must address management

procedures to be utilized during construction to prevent pollution discharges such as spills, leaking, and dumping.

The plan shall become the property of the District. A copy of said plan shall be provided to district and upon request contractor shall certify, in writing, compliance with the relevant rules, regulations and laws. Additional information regarding State Water Resources Control Board requirements can be obtained from State Water Resources Control Board, Division of Water Quality, Attention: Storm Water Permit Unit, P.O. Box 1977 Sacramento, CA 95812-1877. Telephone Number (916) 657-0903.

15.9 Codes and Regulations: All work and materials shall be in full accord with the latest codes, rules and regulations, including but not limited to the following:

Rules of Local Utilities
Calif. Electrical Code
National Board of Fire Underwriters and/or
State Fire Marshall or
Applicable DSA Requirements
State Codes and Ordinances

State Industrial Accident
Commission's Safety Orders
Calif. Plumbing Code
Calif. Building Code

Contractor shall hold the District harmless for Contractor's failure to comply with any law or regulation affecting Contractor's performance on this project. Certain provisions are set forth herein however, the existence of these provisions does not excuse the Contractor from complying with other statutory requirements or provisions which are not set forth in these contract documents and it is Contractor's responsibility to be, or become familiar with the various federal, state and local laws which govern Contractor's performance.

16. CONCEALED CONDITIONS: Contractor has examined the job site, the contract documents, and the applicable building codes, laws, and regulations that govern the conduct of the work and has made such investigation as he/she deems appropriate and therefore assumes all risk and expense in dealing with subsequently discovered concealed conditions that could have been discovered through reasonable and diligent inspection and investigation. In the event Contractor encounters rock, ground water, underground structures, or utilities or other underground or concealed conditions or any hazardous material or condition in the site or existing structures if any, unknown to Contractor, Contractor shall immediately notify District and Architect of such condition in writing.

Contractor shall discontinue any work affected by the concealed conditions, shall immediately cover, barricade and protect the subject area and shall obtain further direction from District and Architect prior to continuing any work affected by the discovered condition. Should Contractor, his/her subcontractors, or officers, agents or employees proceed without further direction from the District and Architect, Contractor does so at his/her own risk and expense.

17. CONDUCT OF WORK: The Contractor shall permit the District to do other work in connection with the project by contract or otherwise, and Contractor shall at all times conduct his/her work so as not to impose hardship on the District or others engaged in the work. Contractor shall adjust, correct and coordinate his/her work with the work of others so that no discrepancies shall result in the whole work.

18. CONVICT MADE MATERIALS: No materials manufactured or produced in a penal or correctional institution shall be incorporated in the project under this Contract, except as permitted by California law.

19. DEFINITIONS:

19.1 *Action of the Board of Trustees* is a vote of a majority of the District's governing board.

19.2 *Addenda* are the changes in specifications, drawings, contract documents, and plans which have been authorized in writing by the Construction Manager, District or Architect, and which alter, explain, or clarify the contract documents. Addenda shall govern over all other Contract Documents. Subsequent addenda issued shall govern over prior addenda unless otherwise specified in the addenda.

19.3 *Approval* means written authorization through action of the governing board. The board has delegated to the District Administrator the authority to approve certain modifications and Construction Change Directives.

19.4 *The Contract Documents* The Contract Documents consist of the Agreement between District and Contractor (hereinafter the Agreement or Contract), Conditions of the contract (General, Supplementary and other Conditions), Drawings, Specifications, Addenda issued prior to bid, Instructions to bidders, notice to bidders, and the requirements contained in the Bid Documents, other documents listed in the Agreement, and Modifications issued after execution of the Contract. A Modification is a written amendment to the Contract signed by both parties, a Change Order, a Construction Change Directive, or a written order for a minor change in the Work issued by the Architect. The Contract Documents collectively form the Contract. The Contract represents the entire and integrated agreement between the parties hereto and supersedes prior negotiations, representations or agreements, either written or oral. The Contract may be amended or modified only by a written Modification. The Contract Documents shall not be construed to create a contractual relationship of any kind between the Architect and Contractor, between the District and any Subcontractor or Sub-Subcontractor, or between any persons or entities other than the District and the Contractor. The Architect shall, however, be entitled to performance and enforcement of obligations under the Contract intended to facilitate performance of the Architect's duties.

19.5 *Construction Manager* The District may be represented by a Construction manager. Construction Manager and Project Manager are synonymous.

19.6 *Days* All references to "days" in the contract documents shall mean calendar days unless otherwise specified.

19.7 *Professional Inspector* is the individual retained by the District to inspect the work for compliance with plans and specifications and laws and regulations.

19.8 *The Drawings* are graphic and pictorial portions of the Contract Documents prepared for the Project and approved changes thereto, where located and whenever issued, showing the design, location, and scope of work, generally including plans, elevations, sections, details, schedules, and diagrams as drawn or approved by the Architect.

19.9 *Emergency* shall be defined as a sudden, unexpected occurrence, involving a clear and imminent danger, demanding immediate action to prevent or mitigate loss of, or damage to, life, health, property, or essential public services. Emergency includes such occurrences as fire, flood, earthquake, or other soil or geologic movements, as well as

such occurrences as riot, accident, or sabotage.

19.10 *The Project* is the complete construction of the Work performed in accordance with the Contract Documents.

19.11 *The Project Manual* is the volume assembled for the Work which may include, without limitation, the bidding requirements, sample forms, Conditions of the Contract, and Specifications.

19.12 *Safety Orders* are those issued by any cognizant city, county, state or federal agency.

20. DEFERRED APPROVALS: Contract Documents which require deferred approval items are meant to be for illustration purposes only. Contractor is responsible for all deferred approval requirements set forth in the Contract Documents. Contractor is responsible to comply with all laws, building codes, and regulations necessary to obtain all necessary approvals. Contractor shall not be granted an extension of time for failure to obtain necessary approvals due to failure to comply with laws, building codes, and other regulations (including Title 24 of the California Code of Regulations). Contractor shall schedule all deferred approval items in its progress schedule pursuant to Article 37. If Contractor fails to include deferred-approval items in its schedule which results in a critical path delay, then Contractor shall be subject to the assessment of liquidated damages.

21. DIMENSIONS: All dimensions throughout the drawings are to be calculated. Where doubts as to a dimension exists the Architect shall determine the correct dimensions.

22. DISTRICT'S REMEDIES FOR DEFECTIVE CONSTRUCTION AND/OR DEFICIENT PERFORMANCE: In addition to any other remedy afforded to District by law, the District, may exercise, at its option, any remedy, or combination thereof, set forth herein as follows:

22.1 Faulty Labor and Materials:

a. Neither final payment nor any provision in the Contract documents shall relieve the Contractor of responsibility for faulty materials or workmanship, and unless otherwise specified, he/she shall remedy any defects due thereto and pay for any damages to other work, resulting therefrom which shall appear within the warranty period.

b. If it is necessary in order to protect persons or property or, in the alternative, if the District deems it expedient to correct work damaged or not done in accordance with the contract, District may correct said work and deduct from monies otherwise due Contractor, a sum sufficient to compensate District for correction of the damage or improperly installed work.

22.2 Condemned Materials:

a. The contractor shall promptly remove from the premises all work condemned by the Inspector or Architect as failing to conform to the Contract, whether incorporated or not, and the Contractor shall promptly replace and re-execute the work in accordance with the Contract and without expense to the District and shall bear the expense of making good all work of other contractors destroyed or damaged by such removal or replacement.

b. If the Contractor does not remove such condemned work within a reasonable time, fixed by written notice, the District may remove it and may store the material at the expense of the Contractor. If the Contractor does not pay the expense of such removal within ten (10) days' time thereafter, the District may,

upon ten (10) days written notice, sell such materials at auction or at private sale and shall account for the net proceeds thereof, after deducting all the costs and expenses that should have been borne by the Contractor. In the event the net proceeds are not sufficient to compensate for the costs and expenses that should have been borne by Contractor, District may deduct from monies otherwise due Contractor a sum sufficient to compensate for the costs and expenses that should have been borne by the Contractor.

22.3 The District's Right to Perform Work: If the Contractor neglects to prosecute the work properly or fails to perform any provision of, or fails to correct work in accordance with the contract documents, the District, by written order, may order the Contractor to stop the work or any portion thereof, until the cause for such order has been eliminated; however, if Contractor fails to correct the cause, or fails to make satisfactory arrangements with the District to correct the cause for the order within seven (7) calendar days of the written order, the District may, without prejudice to any other remedy District may have, correct such deficiencies or causes for said order and may deduct the cost thereof from the payment then or thereafter due the Contract. The right of the District to stop work shall not give rise to a duty on the part of the District to exercise its right for the benefit of the Contractor or for any other person or entity and in times of such work stoppage, Contractor shall be responsible for continuing job safety and job security.

22.4 Termination of Contract:

a. If the Contractor refuses or fails to prosecute the work or any separable part thereof with such diligence that will ensure its completion within the time specified, or any extension thereof, or fails to complete said work within such time, or withholds, or threatens to withhold continued work regardless of the reason for same, or if the Contractor should be adjudged bankrupt or if he/she makes a general assignment for the benefit for his/her creditors, or if he/she shall make an assignment for any other reason without the express written consent of the District, or if a receiver should be appointed on account of Contractor's insolvency or if Contractor refuses or fails, except in cases for which an extension of time is provided, to supply enough properly skilled workers or proper material to complete the work at the time specified, or if Contractor fails to make prompt payment to subcontractors or for material or labor, or disregards laws, ordinances, or instructions of District, District's Architect or District's inspector, or if Contractor or any of his/her subcontractors should otherwise violate a provision of the contract, or if Contractor or any of his/hers subcontractors should perform work in a negligent or dangerous manner, or install or construct any portion thereof so that the work does not comply with the drawings and specifications, including any amendments thereto, or does not meet generally recognized industry standards for workmanlike quality, District may, without prejudice to any other rights or remedy, serve written notice upon Contractor of District's intention to terminate Contractor's control over the project, terminate Contractor's right to complete the contract or terminate this contract. Such notice shall contain the reasons for such intention to terminate, and Contractor shall immediately cease any and all violations of the terms of this contract, ordinances, or laws and shall correct to the District's satisfaction, or make satisfactory arrangements to correct to District's satisfaction, within seven (7) days, from the date of said notice, any and all deficient conditions. If Contractor, after proper notice, fails to cease and desist or fails to cure deficiencies within the said seven (7) day period, District may terminate Contractor's control over the project, terminate Contractor's right to complete the contract or terminate this agreement by written notice to Contractor, said termination shall be effective upon delivery of written notice to Contractor, his/her officers, agents or employees, or notice by certified mail to Contractor's business address. Thereafter, District may exercise any and all remedies as provided for in this agreement or by law.

b. In the case of termination, Contractor shall not be entitled to receive any further payment until the project is completed. In the event of termination, District shall immediately serve written notice thereof upon the Surety consistent with the terms and conditions set forth in the performance bond incorporated within these contract documents. Surety shall not be entitled to reappoint or contract with Contractor to complete this project without the express written consent of the District. Upon termination, Contractor shall be ejected from the project and District may without liability for so doing, take possession of and utilize in completing the work, such materials, appliances, plant, and other property belonging to Contractor as may be on the site of the work and necessary therefore.

c. If the unpaid balance of the contract price exceeds the expense of finishing the work, including compensation to District for additional architectural, managerial, legal, and administrative services, such excess shall be paid to Contractor. If such expense shall exceed such unpaid balance, Contractor shall pay the difference to the District. Notwithstanding the foregoing provision, this contract may not be terminated or modified where a trustee in bankruptcy has assumed the contract pursuant to 11 U.S.C., Section 365 of the Federal Bankruptcy Act.

22.5 Additional Remedies: The foregoing provisions are in addition to and not in limitation of any other rights and remedies available to the District. The District may, at any time Contractor's performance or any subcontractor's performance is such to call into question Contractor's or the subcontractor's ability or capacity to properly, and in good workmanlike manner, perform his/her obligations in accordance with the plans and specifications and within the stated time for completion, demand assurances from the Contractor in any form acceptable to District (i.e., additional bond, written addendum, modification of the contract, additional staffing, etc.) and Contractor's failure to provide adequate assurance shall constitute a material breach of the contract and the District may suspend its performance and exercise any other right or remedy provided within the contract documents or by law.

22.6 Termination By The District for Convenience:

a. The District may terminate the performance of Work under this Contract in accordance with this clause in whole, or from time to time in part, whenever the District shall determine that such termination is in the best interest of the District. Any such termination shall be effected by delivery to the Contractor of a Notice of Termination specifying the extent to which performance of the Work under the contract is terminated, and the date upon which such termination becomes effective. After receipt of a Notice of Termination, and except as otherwise directed by the District, the Contractor shall:

i. Stop Work under the contract on the date and to the extent specified in the Notice of Termination;

ii. Place no further orders or subcontracts for materials, services or facilities except as necessary to complete the portion of the Work under the contract which is not terminated;

iii. Terminate all orders and subcontracts to the extent that they relate to the performance of the Work terminated by the Notice of Termination;

iv. Assign to the District, in the manner and at the times, and to the extent directed by the District, all of the right, title and interest of the Contractor

under the orders and subcontracts so terminated. The District shall have the right, in its discretion, to settle or pay any or all claims arising out of the termination of such orders and subcontracts.

v. Settle all outstanding liabilities and all claims arising out of such termination of orders and subcontracts with the approval or ratification of the District, in writing, and to the extent it may require. Its approval or ratification shall be final for all the purposes of this clause;

vi. Transfer title to the District, and deliver in the manner, at the times, and the extent, if any, directed by the District, (a) the fabricated and no fabricated parts, Work in process, completed Work, supplies and other material produced as a part of, or acquired in connection with the performance of, the Work terminated by the Notice of Termination; and (b) the completed or partially completed drawings, information and other property which, if the contract had been completed, would have been required to be furnished to the District;

vii. Use its best efforts to sell, in the manner, at the times, to the extent, and at the prices or prices that the District directs or authorizes, any property of the types previously referred to herein, but the Contractor (a) shall not be required to extend credit to any purchaser; and (b) may acquire such property under the conditions and at a price or prices approved by the District. The proceeds of any such transfer or disposition shall be applied in reduction of any payments to be made by the District to the Contractor under this contract or shall otherwise be credited to the price or cost of the Work covered by this contract or paid in such other manner as the District may direct;

viii. Complete performance of such part of the Work as shall not have been terminated by the Notice of Termination; and

ix. Take such action as may be necessary, or as the District may direct, for the protection and preservation of the property related to this contract which is in the possession of the contractor and in which the District has or may acquire an interest.

b. After receipt of a Notice of Termination, the Contractor shall submit to the District its termination claim, in the form and with the certification the District prescribes. Such claim shall be submitted promptly but in no event later than one (1) year from the effective date of termination, unless one or more extensions in writing are granted by the District upon request of the Contractor made in writing within such 1-year period or authorized extensions. However, if the District determines that the facts justify such action, it may receive and act upon any such termination claim at any time after such 1-year period or extension. If the Contractor fails to submit his/her/its termination claim within the time allowed, the District may determine, on the basis of information available to the District, the amount, if any, due to the Contractor because of the termination. The District shall then pay to the Contractor the amount so determined.

c. Subject to the previous provisions, the Contractor and the District may agree upon the whole or any part of the amount or amounts to be paid to the Contractor because of the total or partial termination of the Work under this Paragraph. The amount or amounts may not include profit on Work not performed to date, but may include profit on Work completed up to the time of Notice of Termination. However, such agreed amount or amounts, exclusive of settlement costs, shall not exceed the total contract price as reduced by the amount of payments

otherwise made and as further reduced by the contract price of Work not terminated. The contract shall be amended accordingly, and the Contractor shall be paid the agreed upon amount.

d. If the Contractor and District fail to agree, as the previous subparagraph provides, on the whole amount to be paid to the Contractor because of the termination of Work hereunder, the District shall determine, on the basis of information available to the District, the amount, if any, due to the Contractor by the reason of the termination and shall pay to the Contractor the amounts determined as follows:

i. For all Contract Work performed before effective date of Notice of Termination, the total (without duplication of any items) of:

a. The cost of such Work;

b The cost of settling and paying claims arising out of the termination of Work under subcontractors or orders as previously provided. This cost is exclusive of the amounts paid or payable on account of supplies or materials delivered or services furnished by the Contractor before the effective date of the Notice of Termination. These amounts shall be included in the cost on account of which payment is made for the cost of Work previously provided; and

c. A sum, as profit on the cost of the Work completed to the time of receipt of the Notice of Termination, that the District determines to be fair and reasonable. But, if it appears that the Contractor would have sustained a loss on the entire Contract had it been completed, no profit shall be included or allowed, and an appropriate adjustment shall be made reducing the amount of the settlement to reflect the indicated rate of loss; and

ii. The reasonable cost of the preservation and protection of property incurred as previously provided. The total sum to be paid to the Contractor shall not exceed the total Contract price as reduced by the amount of payments otherwise made and as further reduced by the Contract Price of Work not terminated. Except for normal spoilage, and except to the extent that the District shall have otherwise expressly assumed the risk of loss, there shall be excluded from the amounts payable to the Contractor the fair value, as determined by the District, of property which is destroyed, lost or stolen or damaged to the extent that it is undeliverable to the District, or to a buyer as previously provided.

e. The Contractor shall have the right to dispute as provided hereinafter in the subparagraph entitled "remedies" from any determination the District makes under the previous subparagraphs. But, if the Contractor has failed to submit its claim within the time provided and has failed to request an extension of such time, it shall have no such right of appeal. In any case where the District has determined the amount owed, the District shall pay to the Contractor the following:

i. If there is no right of appeal hereunder or if timely appeal has been taken, the amount so determination by the District; or

ii. If a "remedies" proceeding is initiated, the amount finally determined in such "remedies" proceeding.

f. In arriving at the amount due the Contractor under this clause there shall be deducted:

i. All unliquidated advance or other payments on account theretofore made to the Contractor, applicable to the terminated portion of the contract;

ii. Any claim which the District may have against the Contractor in connection with the Work; and

iii. The agreed price for, or the proceeds of sale of, any materials, supplies or other things kept by the Contractor or sold under the provisions of this clause and not otherwise recovered by or credited to the District.

g. If the termination hereunder be partial, before the settlement of the terminated portion of this contract, the Contractor may file with the District a request in writing for an equitable adjustment of the price or prices specified in the contract relating to the continued portion of the contract. Such equitable adjustment as may be agreed upon shall be made in the price or prices. Nothing contained herein shall limit the right of the District and the Contractor to agree upon the amount or amounts to be paid to the continued portion of the contract when the contract does not contain an establishes contract price for the continued portion.

h. Remedies: All claims, counter-claims, disputes and other matters in question between the District and Contract arising out of or relating to this Contract or its breach will be decided by way of arbitration as set forth herein or in a court of competent jurisdiction within the State of California.

i. The Contractor understands and agrees that the forgoing termination of Contract for convenience provisions shall be interpreted and enforced pursuant to cases interpreting and enforcing similar provisions in federal procurement contracts.

23. INDEPENDENT CONTRACTOR: Contractor and District agree that there is no agency or employment relationship between District and Contractor, or any of Contractor's officers, agents or employees or subcontractors and that Contractor in performing its contractual obligations acts entirely as an independent contractor.

24. INSPECTION BY DISTRICT: The Contractor shall at all times maintain proper facilities and provide safe access for inspection by the District to all parts of the work, and to the shops wherein the work is in preparation. Where the Specifications require work to be specially tested or approved, it shall not be tested or covered up without timely notice to the District of its readiness for inspection and without the approval thereof or consent thereto by the latter. Should any such work be covered up without such notice, approval, or consent, it must, if required by District, be uncovered at Contractor's expense for examination. Contractor shall pay for any necessary retesting and/or reinspection required because of work that fails to comply with the requirements of the contract documents.

24.1 Contractor must request all inspections, in writing, using the Inspection Request Form provided by the District. Contractor shall also make all such requests for inspection on no less than twenty-four (24) hours' notice.

25. INSURANCE: The Contractor shall not commence work under this Contract until he/she has obtained all insurance required by these General Conditions and which insurance has been approved by the District and copies of certificates of such insurance are filed with the District. The Contractor shall not allow any subcontractor to commence work on a subcontract until such insurance has been obtained. Three (3) copies of insurance certificates evidencing the required coverage shall be furnished to the District. Certificates of insurance must indicate that the

coverage cannot be reduced or canceled until THIRTY (30) days written notice has been furnished District. Such insurance shall name district, its officers, agents, and employees as additional insured. Contractor's liability insurance policy shall be endorsed as primary insurance.

25.1 Liability Insurance: The Contractor shall carry Bodily Injury Liability Insurance in an amount not less than $2,000,000 combined single limit, per occurrence, $3,000,000 aggregate. Contractor shall carry Automobile Liability Insurance in an amount not less than $1,000,000. Contractor's insurance SHALL BE ENDORSED AS PRIMARY. **District, its officers, agents, Architects, and employees shall be named as ADDITIONAL INSUREDS.**

25.2 Workers' Compensation Insurance: The Contractor shall comply with the Workers' Compensation Insurance requirements of the State of California. The Contractor shall take out and maintain during the life of this Contract, Workers' Compensation Insurance and Employer's Liability Insurance for all of his/her employees employed at the site of the project and, in case any work is sublet, the Contractor shall require all subcontractors to provide Workers' Compensation Insurance and Employer's Liability Insurance for all of the latter's employees unless such employees are covered by protection afforded by the Contractor.

In signing this Contract, the Contractor makes the following certification:

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

25.3 Builders Risk/"All Risk" Insurance: The Contractor, during the progress of the Work and until final acceptance of the Work by District upon completion of the entire Contract, shall maintain Builder's Risk/"All Risk," course-of-construction insurance issued on a completed value basis on all insurable Work included under the Contract Documents. Coverage is to provide extended coverage and insurance against vandalism, malicious mischief, perils of fire, sprinkler leakage, civil authority, sonic boom, collapse, wind, lightning, smoke, riot, debris removal (including demolition), and reasonable compensation for the Architect's services and expenses required as a result of such insured loss upon the entire Work which is the subject of the Contract Documents, including completed Work and Work in progress to the full insurable value thereof. Such insurance shall include the District, the Architect and the Construction Manager as an additional named insured and any other person with an insurable interest designated by the District as an additional named insured.

The Contractor shall submit to the District for its approval all items deemed to be uninsurable. The risk of the damage to the Work due to the perils covered by the Builder's Risk/All Risk" insurance, as well as any other hazard which might result in damage to the Work, is that of the Contractor and the surety, and no claims for such loss or damage shall be recognized by the District nor will such loss or damage excuse the complete and satisfactory performance of the Contract by the Contractor.

25.4 All policies and certificates of insurance of the Contractor shall contain the following clauses:

a. Insurers have no right of recovery or subrogation against the District (including its agents and agencies as aforesaid), it being the intention of the parties that the insurance policies so effected shall protect both parties and be the primary coverage for any and all losses covered by the above-described insurance.

b. The clause "other insurance provisions" in a policy in which the District is named as an insured, shall not apply to the District.

c. The insurance companies issuing the policy or policies shall have no recourse against the District (including its agents and agencies as aforesaid) for payment of any premiums or for assessments under any form of policy.

d. Any and all deductibles in the above described insurance policies shall be assumed by and be the account of, the Contractor.

25.5 Indemnification:

a. Contractor will indemnify and hold harmless Colusa Unified School District, its Board of Trustees, and its officers, agents, employees and Architects from and against all claims, damages, losses, demands, liability, costs and expenses including attorney fees arising out of or resulting from the performance of this Contract or the prosecution of work under it, whether such claims, damages, losses, demands, liabilities, costs and expenses are caused by the Contractor, Contractor's agents, servants or employees or subcontractors employed on the project, the agents, servants or employees or any person or persons or products installed on the project by the Contractor or subcontractors.

b. Contractor at his/hers own expense and risk shall defend any and all actions, suites, or other legal proceedings that may be brought or instituted against Colusa Unified School District, the members of its governing body, its officers, agents, employees, and Architects or any such claims, damages, losses, demands, liabilities, costs or expenses.

c. The indemnification obligations hereunder 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 subcontractors under workers' compensation acts, disability benefit acts or other employee benefits acts; however, the obligations of the Contractor hereunder shall not extend to the liability of the Architect, his/her agents or employees arising out of (a) the preparation or approval of maps, drawings, opinions, reports, surveys, change orders, designs or specifications or (b) the giving of directions or instructions by the Architect, his/her agents or employees, provided such giving is the primary cause of the injury or damage. Contractor shall not be obligated to the District hereunder if such injury, harm or damage is caused solely and exclusively by the Architect's negligence.

d. This indemnification provision shall be applicable to any infringement or alleged infringement of the patent rights of any person or persons, firm or corporation in consequence of the use thereof by the Contractor. Notwithstanding any of the above, the Contractor shall whenever it is necessary keep and maintain at his/her sole cost and expense during the course of his/her operations under this Contract such warnings, signs, and barriers as may be required to protect the public. The provisions of the preceding sentence shall not impose any liability upon Colusa Unified School District or the Architect or the members of the Colusa Unified School District governing body or the officers, agents and employees of either of them.

e. This indemnification provision shall also extend to claims, damages, losses, demands, liabilities, costs and expenses for injury, harm, or damages occurring after completion of the project as well as during the work's progress. In each and every instance in which the Contract is required to indemnify or hold the District harmless, that obligation includes the obligation to defend the District.

26. INTERPRETATION OF CONTRACTS/DRAWINGS/SPECIFICATIONS:

26.1 The contract documents, including the drawings and specifications are to be read as an integrated document. The Contractor shall immediately report to the Architect any discrepancies or errors which are contained within the documents. Figured dimensions shall be followed and the Contractor shall make all additional measurements necessary for the work and shall be responsible for their accuracy. Before ordering any material or doing any work, the Contractor shall verify all measurements and shall be responsible for the correctness of same. It is the intent of the drawings and specifications to show and describe complete installations. Items shown but not specified or specified but not shown shall be included unless specifically omitted. The contract documents, including the drawings and specifications, shall be deemed to include and require everything necessary and reasonably incidental to the completion of all work described and indicated on the drawings whether particularly mentioned or shown or not. Work indicated on the drawings and not mentioned in the specifications, or vice versa, shall be furnished as though fully set forth in both. In case of disagreement or conflict between or within standards, specifications, and drawings, the most stringent, higher quality and greater quantity of work shall be included in the bid.

26.2 If an error(s) appear(s) in the drawings or specifications or in work done by others affecting this work, the Contractor shall immediately notify the Architect in writing. If the contractor proceeds with the work so affected without having given such written notice and without receiving the necessary approval, decision or instructions in writing from Architect, then he/she shall not have a valid claim against the District for the cost of so proceeding and shall make good any resulting damage or defect. No oral approval, decision, or instruction shall be valid or be the basis for any claim against the District, its officers, employees or agents. The foregoing includes typographical errors in the specifications or notational errors in the drawings where the interpretation is doubtful or where an error exists, and the error is sufficiently apparent as to place a reasonably prudent contractor on notice that should he/she elect to proceed, he/she is doing so at his/her own risk.

27. LAYING OUT OF WORK:

27.1 The Contractor shall, immediately upon entering the Project Site to begin work, locate all reference points and bench marks and take all necessary precautions to prevent their destruction; layout all work and be responsible for all lines, elevations and measurements of buildings, utilities, and other work executed under the Contract. He/she shall verify figures and elevations shown on the Drawings before laying out work, and will be held responsible for any error resulting from his/her failure to do so. Cost of surveying services required to establish and check property elevations and to correctly locate and establish property and construction lines, streets, sidewalks, curbs, etc., shall be included in the Contract sum. Contractor shall be responsible for encroachments on the rights or property of the public or surrounding property, and for encroachments on easements noted and required setbacks, and he/she shall, without cost to the District, take down, and rebuild in an approved manner any portion of a building, wall, fence or any other item that is constructed over the property lot easement or setback line.

27.2 Where work of one trade joins or is on other work, there shall be no discrepancy when said is completed. In engaging one kind of work with another, marring or damaging same will not be permitted. Should improper work of any trade be covered by another that results in damage or defects, the whole work affected shall be made good by the Contractor without expense to the District.

27.3 The Contractor shall consult the other Contractors on the project, if any, and the Architect, regarding the installation of such other Contractor's work before starting the

various phases of his/her work, in order to avoid the possibility of the removal of his/her work to permit others to install their work.

27.4 Assistance required by the Architect in obtaining measurements or information on the work shall be furnished fully and efficiently by the Contractor.

28. LIQUIDATED DAMAGES: The District and Contractor understand and agree that if the work is not completed within the time of completion required by this Agreement, the District will suffer damage. The parties agree that it will be impractical and infeasible to determine the amount of actual damage and, therefore, it is agreed that Contractor shall pay to District as fixed and liquidated damages, and not as a penalty, the sum of $500 for each calendar day of delay until all work is completed and accepted. Contractor and District agree that the sum fixed as liquidated damages is a reasonable and good faith estimate of the actual amount necessary to compensate District for damages incurred as the result of delay when viewed prospectively upon the making of this Contract. Contractor and his/her surety shall be liable for the amount thereof, which shall be deducted from any payments due to or to become due to Contractor. Contractor understands and agrees that nothing set forth in these Contract Documents shall be construed to limit the District's right to collect actual damages and the District shall have the option to exercise all other remedies afforded by law including, but not necessarily limited to, recovery of actual damages that the District incurs as a result of any delay in performance.

29. MANUFACTURER'S MAINTENANCE INSTRUCTIONS, MANUAL AND WARRANTIES: Notwithstanding Contractor's warranties as identified in these contract documents, Contractor shall provide to District all relavant manuals, instructions and manufacturer warranties for all equipment, systems, and appliances installed in the project, including, but not limited to, automatic sprinklers, kitchen appliances, heating, air conditioning, and ventilation systems, climate control systems, energy monitoring/ control systems, alarms, automatic lighting systems, elevators, etc. In addition, Contractor or his/her manufacturer, representative or other agent shall provide District designee(s) with initial, basic instruction in the operation of any installed equipment/system(s).

30. MATERIALS:

30.1 New Materials: Materials shall be new and of quality equal to that specified. When not particularly specified, materials shall be the best of their class or kind. The Contractor shall, if required, submit satisfactory evidence as to the kind and quality of material. Price, fitness and quality being equal, preference shall be given to products made in California. If a conflict(s) exists in the drawings or specifications regarding the type, kind or quality of materials to be used, the conflict shall be resolved in favor of using the superior type, kind or quality material unless use of the inferior type, kind or quality of material is authorized in writing by the District.

30.2 Non-Utilization of Asbestos Material:

a. No asbestos or asbestos containing products shall be used in this construction or in any tools, devices, clothing or equipment used to affect this construction. Asbestos and/or asbestos containing products shall be defined as all items but not limited to chrysotile, crocidolite, amosite, anthophyllite, tremolite and actinolite. Any and all material containing greater than one tenth of one percent (>.1%) asbestos shall be defined as asbestos-containing material. Any disputes involving the question of whether or not material contains asbestos shall be settled by electron microscopy. The costs of any such tests shall be paid by the Contractor. All work or materials found to contain asbestos or work or material installed with asbestos containing equipment will be immediately rejected and this work will be removed at no additional cost to the Owner.

b. Decontamination and removal of work found to contain asbestos or work installed with asbestos containing equipment shall be done only under the supervision of a qualified consultant, knowledgeable in the field of asbestos abatement and accredited by the Environmental Protection Agency. The asbestos removal contractor shall be an EPA accredited contractor qualified in the removal of asbestos and shall be chosen and approved by the asbestos consultant who shall have the sole discretion and final determination in this matter. The asbestos consultant shall be chosen and approved by the Architect or the Owner who shall have sole discretion and final determination in this matter. The work will not be accepted until asbestos contamination is reduced to levels deemed acceptable by the asbestos consultant.

c. Costs of all asbestos removal, including but not necessarily limited to the cost of the asbestos removal Contractor, the cost of the asbestos consultant, analytical and laboratory fees, time delays, additional costs as may be incurred by the Owner and/or his agent(s) shall be borne entirely by the Contractor.

d. Contractor shall execute a declaration under penalty of perjury that no asbestos or asbestos containing products have been utilized in the project. In addition, Contractor shall certify that no lead based paint has been used in the project. Said declaration shall be provided to District at the project closeout.

30.3 Equals:

a. Wherever in the contract documents any material or process is indicated or specified by patent or by proprietary name or by name of manufacturers, and except where any material or product is expressly specified for the purpose of maintaining uniformity of design or function and designated as no substitutes allowed, such specifications are used for the purpose of facilitating the description of the materials or processes desired and are in no way intended to restrict bidding. Such specifications shall be deemed to be followed by the words "or equal", and the Contractor may offer any material or process which shall be equal in every respect to that indicated or specified; provided, however, that if the material, process or article offered by the Contractor is deemed to not be equal in every respect to that specified by the District, at the District's discretion, then the Contractor must furnish the material or article specified, or one that in the opinion of the Architect is the quality thereof in every respect. The burden of persuasion of the equality to the satisfaction of the Architect shall be solely upon the Contractor. Requests for equals shall be submitted not later than 35 days after contract signing so as to avoid delay, and in no event will the time for completion of the project be extended on account of request for an equal. Failure to submit requests for equals in accordance with this article shall constitute a waiver of the right to substitute equals for specified items. Requests shall be made on a form provided by the Architect.

b. The Contractor shall submit for approval to the Architect and District, a list of all materials proposed to be used which differ in any respect from materials specified. This list shall include all materials which are proposed by the subcontractors as well as by the Contractor, for use in work under the Contract, whether or not specifically mentioned in the specifications.

c. The list must also include the cost figures received by the Contractor for the material or materials which are submitted for approval as an equal, together with the cost figures of the specified material or materials for which equals are proposed. Failure to propose any item prior to the commencement of work, and within the time specified after the signing of the Contract, will be deemed sufficient cause for denial of the request for use of a proposed equal.

d. If, after the Architect has favorably reviewed materials or equipment, it is found that the materials or equipment presented and favorably reviewed for use are not justifiably equal in quality and performance to the product originally specified, the Architect retains the right to revoke said favorable review, and to reject the materials or equipment without any additional cost.

e. All materials shall be delivered so as to insure a speedy and uninterrupted progress of the work. Materials shall be stored so as to cause no obstruction and so as to prevent overloading of any portion of the structure on work site, and the Contractor, regardless of whether he/she stores materials on or off the site, shall be entirely responsible for damage or loss by weather, theft, vandalism, or other cause.

f. After the Contract has been executed, the District and the Architect will consider a formal request for the substitution of products in place of those specified only under the conditions set forth in the contract documents.

g. By making requests for equals or substitutions, the Contractor:

i. represents that the Contractor has personally investigated the proposed substitute or equal product and determined that it is equal or superior in all respects to that specified;

ii. represents that the Contractor will provide the same warranty for the equal or the substitution that the Contractor would for that specified;

iii. certifies that the cost data presented is complete and includes all related costs under this Contract except the Architect's redesign costs, and waives all claims for additional costs related to the equal or the substitution which subsequently became apparent; and

iv. will coordinate the installation of the acceptable equal or substitute, making such changes as may be required for the work to be complete in all respects.

v. early occupancy shall not in any way affect the warranties provided pursuant to this contract;

vi. all requests for substitution of proposed equals shall be accompanied by a substitution request form as provided by the Architect;

vii. represents that the proposed substitution does not affect dimensions unless shown on drawings and does not require design changes in the Contract Documents;

viii. represents that the Contractor will pay for changes to the building design, including engineering design, detailing, and construction costs caused by the requested substitution;

ix. represents that the proposed substitution will have no adverse effect on the work, the schedule, or specified warranty requirements; and

x. represents that maintenance and service parts will be readily available for the proposed substitution.

31. MODIFICATION: The contract, including all contract documents therein, may be modified by mutual consent and in writing only.

32. NOTICE AND SERVICE THEREOF: Any notice from one party to the other under the Contract shall be in writing and shall be dated and signed by the party giving such notice or by a duly authorized representative of such party. Any such notice shall not be effective for any purpose whatsoever unless served in the following manner, (a) if the notice is given to the District, by personal delivery thereof to the Facility Planner of said District, or by depositing the same in the United States mail, enclosed in a sealed envelope, addressed to the District, postage prepaid and registered; (b) if the notice is given to the Contractor, by personal delivery thereof to said Contractor or to his/her duly authorized representative at the site of the project, or by depositing the same in the United States mail, enclosed in a sealed envelope, addressed to Contractors business address, postage prepaid and registered; and (c) if the notice is given to the surety or any other person, by personal delivery to such surety or other person, or by depositing same in the United States mail, enclosed in a sealed envelope, postage prepaid and registered.

33. OCCUPANCY PRIOR TO COMPLETION:

33.1 The District reserves the right to occupy, on written notice, any portion of the work at any time before completion and while work is in progress. In the event of such occupancy, the Contractor shall provide, without additional cost to the District, suitable protection by means of fencing, barriers, posted signs or other methods as required to prevent persons other than those directly connected with the work from entering remaining areas where continuing work is being conducted, vehicles are operating, or materials are stored.

a. Such occupancy by the District prior to final acceptance shall not be construed by the Contractor as being an acceptance of that part of the project so occupied, nor shall the Contractor be entitled to, or make demand for, additional compensation or extension of time because of such occupancy.

b. Such occupancy by the District prior to final acceptance shall not be deemed to constitute a waiver of existing claims on behalf of the District or Contractor against each other.

c. The metered cost of electricity, water, fuel, etc., for the occupied portions will be borne by the District from the start of such occupancy.

d. The Contractor shall not be held responsible for any damage to the occupied portions of the project resulting from such occupancy by the District, unless attributed to the Contractor's failure to comply with subdivision a. above.

e. Use and occupancy by the District prior to final acceptance shall not relieve the Contractor of his/her responsibility to provide and maintain all insurance and bonds required of the Contractor under the Contract until the work is completed and accepted by the District.

34. OVERLOADING:

34.1 If the Contractor shall cause, permit, or allow any part of the building or buildings to be overloaded by storing, piling or setting thereon any material or equipment, or by performing thereon any of his/her work, he/she shall do so at his/her sole risk, and he/she shall be solely responsible for any and all loss, damage, and/or injury arising or resulting therefrom.

34.2 All materials brought onto the site shall be stacked up in an orderly manner in a designated area not in conflict with the area where work is being performed.

35. PAYMENT: Contractor understands and agrees that all Applications for Payment must be submitted to District using forms approved in writing, by District for use with the project and must be accompanied by any and all other information required by any other provision of the Contract Documents (e.g., cash allowances, change orders, current schedule of values, et cetera). Pay Applications that are not submitted on the proper form or accompanied by any other documentation required by the Contract Documents will not be considered complete and will be returned to Contractor for correction and resubmission. Once the Pay Application is considered complete, all Pay Application requests shall be processed as follows:

35.1 Certificates of Payment: Subject to other conditions of these specifications, within seven (7) days after receipt of Contractor's monthly request for payment on account, during the progress of the work, the Architect shall issue certificates authorizing payment on account of the Contract, for labor and materials actually incorporated in place in the building in a satisfactory manner or stored in an insured or bonded storage facility or warehouse, in a sum not to exceed ninety percent (90%) of a reasonable value of such temporarily accepted work.

35.2 Progress Payments: If the District fails to make a progress payment within thirty (30) days after receipt of an undisputed and properly submitted payment request from Contractor, the District shall pay interest to Contractor in accordance with and in the amount set forth in the applicable provisions of California law.

a. Any payment request determined not to be a proper request suitable for payment shall be returned to the Contractor as soon as practical, but not later than seven (7) days after receipt. A request returned pursuant to this paragraph shall be accompanied by a document setting forth the reasons in writing why the payment request is not proper.

b. A properly submitted payment request shall be defined as the date upon which the District receives a payment request, certified in accordance with this Contract.

For purposes of this section, a "progress payment" includes all payments due contractors, except that portion of the final payment designated by the contract as retention earnings.

35.3 Proof of Value: Contractor shall submit to the Architect and to the Inspector vouchers or other satisfactory proof of the value of any work for which he/she claims payment on such account, and receipts showing that progress payments have been duly made on such contracts, and for materials furnished.

35.4 Inspector's Confirmation: All estimates of work performed during the preceding calendar month and all requests for payment thereof or for partial payment on account of equipment delivered but not installed, as herein provided for, shall be certified by the Inspector and countersigned by him/her before any certificate shall be given to Architect. If errors are found in a request for payment, the errors shall be corrected by the Contractor, and the request resubmitted to the Architect and Inspector for approval, bearing the date of same as corrected.

35.5 Final Certificates: When the work is ready for acceptance by the District Contractor shall submit a request for final payment, the Architect shall so certify in writing to the Board of Trustees, and a certificate of acceptance will be issued to the Contractor which will bring his/her progress payment up to ninety percent (90%) of the Contract price, less sums withheld for liquidated damages, or other off-sets for defective work, if any.

35.6 Final Payment: A Notice of Completion will be filed by the District upon completion and acceptance of the work. Thirty-five (35) days after filing of such notice of completion payment due under the Contract, less amounts in satisfaction of stop notices and incomplete punch list items, will become due the Contractor and the Architect shall so certify to the District authorizing the final payment. District may withhold any reasonable sums payable to Contractor for any work that was not completed on said date or that is defective and ordered to be replaced; final payment for withholdings to be made when certified by the Architect in writing to District. A reasonable sum shall be defined as 150% of the amount of monies necessary to complete or correct the work.

35.7 Stop Notices: District shall withhold, from the next following payment to Contractor, 150% of any amount claimed in a stop notice timely filed with the District. Amounts withheld shall only be paid upon a valid release of stop notice or other resolution pursuant to governing law. Disputes regarding the validity of stop notices shall be resolved pursuant to governing law and shall not be subject to the dispute resolution provisions set forth in Public Contracts Code Section 20104 and these contract documents. Neither the final payment nor any part of the retained percentage shall become due until the Contractor delivers to the District a complete release of all stop notices arising out of this Contract, but the Contractor may, if any subcontractor refuses to furnish a release, furnish a bond satisfactory to the District, to indemnify District against any stop notice.

Contractor understands and acknowledges that public property may not be liened but that a subcontractor may file a stop notice with the District. Contractor shall inform all subcontractors regarding the invalidity of liens on public property and in the event a subcontractor erroneously records a lien against public property, Contractor shall remove or bear the expense incurred by District in removing the invalid lien, including all costs and reasonable attorney fees.

35.8 Payments Withheld: The District may withhold or, on account of subsequently discovered evidence, nullify the whole or a part of any certificate of payment to such extent as may be necessary to protect the District from loss on account of:

a. Defective work not remedied;

i. Payment for defective work shall not be made unless and until contractor provides written notice from its surety that surety waives the right to claim exoneration based on payment for defective work.

b. Claims filed or reasonable evidence indicating probable filing of claims;

c. Failure of the Contractor to make payments properly to subcontractors or for material or labor;

d. Conditions indicating that the Contract cannot be completed for the balance then unpaid;

e. Damage to another Contractor.

f. Delays in progress toward completion of the work, with the stipulated amount of liquidated damages being withheld for each day of delay for which no extension is granted.

35.9 Substitution of Securities: Upon the Contractor's request, the District will make payment of funds withheld from progress payments pursuant to the requirements of Public Contracts Code Section 22300, if the Contractor deposits in escrow

with the District's treasurer or with a bank acceptable to the District, securities eligible for the investment under Government Code Section 16430 or bank or savings and loan certificates of deposit, upon the following conditions:

a. The Contractor shall bear the expense of the escrow account including the expense of District and the escrow agent, either the District's Treasurer or the bank, in connection with the escrow deposit made;

b. Securities or certificates of deposit to be placed in escrow shall be of a value at least equivalent to the amounts of retention to be paid to the Contractor pursuant to this section;

c. The Contractor shall enter into an escrow agreement in the form set forth in Public Contracts Code Section 22300 and satisfactory to the District, which agreement shall include provisions governing inter alia,

i. the amount of securities to be deposited;

ii. the providing of powers of attorney or other documents necessary for the transfer of the securities to be deposited;

iii. conversion to cash to provide funds to meet defaults by the Contractor, including, but not limited to, termination of the Contractor's control over the work, stop notices filed pursuant to law, assessment of liquidated damages or other amounts to be kept or retained under the provisions of the Contract;

iv. decrease in value of securities on deposit;

v. the termination of the escrow upon completion of the Contract.

d. The Contractor shall obtain the written consent of the surety to such agreement.

35.10 Off-Setting Obligations: District may off-set against payments required under this contract any monetary obligation from Contractor to District whether the obligation arises out of this project or otherwise.

36. PRE-CONSTRUCTION CONFERENCE: Prior to start of construction a conference will be called for the purpose of reviewing the construction program with the Contractor's representative. At the conference, detailed program, sequence of work, and methods of access to work site shall be reviewed. Representatives of the District, Architect, and Contractor shall be named, and District will establish requirements for request of payments, procedures for correspondence, etc.

37. PROGRESS SCHEDULE:

37.1 This section includes the preparation and submission of the schedules and reports specified herein, including the up to date maintenance thereof as required. Progress payments to the Contractor shall be withheld by the District until schedules are up to date.

37.2 Construction Schedule General Requirements: Contractor shall prepare and submit a detailed critical path method (CPM) schedule within twenty-one (21) calendar days of the formal notice to proceed. General requirements of the schedule shall include:

a. a construction sequence that does not exceed the contract completion date. **IMPORTANT: PROGRESS SCHEDULES SUBMITTED TO THE DISTRICT UNDER ARTICLE 37 MUST SHOW ONLY ACTUAL WORKING DAYS,**

IRRESPECTIVE OF WEEKENDS, HOLIDAYS, ETC., UNLESS WORK IS SCHEDULED TO ACTUALLY BE PERFORMED ON THOSE DATES. The District anticipates that it is rare that work will be performed on weekends, holidays, etc., and as such anticipates that most progress schedules submitted in accordance with the requirements of Article 37 will reflect only a 5 day work week on the schedule. Failure to exclude weekends, holidays, and other non-working days or to exceed a five-day work week will result in the Progress Schedule being rejected and constitutes a material breach of the Contract.

b. submittal/approval/fabrication and delivery sequences for all key materials and equipment on the project.

c. activities to reflect major inspections and testing of equipment.

d. utilize computerized software, such as Primavera, Promus, Aldegraph, or equal computerized CPM scheduling software.

e. use conventional critical path methods, principles, and definitions to satisfy the requirements of this specification.

f. use Precedence Diagraming Method (PDM) format.

37.3 Cost loading of all work activities shall be required. the cumulative amount of all cost loaded work activities shall equal the total contract price. Prorate overhead profit and general conditions on all activities for the entire project.

37.4 Procurement activities must be cost loaded to determine payment amounts for materials stored on site. If materials stored on site are not to be submitted for payment as such, cost loading of procurement items will not be required.

37.5 Original CPM Schedule Submittal: The project CPM schedule shall have a level of detail sufficient to reflect the various construction activities and monitor the project in a usable and readable manner. A minimum number of activities, including procurement activities, shall be required as determined by the Architect in accordance with the scope of the project.

37.6 The Contractor may elect to supply the services of a CPM scheduling consultant, and shall do so if adequate scheduling capabilities do not exist in-house.

37.7 The original submittal shall include the following:

a. time scaled logic network diagram in order by building. (3 copies)

b. bar chart in order by building, by early start. (3 copies)

c. bar chart in order by trade, by early start. (3 copies)

d. eight and one-half inch by eleven inch (8-1/2" x 11") written reports for a), b) and c) above and a minimum of 3 copies of a full size (i.e., 24" x 36") color baseline schedule as well as all schedules as the schedule is updated throughout the project

e. a cost loaded report, including individual activity cost and estimated month projected payments for the entire length of the project, sorted by: 1) early start, 2) late start. the cost loading totals must equal the contract sum.

37.8 Schedule Maintenance and Updating: The project CPM schedule shall be updated on a monthly basis with the project status date (data date) being no more than ten (10) working days to the prior periodic submittal due date. Such report shall show actual progress on the schedule compared to the plan. Progress payments to the Contractor shall be withheld by the District until schedules are up to date.

37.9 Periodic payment requests must include the current CPM schedule update at the time payment requests are submitted for processing. Progress payments to the Contractor shall be withheld by the District until schedules are up to date.

37.10 Each update submittal shall include the current time scaled logic network diagram and bar charts.

37.11 Select reports yielding the following sort of orders will be required.

a. activity listing sorted by building (including site), by total float, by early start.

b. activity listing sorted by building (including site), by early start.

c. during the report sorted by building, by total float; comparing current update with prior update.

d. variance report sorted by building by total float; comparing current update with original schedule.

e. value of work performed for current period, sorted by building, by trade.

f. value of work performed to date, sorted by building, by trade.

37.12 Included in the CPM schedule update shall be a written narrative report detailing the following:

a. a general discussion of progress since the prior update, including areas of work being accomplished earlier or later than scheduled. Include a discussion of any delay reflected by the CPM schedule.

b. a listing of the critical path only, sorted by early start, and a narrative addressing all critical path changes for the current update, the projected completion date, and the Contractor's plan of action to maintain the contract completion date.

c. a listing of all near-critical activities (activities having less than sixteen (16) working days total float) with a narrative discussion of the Contractor's plan of action to keep these activities from becoming critical.

d. a detailed listing and narrative of all logic changes, activity additions and deletions, duration modifications, and other scheduled alterations that were completed during the update.

e. each schedule update shall include CD(s) containing the CPM schedule files for that update.

f. the Contractor shall provide the District, upon the District's request, access to the scheduling software and hardware used to produce the original CPM schedule and monthly updates and an electronic copy of the schedule.

37.13 A copy of the most recent CPM construction schedule shall be posted in the Contractor's job office and copies of all out of date schedules shall be kept at the job office at all times for perusal by the District.

37.14 In addition to the CPM schedule update and reports submitted with each periodic payment request, one copy of CPM schedule updates and required report shall be submitted to the architect and the District. Such submittal shall be required within five (5) working days of the CPM schedule status date (data date).

37.15 Upon project closeout, the Contractor shall provide the District and the architect with one copy each of the completed as-built schedule and applicable reports.

37.16 Submittal Schedule: The Contractor shall also furnish before first application for payment, a separate schedule along with the construction schedule specified above showing the proposed dates for submittal of all shop drawings, product data and samples.

a. Submit two (2) copies of the submittal schedule to the Architect.

37.17 Recovery Schedules: Once a Contractor determines or the District or Architect notifies the Contractor that based on his/her/its observations of the work completed and the work in progress that the Contractor is twenty one (21) calendar days or more behind schedule, the Contractor has a duty to prepare a Recovery Schedule in accordance with the requirements set forth in Article 36 and submit the same to the District within seven (7) calendar days of receipt of notice that the Contractor is off schedule by twenty one (21) calendar days or more or, if no such notice is received by Contractor, within seven (7) calendar days of the date it becomes known to Contractor that Contractor is off schedule by twenty one (21) calendar days or more. Failure to timely provide District with recovery schedules shall constitute a material breach of the contract and District may declare the Contractor in default and terminate the contract.

38. PROTECTION OF WORK AND PROPERTY:

38.1 The Contractor shall continuously maintain adequate protection of all his/her work from damage and shall protect the District's property from injury or loss arising in connection with this Contract. Contractor shall make good any such damage, injury or loss, except such as may be directly due to errors in the Contract documents or caused by agents or employees of the District. Contractor shall adequately protect adjacent property as provided by law and the Contract documents.

38.2 Any plants which must be removed for proper execution of the work shall be removed without damage in a manner necessary for transplanting. The Contractor shall aid in this work and shall complete the transplanting and be responsible for watering and cultivation. The Contractor shall be responsible for damage to plants in a manner described in the foregoing paragraph.

39. QUALIFICATIONS FOR EMPLOYMENT:

39.1 No person under the age of 16 years of age and no person currently serving sentence in a penal or correctional institution shall be employed to perform any work under this Contract, unless, under the discretion of District, the safety of facility users is protected by one or more of the following methods:

a. The installation of a physical barrier at the worksite to limit contact with community users of District facilities.

b. Continual supervision and monitoring of all employees of the entity by an employee of the entity whom the Department of Justice has ascertained has not been convicted of a violent or serious felony.

c. Surveillance of employees of the entity by District personnel.

39.2 No person whose age or physical condition is such to make his/her employment dangerous to his/her health or safety or to the health or safety of others shall be employed to perform work under this Contract; provided that this sentence shall not operate against any physically handicapped person otherwise employable where such persons may be safely assigned to work which they can ably perform.

40. ROYALTIES AND PATENTS: The Contractor shall pay all royalties and license fees. He/she shall defend all suits or claims for infringement of any patent rights and shall save the District harmless from loss on account thereof, except that the District shall be responsible for all such loss when a particular process or the product of a particular manufacturer or manufacturers is specified, but if the Contractor has information that the process or articles specified is an infringement of a patent he/she shall be responsible for such loss unless he/she promptly gives notice of such infringement in writing to the District.

41. SANITARY FACILITIES: In accordance with applicable Cal-OSHA regulations, Contractor shall supply and maintain at his/her expense such toilets and other sanitary facilities as are necessary for use by workers employed at the job site. Such facilities shall be approved by District.

42. SCHEDULE OF VALUES: Within ten (10) days after the execution of the contract, the successful bidder will be required to provide District and Architect with a schedule of values that will break down the contract price into its component parts. The schedule of values shall allocate the entire Contract sum among the various portions of the work. The schedule of values should reflect the total cost of the work, including but not necessarily limited to, overhead, profit markups, start-up costs, completion costs, et cetera. The schedule of values should also separately itemize labor, by trade and hourly rate, for any trade performing work on the project in excess of one thousand dollars ($1,000.00) and materials for any one activity in excess of one thousand dollars ($1,000.00). If District and/or the Architect questions the accuracy of any item, the successful bidder shall supply the specific detailed breakdown of the item(s) cost as requested by District and/or Architect. Percentages of completion may be applied to the schedule of values by the District and/or Architect to compute progress payments. The schedule of values should be aligned with the CPM schedule. Within ten (10) calendar days of the approval of any change order, the schedule of values must be updated to incorporate the change orders as provided herein and submitted to the District and Architect. Within ten (10) calendar days of any change by Division of Industrial Relations to prevailing wage rates, the schedule of values shall be updated to reflect such changes and submitted to the District and Architect.

43. SEPARATE CONTRACTS: The District reserves the right to let other contracts in connection with the work including, but not limited to, work covered by a proposed change order that is not acceptable to the District. The Contractor shall afford other contractors reasonable opportunity for the introduction and storage of their materials and the execution of their work, and shall properly connect and coordinate his/her work with theirs.

44. SEVERABILITY: In the event any provision(s) of the contract documents is deemed to be invalid or unenforceable, that (those) provision(s) shall be severable from the remainder of the contract documents and shall not cause the invalidity or unenforceability of the remainder of the contract.

45. SUBCONTRACTORS:

45.1 The Contractor agrees that he/she is as fully responsible to the District for the acts and omissions of his/her subcontractors and of persons either directly or indirectly employed

by them, as he/she is for the acts and omissions of persons directly employed by him. Nothing contained in the Contract documents shall create any contractual (including third party beneficiary) relation between any subcontractor and District.

a. A subcontractor is a person or organization who has a direct contract with the Contractor to perform any of the work at the site. Subcontractor shall be listed in the Bid Proposal according to the instructions contained therein.

b. The Contractor agrees to bind every subcontractor to the terms of this contract, including the General Conditions, Special Conditions, the Drawings and Specifications as far as applicable to the Contractor's work.

The following provisions shall be included in the Contractor's contracts with his/her subcontractors, unless specifically noted to the contrary in a subcontract approved in writing as adequate by the District.

The subcontractor agrees:

i. To be bound to the Contractor by the terms of the Agreement, General Conditions, Special Conditions, Drawings and Specifications, and to assume toward him/her all the obligations and responsibilities that he/she, by those documents, assumes toward the District.

ii. To submit to the Contractor, applications for payment, in such reasonable time as to enable the Contractor to apply for payment under terms of the General Conditions.

iii. To make all claims for extras, for extensions of time and for damages to the Contractor in the manner provided in the contract documents for claims by the Contractor upon the District.

45.2 Contractor shall hold District harmless and defend and indemnify District from damages, if any, incurred as a result of Contractor's failure to include the required conditions in Contractor's subcontracts.

45.3 Contractor shall:

a.. Pay the subcontractor, upon the payment of certificates, the amount allowed to the Contractor on account of the subcontractor's work to the extent of the subcontractor's interest therein.

b. Pay the subcontractor to such extent as may be provided by the Contract documents or the subcontract, if either of these provides for earlier or larger payments than the above.

45.4 Pursuant to the provisions of Sections 4100 et seq., of the Public Contracts Code of the State of California, the Contractor shall not without the consent of the District, either:

a. Substitute any persons as subcontractors in place of the subcontractors designated in his/her original bid.

b. Permit any subcontractor to be assigned or transferred or allow any work to be performed by anyone other than the original subcontractor listed in his/her bid.

c. Other than in the performance of change orders, sublet or subcontract any portion of the work in excess of one-half of one percent of his/her bid for which his/her original bid did not designate a subcontractor.

d. Contractor's violation of any of the provisions of sections 4100 et seq., of the Public Contracts Code, shall be deemed a material breach of this Contract, and the District may terminate the Contract, or may assess the Contractor a penalty in the amount of not more than ten percent (10%) of the amount of the subcontract involved, or may both cancel the Contract and assess the penalty.

46. SUBMITTALS, SHOP DRAWINGS, CUTS AND SAMPLES: Shop drawings, brochures, catalogue cuts and samples in quantities specified by Architect shall be submitted to the Architect for all items for which they are required by the technical specifications. The Contractor shall examine all submittals for accuracy and completeness, including those submittals provided by subcontractors at any tier, in order to verify their suitability for the work and compliance with the contract documents and shall sign and date each submittal. Specific submittals requirements are identified in the individual specification Sections.

46.1 Submittal Requirements:

a. General: Conform to specified procedures in submission of all required submittals.

b. Specified Products: Where submittals are identified in individual specification Sections with the statement "None required for specified product.", only the named manufacturer's, product and model numbers are exempt from submittal requirements.

c. Approved Equals and Substitutions: Where submittals are identified in individual specification Sections with the statement "None required for specified product.", and Contractor is requesting an approved equal or substitution, all submittal requirements shall be in effect and will be required. Submittals shall identify all changes required in plan, detail and specification, and shall show or describe in detail, how proposed product will be incorporated, without altering the design or appearance of the Project in any way.

d. Deferred Approvals: Items identified on the cover sheet of the Drawings that are not approved because the exact design or manufacturer are not known at the time of approval and which require submittals be made through the Architect for review and acceptance after the Contract is signed.

46.2 Submission Procedures.

a. General: Schedule submissions a minimum three (3) weeks before required for use.

b. Submissions:

i. General: After issuance of Notice to Proceed make submissions as follows:

ii. Deferred Approval Items: 21 calendar days.

iii. Early Start and/or Long Lead-Time Items: 30 calendar days.

iv. Color Selection Items: 30 calendar days.

v. Electrical, Mechanical and Equipment Items: 60 calendar days.

vi. All other items: 90 calendar days.

46.3 Cover Sheet:

a. General: All submittals shall be accompanied by a Submittal Cover Sheet as provided by the Architect. Contractor shall follow the format as follows:

i. Contractor: Provide company name, mailing address, telephone number and name of the contact person responsible for work on this project.

ii. Sub-contractor: Provide company name, mailing address, telephone number and name of the contact person responsible for work on this project.

iii. Submittal Description:

General: Describe contents of submittal completely; identify if material is a resubmittal, and give previous submittal number.

Submittal Index: Provide index of all items included in submittal; properly identify with drawing numbers, etc.

iv. Specification Section Number: Identify submitted work with Section number and name shown in the Project Manual. Provide separate submittals for each specification Section, as required.

v. Submittal Number: Identify first submittal as number one (1); number re-submittals, if required, with succeeding numbers.

b. Submittals Identification:

i. General: Provide the following on each submittal.

ii. Date: Submission date and revision dates.

iii. Project: Project title and number; names of Architect, Contractor, and Sub-contractor.

iv. Product or Material: Name of manufacturer; product name or model number; and supplier.

v. Contractor's stamp: Initialed or signed, certifying to review of submittal, verification of field requirements and compliance with contract documents.

46.4 Number of Copies Required:

a. General: Submit following number of copies:

b. Progress Schedule: Three (3) copies.

c. Schedule of Values: Three (3) copies.

d. Certifications: Three (3) copies.

e. Shop Drawings: One (1) reproducible transparency and six (6) copies of each original drawing.

f. Product Data/Material Lists: Seven (7) copies.

g. Samples:

i. General: As identified in individual specification Section.

ii. Color/Pattern Section: One (1) set of manufacturer's complete range for initial selection; additional samples as requested of selected color/pattern for final color schedule.

h. Substitutions: Seven (7) copies.

i. Maintenance/Operating Manuals: Three (3) copies.

j. Record Drawings: Reproducible transparencies and two (2) copies.

k. Record Survey: Reproducible transparencies and two (2) copies.

l. Contractor and Subcontractor Guarantees: Three (3) copies, all with original signatures.

m. Products, materials and equipment – warranties: Three (3) copies, all with original signatures.

46.5 Submittal Review:

a. General: Make submittals as required to cause no delay in the orderly progress of work, layout or fabrication under Contract, due allowance being made for checking by the Architect and for such corrections, resubmissions and rechecking as may be necessary. Do not commence any work requiring submittals until review by Architect has been completed.

b. Review: Review of submittals will be general and only for general conformance with the Contract Documents. Review does not relieve Contractor from responsibility for coordinating work with other trades and compliance with requirements of Contract Documents for lengths, fit and other details, or from furnishing materials and work required by contract which may not be indicated on submittals when reviewed. Review does not authorize changes from Contract requirements. Efforts will be made by Architect to identify errors and omissions, but General Contractor is responsible for the accuracy and correctness of all submittals.

c. Color Selections: Architect will make no selections until all submittals related to color have been received and materials reviewed.

47. PROJECT SUPERINTENDENT; PROJECT MANAGER; FOREMAN - SUBMISSION OF RESUME FOR APPROVAL TO ASSIGN TO PROJECT: Within five (5) days of receiving the Notice of Award, in addition to other contractually required submittals, Contractor shall also submit to District the name, address, work, home and pager telephone of the Contractor's project manager, superintendent and foreman who will be assigned by the Contractor to the Project, as well as a copy of the resume of the superintendent and foreman.

47.1 Designated Superintendent, Project Manager and Foreman - District Approval Required: Within five (5) calendar days of receiving the Notice of Award, Contractor shall submit to District the information identified in 47 above for District's review. Within ten (10) business days of receipt of such information, District shall notify Contractor as to whether the designated superintendent, project manager and foreman for the Project are acceptable to the District. District's approval shall not be unreasonably withheld. Contractor understands and agrees that the requirement to provide a Project Superintendent and a Project Manager expressly requires that Contractor employ two separate individuals and that contractor will not be permitted to staff this Project with just one employee wearing both the hat of Project Superintendent and Project Manager, unless expressly authorized by District, in writing.

47.2 If, at any time during the Project, the District notifies the Contractor that either the superintendent, project manager or foreman on the Project are not performing to the District's satisfaction, the Contractor shall immediately replace such individuals not later than seven (7) business days after receipt of such notification from District. Contractor shall provide the District with the information identified in Paragraph 47 above relating to any replacement superintendent, project manager or foreman prior to the individuals performing work on the Project. District shall expeditiously review the information to determine whether the proposed replacement superintendent and/or foreman are acceptable to the District, which approval shall not be unreasonably withheld.

47.3 If, at any time during the Project, Contractor notifies the District, in writing, stating the reasons therefore, that the Project superintendent or foreman have become unavailable to continue on the Project, Contractor may substitute other personnel of at least equal competence upon prior written approval by District, which approval shall not be unreasonably withheld. Contractor understands, however, that District will not approve any substitution if the basis of such request is to merely assign these employees to other Projects being constructed by Contractor before the completion of the Project that is the subject of this Contract. In proposing replacement personnel, Contractor must first provide the District with the information identified in Paragraph 47 above relating to any replacement superintendent, project manager or foreman prior to the individuals performing work on the Project. District shall expeditiously review the information to determine whether the proposed replacement superintendent and/or foreman are acceptable to the District.

47.4 Contractor shall keep a full-time project superintendent and foreman physically on each project site at all times that work is being performed on the project and shall keep during the progress of the project any necessary assistants to the Project Superintendent. Contractor understands and agrees that the Project Superintendent and/or foreman cannot be removed from any assigned project, without the express written consent of the District, which District agrees shall not be unreasonably withheld. Contractor understands, however, that District will not approve any substitution if the basis of such request is to merely assign these employees to other Projects being constructed by Contractor before the completion of the Project that is the subject of this Contract.

47.5 The superintendent shall represent the Contractor in his/her absence and all directions given to him/her shall be as binding as if given to the Contractor.

47.6 The Contractor shall give efficient supervision to the work, using his/her best skill and attention. Contractor shall carefully study and compare all drawings, specifications and other instructions and shall at once report to the Architect any error, inconsistency, or omission which he/she may discover but he/she shall not be held responsible for their existance or discovery, unless there is a situation in which interpretation is doubtful or the error is sufficiently apparent as to place a reasonably prudent contractor on notice that an error exists.

47.7 Any time Contractor's personnel or personnel of subcontractors or materialmen are on the project site, Contractor shall have a designated person on site to be responsible for the work.

47.8 Contractor understands that is it solely responsible for giving directions to its subcontractors and/or responding to any requests for information from its subcontractors. Contractor also understands that it shall be its sole responsibility to coordinate the work of all of its subcontractors. Neither District, Architect, Inspector, or any officer, agent or employee thereof, shall provide direction to Contractor's subcontractors or respond to requests for information from subcontractors or coordinate subcontractor work.

47.9 The Superintendent shall submit daily reports to the District not less than weekly including but not limited to: subcontractors on site, accurate head count of workers and trades, and materials, and equipment delivered to the site, visitors, accidents, problems, et cetera. Note: If the Contractor's Superintendent performs labor on the project, the Contractor shall cause the Superintendent to be paid at the prevailing wage for the classification of work performed.

48. THIRD PARTY BENEFICIARIES: This contract is by and between the District and Contractor and/or their successors or assigns and no third party is intended expressly or by implication to be benefited by this Agreement.

49. UTILITIES:

49.1 Unless otherwise provided for under separate sections, Contractor shall arrange for and provide continuously until acceptance of work, all water, gas and electricity required. Contractor shall pay for such services unless specifically otherwise noted. Contractor must obtain prior written permission from District before hooking up to any District utilities that have not been directly sub-metered by Contractor. In the event Contractor is permitted to utilize District utilities, Contractor shall be responsible for all costs attributable to Contractor's performance of work under this Contract and such charges will be back charged to Contractor on a pro-rata basis.

49.2 Contractor shall send proper notices, make necessary arrangements, perform other services required in care and maintenance of all public utilities and assume all responsibility concerning same. Notify proper utility if damage occurs. Observe all rules and regulations of the respective utilities in executing the work.

49.3 Contractor shall carefully check areas where operations of the Contract are to be performed and observe any existing overhead wires, equipment and other obstructions. Any such work shall be moved, replaced or protected, as required, whether or not shown or specified.

49.4 Locations of existing underground lines shown on Drawings are based on information from best available sources, but are to be regarded as approximate only. Deviations necessary to conform with actual locations and conditions shall be made without extra cost. Contractor shall exercise extreme care in locating and identifying said underground lines before starting work.

49.5 Contractor shall exercise all reasonable precautions to preserve and protect any existing underground improvements whether or not shown or specified. Active utilities shown on Drawings shall be adequately protected from damage and removed or relocated only as indicated or specified. Where active utilities are encountered but are not shown on Drawings, Architect shall be advised; work shall be adequately protected, supported, or relocated as directed by Architect; contract sum will be adjusted for such additional work.

49.8 Contractor shall repair, to the satisfaction of Architect and without additional cost to District, any damage to utility lines that occur as a result of operations of this work whether or not such utility lines are indicated.

50. WARRANTIES: Where the specifications require the Contractor to provide a written guarantee, it is the intention of this Contract that such guarantee shall run in favor of District, shall be made out to District, and shall be delivered in writing, in the form set forth in these contract documents, to the District prior to final payment.

50.1 Contractor's Guarantee During Construction: The District shall not, in any way or manner, be answerable or suffer loss, damage, expense or liability for any loss or damage that may happen to said building, work, or equipment or any part thereof, or in, on, or about the same during its construction and before acceptance. Contractor assumes the risk of loss from destruction of, or damage to the project and in the event the work is damaged or destroyed in whole or in part by fire, earthquake, flood, or other peril, the time for the completion of the contract will be extended, and Contractor shall rebuild at no expense to District. This obligation shall not replace Contractor's obligation to carry insurance as set forth in the contract documents.

50.2 Contractor's Guarantee of Quality: Contractor unqualifiedly guarantees the "first-class" quality of all workmanship and of all materials, apparatus, and equipment used or installed by him/her or by any subcontractor or supplier in the project which is the subject of this Contract unless a lesser quality is expressly authorized in the Drawings and Specifications, in which event Contractor unqualifiedly guarantees such lesser quality and that the work as performed by Contractor will conform with the Plans and Specifications or any written authorized deviations therefrom.

50.3 Guarantees: Besides guarantees required elsewhere, Contractor shall and does hereby guarantee all workmanship and material for a period of two (2) years from the date of acceptance of the work by the District (special or extended guarantees as noted shall be honored as specified under specific items) and shall repair or replace any or all material and workmanship (together with any other work which may be damaged in so doing) that is or becomes defective during the period of said guarantees without expense whatsoever to District. For purposes of this Contract the date of acceptance shall be the date of the resolution of the governing body of District accepting work excepting work which is incomplete upon date of said resolution, and then the date of acceptance shall be the date of final payment under this Contract. In the event the Contractor fails to comply with the requirements of any guarantee required by this Contract within seven (7) days after being notified in writing, District is authorized to proceed to have the defects repaired and made good at the expense of contractor who shall pay the costs and charges therefor immediately on demand. In the event the defective condition giving rise to repairs pursuant to this warranty endangers persons or property, or otherwise substantially interferes with District's ability to conduct its business or provide services for which the District is responsible, District may immediately make repairs after reasonable attempts to notify Contractor and Contractor shall pay the costs and charges of said repairs immediately upon demand. Early occupancy by District or early use of a guaranteed item or system by District, Contractor, subcontractor or any other person or agency shall not modify the period of guarantee which shall commence as set forth above.

51. SUPPLEMENTAL GENERAL CONDITIONS

51.1 Ownership and Use of Drawings, Specifications, Other Documents: The drawings, specifications and other contract documents for the project are the property of the District and/or architect/engineer pursuant to contract requirements between the District and the

architect/engineer. Neither the contract, nor any subcontractor, or material or equipment supplier shall own or claim a copy right in the drawings, specifications, and other documents prepared by the architect/engineer and/or the District.

51.2 Fingerprinting: On any project that is occupied at the time of construction, reconstruction or modernization or where workers are anticipated to come in contact with pupils, contractor shall comply with the applicable provisions of Education Code Section 45125.1 in a method as determined by the District. Pursuant to Education Code Section 45125.1, contractor shall either conduct criminal background checks of all employees of contractor assigned to the contract site, and shall certify that no employees who have been convicted of serious or violent felonies as specified in Education Code Section 45125.1, will have contact with pupils by utilizing the certification regarding background checks and the corresponding attachments found in instructions to bidders and contract documents, or shall ensure that, by erection of a physical barrier, or otherwise, that workers and students shall be separated by a physical barrier.

If it is determined that the contractor must provide certification of employees, as part of such certification contractor must provide the District with a list of all employees providing services pursuant to this agreement, and designate which sites such employees will be assigned.

In performing the services set forth in this agreement, contractor shall not utilize any employees who are not included on the list.

At owner's sole discretion, owner may make a finding, as authorized under Education Code Section 45125.1 that contractor's employees will have only "limited contact" with pupils. Contractor's failure to comply with this law shall be considered a material breach of this agreement.

In the case of new construction contracts where there are no students. If the project schedule provides for beneficial occupancy or portions of the project, or if the project should be delayed, then contractor, at no additional cost, shall meet the requirements of fingerprinting or providing a physical barrier as required by the District.

51.3 Noise, Drugs, Tobacco and Alcohol: Contractor shall take all steps necessary to ensure that employees of contractor, or any of its subcontractor's employees do not use, consume, or work under the influence of alcohol, tobacco or illegal drugs while on the project. Contractor shall further prevent any of its employees or subcontractor's employees from playing any recorded music devices, radios or wearing any radio headphone devices for entertainment while working on the project. Contractor shall prevent its employees, or subcontractor's employees from bringing any animal onto the project. Contractor shall become familiar with the District's written policies, available online or by request, and school site policies or rules, available upon request from the school site, regarding conduct of persons present on District facilities and school sites.

51.4 Noise Control: Contractor shall be responsible for the installation of noise reducing devices on construction equipment. Contractor shall comply with the requirements of the City and County of Colusa with regard to noise ordinances governing construction sites and activities. If school is in session at any point during the progress of the project and in the District's reasonable discretion, the noise from such work disrupts the students or faculty or the normal operation of the school then at the District's request, the contractor shall schedule performance of all such work around normal school hours or make other arrangements so that the work does not cause disruption. In no event shall the contractor have the right to receive additional compensation or an extension to the contract time as a result of any such rescheduling. Noise control shall be implemented during site preparation and construction and any issue related to scheduling or

rescheduling based on anticipated noise and school program issues must be scheduled in the project schedule as set forth in Article 37.

51.5 Administrative Site Resources. Contractor shall maintain at the site for the District, a current copy of the California Building Code, Titles 19, 20 and 24 of the California Code of Regulations, any other document required by the Division of State Architect, and one record copy of the drawings, specifications, addendum, change orders and other modifications marked currently to record changes in selections and make such documents available to the District and its architect. Contractor shall maintain an onsite computer with internet access so the contractor can review and post documents as require, including, but not limited to, filing and posting of Division of State Architect documents.

51.6 Division of Industrial Relations Registration: Contractor shall comply with all DIR registration requirements in accordance with Labor Code Section 1725.5 and 1771.1 and compliance with the requirement is a material obligation of the contractor and all of its subcontractors. Failure of the contractor and/or any of its subcontractors at any tier to be properly registered with the DIR at all times during the performance of the work is a material breach subjecting the contractor and/or subcontractors to termination.

51.7 Excavation Deeper Than 4 Feet: If this contract involves digging trenches or other excavation that extends deeper than 4 feet below the surface, then all of the following apply:

A. The contractor shall promptly, and before the following conditions are disturbed, notify the District, in writing, of any (1) material that the contractor believes may be material that is hazardous waste as defined in Section 25117 of the Health and Safety Code, that is required to be removed to a class 1, class 2 or class 3 disposal site in accordance with provisions of existing law; (2) subsurface or latent physical conditions at the site differing from those indicated; (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 this contract.

B. Upon receiving any such notice, the District shall promptly investigate the condition, and if it finds the conditions do materially differ, or do involve hazardous waste, and cause a decrease or increase in the contractors cost of, or the time required for, performance of any part of the work, shall issue a change order under the procedures set forth in this contract.

C. In the event a dispute arises between the District and the contractor whether the conditions materially differ or involve hazardous waste, or cause a decrease or increase in the contractors cost of, or time required for performance of any part of the work, the contractor shall not be excused from any scheduled completion date, but shall proceed with all work under the contract. Contractor shall retain any and all rights provided either by contract or by law, which pertain to the resolution of disputes and protest between the parties.

D. Pursuant to Labor Code Section 6705, if this project involves the excavation of any trench or trenches five (5) feet or more in depth the contractor shall, in advance of the excavation, submit to the District, or a registered civil or structural engineer employed by the District, or the District's architect/engineer a detailed plan showing the design and shoring for protection from the hazard of caving ground during the excavation the trenches. If such plan varies from the Shoring System Standards established by the construction safety orders, the plans shall be prepared by a registered civil or structural engineer, but in no case shall such plan be less effective than that required by the construction safety orders. No

excavation of trenches shall be commenced until the plan has been accepted by the District or its delegated representative. Contractor shall not commence any excavation work until it has secured all necessary permits including the required CAL OSHA excavation/shoring permit.

51.8 Notification of Main or Trunk Line Utility Facilities. If the contractor, while performing work under the contract discovers any existing main or trunk line utility facilities not identified by the District in the contract plans or specifications, contractor shall immediately notify the District in writing. The local public utility where they are the owners of the utility, shall have the sole discretion to repair or relocate the work, or permit the contractor to do such repairs or relocation at a reasonable price. The contractor shall be compensated for the cost of locating, repairing damage not due to failure of the contractor to exercise reasonable care, and removing or relocating such utility facilities not set forth in the plans and specifications with reasonable accuracy.

Section 00 8000 SPECIAL PROVISIONS

ARTICLE 1: SCOPE OF WORK

Section 1.01 Bid Package(s)

A. Bidder shall carefully review the total scope of responsibilities with respect to the Work of Bid Package #16-102, Fire Alarm Replacement Projects at Burchfield Primary School, Egling Middle School and Colusa High School and shall provide for the total scope in its Proposal.

Section 1.02 License Classification: **B or C10**

Section 1.03 Scope of Work

Included:

1. Furnish and install all labor, material and equipment for all Work shown and/or specified in accordance with the Contract Documents, except as excluded below. **Please note, technical requirements for Divisions 02 thru 48 include complete specifications for Egling Middle School (EMS). Burchfield Primary School and Colusa High School have the same technical specifications requirements. These documents are available upon request. Only one complete school site (EMS) technical requirements was included for contractors to develop bid proposals.**
2. This Scope of Work Section 1.03 also applies to all applicable awarded alternates.
3. Information provided under "Also Included" points out some items which may be considered less obvious or "unconventional", but which are included in the Scope of Work.
4. This Bid Package Description is intended to clarify scope to the Contractor, but is in no way intended to limit scope that is reasonable inferable as being required by the Work included in this description. Work required under a Bid Package may be shown or specified anywhere in the Contract Documents.

Also Included:

1. Fire Alarm Control Panel (FACP) at Burchfield Primary School (BPS).
2. Fire Alarm Control Panel (FACP) at Egling Middle School (EMS).
3. Trenching/compaction and backfill Work as shown on drawings.
4. Concrete/asphalt patching Work.
5. All demolition and removal and/or replacement of Work associated with this Bid Package.
6. Coordination with other Contractors working on this campus.
7. Coordinate the Underground Service Alert (U.S.A.) one-call program prior to construction excavations. Note that the Contractor is responsible to maintain and/or protect the markings performed by U.S.A. during construction for reference.
8. Weather protection during the course of construction (See Section 00 7200, General Conditions).
9. Temporary barricades, signs, pedestrian protection, temporary facilities and traffic control Work.
10. Daily and final clean-up.
11. Qualified/certified technicians must perform the replacement and/or repair of all landscape, irrigation, asphalt/concrete surfaces and above or below grade utilities disturbed during construction, and the District must be given the opportunity to test and accept the Work prior to covering up.
12. Patching, repairing, painting and/or replacement of all finished surfaces disturbed during construction.
13. Coordinate testing and inspections required by the Contract Documents, Owner, and all Federal, State and local agencies.
14. To provide the appropriate administration and close out for the three separate DSA applications, each site will be administered individually.

Excluded:

1. Fire Alarm Control Panel (FACP) at Colusa High School (CHS). Panel is existing at CHS.
2. Plan check fees.
3. Inspection fees.

4. Encroachment permit/fees.
5. Initial Compaction testing only.

ARTICLE 2: ALTERNATES

Section 2.01 Alternates

Alternate Bids may be accepted at the option of the District. Any combination of Base Bid, Alternates, and Unit Costs determined by the District will be basis for awarding a Contract.

ARTICLE 3: SCHEDULE

Section 3.01 Contract Time/Time for Completion
The time for completion of all Work is August 12, 2016.

Time for completion of milestones is as set forth in the attached Preliminary Construction Schedule. Any extensions of time for completion of milestones are governed by the same terms and restrictions as applicable to extensions of the Contract Time referenced in the General Conditions Section 00 7200.

Section 3.02 Schedules
The attached Preliminary Construction Schedule indicates planned durations for significant activities during the construction period, including required milestone completion dates. Phasing and milestone completion dates have been prepared to accommodate the Work of this Bid Package and school educational demands. The activities shown assume 100% manpower levels. Mobilization, planning, coordinating layout, gradual manloading, etc. all must occur prior to the activities shown.

Certain phases of the work may be designated as a "Zero Float Phase" in the Preliminary Construction Schedule. Any Zero Float Phase shall have a fixed start and finish date that is not subject to change as a result of delays in other phases or in issuance of the Notice to Proceed for the Project.

The Contractor is required to submit a Contract Schedule for the activities within its scope of Work according to the requirements specified in General Conditions Section 00 7200, Article 37, Progress Schedule.

The District will occupy the Site during the entire period of construction for the conduct of normal operations. The Contractor shall cooperate with the District to minimize conflict, and to facilitate the District's operations. Construction areas will be made available in the order and time frames shown in the Preliminary Construction Schedule.

Schedule the Work to accommodate these requirements.

Preliminary Construction Schedule

Schedule the Work to accommodate the following milestone requirements:

- Post Bid Document Phase Milestone **(Start Date, Not Later than 4/13/16)**
  - Notice of Intent to Award
  - Post-Bid Submittals
  - Project Submittals/Shop Drawings for zero float phase scope of work
  - Post Bid Document Phase Milestone **(Completion Date, Not Later than 4/27/16)**

- Zero Float Phase Milestone **(Start Date, approximately 4/28/16)**
  - Notice to Proceed
  - Submission of all remaining required submittals in accordance with 00 7200

- Remaining Scope of Work Phase Milestone **(Start Date, Not Later than 6/6/16)**
  - Mobilization/initial layout
  - Site Work improvements
  - AC Paving and Patching
  - Punch list development and completion
  - Remaining Scope of Work Phase Milestone **(Completion Date, Not Later than 8/12/16)**

Section 3.03 Liquidated Damages

In the event of failure on the part of the Contractor to complete each phase of the Work within the Milestone Completion Date, or the overall Project within the Contract Time, including any approved extensions thereof, the Contractor shall pay District, on a phase by phase basis, liquidated damages for each calendar day of delay until final completion of the Phase or the Project. The liquidated damages for each Phase and for the Project are separate, and may be accumulated if completion of more than one Phase is delayed concurrently.

The amount of liquidated damages is indicated below (also refer to General Conditions Section 00 7200, Article 28, Liquidated Damages):

$500.00 per calendar day.

SECTION 01 1100
SUMMARY OF WORK

PART 1 GENERAL

1.01 PROJECT DESCRIPTION

A. The furnishing of all labor, materials, equipment, services and incidentals necessary for work of the Fire Alarm Replacement Projects located at Burchfield Primary School, Egling Middle School and Colusa High School.

1.02 RELATED DOCUMENTS

A. General Conditions.

B. Supplementary Conditions.

1.03 STANDARD REFERENCES

A. Any material or procedure specified by reference to number, symbol, or title of a specific standard, such as a commercial standard, a Federal Specification, a trade association standard, or other similar standard document shall comply with requirements in latest revision thereof and any amendment or supplement thereto in effect on date of executed Contract, except as limited to type, class or grade, or modified in such reference.

1.04 REQUIREMENTS OF REGULATORY AGENCIES

A. Construction shall be in conformance with the most currently adopted editions of the following Codes:

1. Title 24, Part 1 - 2013 California Building Standards Administrative Code
2. Title 24, Part 2 - 2013 California Building Code (Based upon 2012 International Building Code)
3. Title 24, Part 3 - 2013 California Electrical Code (Based upon 2011 National Electrical Code)
4. Title 24, Part 4 - 2013 California Mechanical Code (Based upon 2012 Uniform Mechanical Code)
5. Title 24, Part 5 - 2013 California Plumbing Code (Based upon 2012 Uniform Plumbing Code)
6. Title 24, Part 6 - 2013 California Energy Code
7. Title 24, Part 9 - 2013 California Fire Code (Based upon 2009 International Fire Code)
8. Title 24, Part 11 - 2013 California Green Building Standards Code
9. Title 24, Part 12 - 2013 California Referenced Standards
10. Comply with CFC Chapter 14, Fire Safety During Construction and Demolition
11. NFPA 10, 2013 Edition, Portable Fire Extinguishers
12. NFPA 13, 2013 Edition, Installation of Automatic Sprinkler Systems and CA Amendments
13. NFPA 14, 2013 Edition, Installation of Standpipe, Private Hydrants and Hose Systems
14. NFPA 24, 2013 Edition, Installation of Private Fire Service Mains and CA Amendments
15. NFPA 72, 2013 Edition, National Fire Alarm Code – See CA Amendments
16. NFPA 80, 2013 Edition, Fire Doors and Other Opening Protectives
17. 2010 Americans with Disabilities Act (ADA)
18. California Code of Regulations, Title 19, State Fire Marshall Regulations

1.05 OCCUPATIONAL SAFETY AND HEALTH ACT REQUIREMENTS

A. During the entire construction period, it shall be the responsibility of the Contractor to maintain conditions at the Project site so as to meet in all respects the requirements of the Federal Occupational Safety and Health Administration (OSHA). This provision shall cover the

Contractor's employees and all other persons working upon or visiting the site. To this end, the Contractor shall inform himself and his representatives of Federal OSHA standards.

1.06 COORDINATION REQUIREMENTS

A. It is the Contractor's responsibility to coordinate the Work so as to minimize conflicts and optimize efficiency.

B. The placement of pipes, conduits, other materials, and the location, size and reinforcement of holes in the building structure shall conform to the structural Drawings and Specifications. When the requirements of the Mechanical, Electrical or other sections of the Specifications or Drawings are in conflict with the structural requirements, the structural requirements shall take precedance. Where the safety of the building structure is threatened, due to mechanical, electrical or other construction or holes required for such construction, modifications shall be made as directed by the Architect at no additional cost to the District.

C. Coordinate scheduling, submittals, and Work of the various Sections of Specifications to assure efficient and orderly sequence of installation of interdependent construction elements, with provisions for accommodating items installed later.

D. Verify that utility requirement characteristics of operating equipment are compatible with building utilities. Coordinate work of various Sections having interdependent responsibilities for installing, connecting to, and placing in service, such equipment.

E. After District occupancy of premises, coordinate access to site for correction of defective Work and Work not in accordance with Contract Documents, to minimize disruption of District's activities.

1.07 UTILITY AND BUILDING SYSTEM COORDINATION

A. Notify Architect if conditions are discovered which would prevent the completed construction from conforming to the requirements of the Work.

B. Coordinate space requirements and installation of mechanical and electrical work that are indicated diagrammatically on Drawings.

C. Utilize spaces efficiently to maximize accessibility for other installations, for maintenance, and for repairs.

D. Follow routing shown for pipes, ducts, and conduit, as closely as practicable. Place runs parallel with line of building or partitions.

E. Configure piping, conduit, and rack installation to permit access into drop ceilings with minimum clearance above ceiling.

F. Do not install ductwork, conduit, piping, or other building system components on support systems for other components unless specifically designed to accommodate such shared use and only with approval of the Architect.

1.08 WORK INDICATED AS N.I.C.

A. The term "NIC" shall be construed to mean that portions of the Project are not to be furnished, installed or performed by the Contractor. The term shall mean "Not in this Contract" or "Not a Part of the Work to be performed by the Contractor" except that coordination and installation of certain NIC items specified shall be the Contractor's responsibility. Buildings or portions of buildings listed as NIC in one discipline may still need to be provided with services or equipment in another discipline. Refer to all drawings from all disciplines.

B. "NIC" construction is indicated and specified herein as an aid to the Contractor in scheduling the amount of time and materials necessary for the completion of the Contract.

1.09 CONTRACTOR'S USE OF THE PREMISES

A. General: Contractor shall have full use of premises for construction operations, including use of Project site, during construction period. Contractor's use of premises is limited only by Owner's right to perform work or to retain other contractors on portions of Project.

B. The Contractor shall be responsible for the following:

C. Coordinate the use of the premises under the direction of the District.

D. Assume full responsibility for the protection and safekeeping of products under this Contract, which are stored at the site.

E. Move stored products that are under the Contractor's control, which interfere with operations of the District.

F. Obtain and pay for the use of additional storage or construction areas needed for operations.

G. The Contractor shall make provisions to insure the security of the building.

PART 2 PRODUCTS

Not Used.

PART 3 EXECUTION

Not Used.

END OF SECTION

SECTION 01 2113
CASH ALLOWANCES

PART 1 GENERAL

1.01 SUMMARY

A. To provide a budget to cover scope of work not precisely determined by the Contract Documents prior to bidding, allow within the proposed Contract Sum the amounts described in this Section.

B. Related work:
1. Documents affecting work of this Section include, but are not necessarily limited to, Bidding and Contract Requirements, General Requirements and related Technical Requirements.
2. Other provisions concerning Cash Allowances are stated in Specification Section 01 2113 and General Conditions Section 00 7200.
3. Other provisions concerning Cash Allowances also may be stated in other Sections of the Project Manual.

1.02 SPECIFIC CASH ALLOWANCES

BID PACKAGE # 16 – 102.

A. Provide within the proposed Contract Sum the amount of **$15,000** for Underground Utility Relocation Allowance to be used at the Owner's discretion. This allowance will be expended under a "cost plus" basis using current prevailing wage rates, as directed by the Architect and Owner's Representative. All unused portions of the allowance will be deducted from the contract through a change order.

PART 2 PRODUCTS

Not Used.

PART 3 EXECUTION

Not Used.

END OF SECTION

SECTION 01 3119
PROJECT MEETINGS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Owner's Representative will schedule and administer a preconstruction meeting, regular progress meetings, and specially called meetings throughout progress of the Work, and will:

1. Prepare agenda for meetings.
2. Make physical arrangements for meetings.
3. Preside at meetings.
4. Record the minutes; include significant proceedings and decisions.
5. Reproduce and distribute copies of minutes after each meeting to participants in the meeting and to parties affected by decisions made at meeting.

B. Representatives of Contractor, subcontractors and suppliers attending meetings shall be experienced supervisory staff with written authorization to act on behalf of the entity each represents.

1.02 PRECONSTRUCTION MEETING

A. Timing: Prior to start of construction.

B. Attendance: Architect and consultants as appropriate, District's representative, Owner's Representative, Contractors as requested.

C. Purpose: Discuss and familiarize Contractors with construction administrative procedures to be used on Project.

1.03 PROGRESS MEETINGS

A. Timing: Frequency, day and time to be determined by Owner's Representative, Architect and District.

B. Attendance: Owner's Representative and each contractor on site. Owner's Representative, Architect, consultants and subcontractors when required.

C. Purpose: The purpose of these meetings is to provide a formal and regular forum for the District, Owner's Representative, Architect and the Contractors to present questions, problems or issues that need to be addressed. It will also provide an opportunity to review the progress on previous issues and action items along with submittal and schedule review.

D. Each Contractor scheduled to commence Work within the following week will attend the current week's meeting to coordinate Work with other contractors already on site.

1.04 SPECIALLY CALLED MEETINGS

A. The Owner's Representative may call a special meeting at any time during the course of the Project. Special Project meetings shall include representatives of the Project as requested in order to discuss problems and/or solutions that are common to the Project.

PART 2 PRODUCTS

Not Used.

PART 3 EXECUTION

Not Used.

END OF SECTION

SECTION 01 3300
SUBMITTAL PROCEDURES

PART 1- GENERAL

1.01 SECTION INCLUDES

Submittals procedures.
Proposed products list.
Shop drawings.
Product data.
Samples.
Manufacturers' instructions.
Manufacturers' certificates.
Substitutions.

1.02 SUBMITTAL PROCEDURES

A. All items being forwarded to the District / Construction Manager for review and acceptance shall be considered a submittal. All submittals to the Architect shall be via the District / Construction Manager.

B. The Work Package Contractor shall review, approve, stamp and submit to the District / Construction Manager, Shop Drawings, Product Data, Samples and similar submittals required by the Contract.

C. Transmit each submittal with District standardized submittal form.

D. Sequentially number the submittal forms. Resubmittals shall retain original number with an alphabetic suffix.

E. Identify Project, Work Package Contractor, Subcontractor or supplier; pertinent Drawing sheet and detail number(s), and specification Section number, as appropriate.

F. Apply Work Package Contractor's stamp, signed or initialed certifying that review, verification of Products required, field dimensions, adjacent construction Work, and coordination of information, is in accordance with the requirements of the Work and Contract Documents.

G. Provide all submittals within 35 days from receipt of the Notice of Intent to Award. Provide critical path submittals sooner if necessary to accommodate schedule requirements.

H. Identify variations from Contract Documents and Product or system limitations that may be detrimental to successful performance of the completed Work.

I. Provide space for Work Package Contractor and Architect review stamps.

J. Revise and resubmit submittals as required, identify all changes made since previous submittal.

K. Distribute copies of reviewed submittals to concerned parties. Instruct parties to promptly report any inability to comply with provisions.

L. Clearly identify any proposed product that is not specifically referenced in the specifications as a Substitution and provide a side-by-side comparative analysis and product data for ease of review. Submit requests for Substitution on the standardized substitution request form.

M. Number of copies submitted by the Work Package Contractor:
Shop Drawings:
a. Reproducible transparency.
b. Electronic file copy (if available)
c. 8 Copies of Blue line or other prints

Product Data:
a. 7 Catalogue cuts, brochures, calculations, etc.

Samples:
a. 4 Of each color, texture or other unique characteristic.

1.03 PROPOSED PRODUCTS LIST

A. For products specified only by reference standards, give manufacturer, trade name, model or catalog designation and reference standards.

1.04 SHOP DRAWINGS

A. Work Package Contractor shall provide clear, easy to read, shop drawings showing all details of proposed construction.

B. All shop drawings to be professionally drawn with clear notes and dimensions. Include all calculated dimensions.

C. Any questions and requests for additional information or clarifications of contract requirements shall be made under a separate format, Request for Information (RFI), and not on the shop drawings. (Refer to General Conditions 00 7200.)

D. After review, reproduce and distribute as required to sub-contractors, suppliers and vendors.

E. Maintain copies of all shop drawings on site and be ready to provide such information upon request.

1.05 PRODUCT DATA

A. Mark each copy to identify applicable products, models, options, and other data. If necessary, supplement manufacturers' standard data to provide information unique to this Project. Clearly identify products being proposed for use.

B. Any questions and requests for additional information or clarifications of contract requirements shall be made under a separate format. Request for Information (RFI), and not on the submittal. (Refer to General Conditions 00 7200.).

C. Maintain a copy of all Submittals, Material and Safety Data Sheets on the job site at all times and be ready to provide such information upon request or have ready access due to emergency.

1.06 SAMPLES

A. Submit samples to illustrate functional and aesthetic characteristics of the Product, with integral parts and attachment devices. Coordinate sample submittals for interfacing work.

B. Submit samples of finishes from the full range of manufacturers' standard (or custom colors if specified) colors, textures and patterns for selection.

C. Include identification on each sample, with Project information.

D. Reviewed samples which may be used in the Work are indicated in individual specification Sections. All other samples will not be returned.

1.07 MANUFACTURER'S INSTRUCTIONS

A. When specified in individual specification Sections, submit manufacturers' printed instructions for delivery, storage, assembly, installation, adjusting, and finishing, in quantities specified for Product Data.

B. Identify any conflicts between manufacturers' instructions and Contract Documents.

1.08 MANUFACTURER'S CERTIFICATES

A. When specified in individual specification Sections, submit manufacturers' certificate to Architect for review, in quantities specified for Product Data.

B. Indicate material or product conforms to or exceeds specified requirements. Submit supporting reference date, affidavits and certifications as appropriate.

C. Certificates may be recent or previous test results on material or Product, but must be acceptable to Architect.

1.09 PRODUCT OPTIONS

A. Products specified by reference standards or by description only without listing a specific manufacture:
   1. Work Package Contractor to provide submittal including all product data, shop drawings and certificates listed in the specification section and list the manufacture (s) and specific model (s) proposed for use that meets or exceeds to referenced standards or description.

B. Products Specified by Naming One or more Manufacturer and stating "or approved equal" and/or "substitutions per section 01 3300":
   1. Work Package Contractor to provide submittal including all product data, shop drawings and certificates listed in the specification section and list the manufacture (s) and specific model (s) proposed that is one of the listed manufacturers. Or, if not one of the listed manufacturers, also include a completed and signed substitution request form.

C. Products Specified by Naming One Manufacturer and stating "No Substitutions Allowed":
   1. Work Package Contractor to provide submittal on the specified product. No substitutions will be permitted due to coordination with District assemblies and / or maintenance and operation requirements.

1.10 PRODUCT SUBSTITUTION PROCEDURES

A. Reference to any equipment, material, article, system 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.

B. In those cases, where the Specifications designate a material, product, or service 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. Used as a standard of quality which must be satisfied without compromise, or
   3. Is the only brand or trade name known to the Architect

C. Architect will consider requests for Substitutions only within 21 days after date of Notice to Proceed.

D. Document each request to provide material other than specifically identified in specification section on Substitution Request Form with complete data substantiating compliance of proposed Substitution with Contract Documents. The burden of proof as to comparative quality, suitability and performance of offered material(s), article(s), system(s) or equipment shall be upon the Work Package Contractor. The Architect will be the sole judge as to such matters.

E. A request constitutes a representation that the Work Package 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 Owner.

   4. Waives claims for additional costs or time extension which may subsequently become apparent.

   5. Will reimburse Owner for review or redesign services associated with re-approval by authorities.

F. Substitutions will not be considered when they are indicated or implied on shop drawing or product data submittals, without separate written request, or when acceptance will require revision to the Contract Documents. Substitutions will not be considered when acceptance would require revisions to the Contract Documents.

G. Contract Time extensions or approvals by Authorities except as follows: When substitutions that have been accepted by the Architect have structural or life safety implications, they shall be approved by DSA prior to fabrication and installation on the project.

H. Substitution Submittal Procedure:
   1. Submit seven copies of request for Substitution 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. The Architect will notify Work Package Contractor, in writing, of decision to accept or reject request.

   4. Incomplete Substitution Request package will not be reviewed and will be returned to the Bidder. Bidder shall provide specified item.

   5. Only one request for substitution will be allowed. If proposed substitution is not accepted by Architect, Work Package Contractor shall provide specified product.

   6. Use of approved substitutions shall in no way relieve the Work Package Contractor from responsibility for compliance with the Drawings and Specifications. The use of approved 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 Work Package Contractor.

I. The Architect shall evaluate the proposed "substitute" materials and if acceptable to the Architect, will make a recommendation to the District to accept. To obtain approval requires the concurrence by the District of the recommendation from the Architect.

J. The Architect shall take into consider the environmental differences in determining equality of proposed alternate manufacture and products.

PART 2 PRODUCTS - Not Used.

PART 3 EXECUTION

3.0.1 PROCUREMENT OF MATERIALS AND EXECUTION OF WORK:

A. The Work Package Contractor shall perform no portion of the Work or procure materials requiring submittal and review of Shop Drawings, Product Data, Samples and other submittals until the respective submittal has been received, reviewed and accepted by the Architect and returned by the District. Such work shall be accordance with approved submittals. The Work Package Contractor is solely responsible for delays or disruptions to the Work caused by inadequate, uncoordinated, incorrect or late submittals. All submittals shall be submitted within thirty-five (35) days after Notice to Proceed and shall be phased to support the Project Schedule as well as to allow Architect maximum review time. Work Package Contractor schedule must allow at a minimum of two (2) weeks for Architect's review of submittals. More time shall be allowed for particularly complex submittals or if a Substitution will be submitted which may result in a re-submittal.

B. Where a shop drawing or sample is required by the Specifications, and related Work performed prior to the Architect's review and approval of the pertinent submittal corrective work shall be at the sole expense and responsibility of the Work Package Contractor.

3.0.2 REVIEW OF SUBMITTALS PRIOR TO SUBMITTING

A. By approving and submitting Shop Drawings, Product Data, Samples and other submittals, the Work Package Contractor represents that it has determined and verified materials, field measurements and field criteria related thereto, and has checked and coordinated the information contained within such submittals for compliance with the contract documents and for coordination of the Work indicated in the submittal and with adjacent work.

3.0.4 REVIEW OF SUBMITTALS BY ARCHITECT, CONSTRUCTION MANAGER AND DISTRICT

A. The Work Package Contractor shall not be relieved of responsibility for deviations from requirements of the Contract Documents by the Architect's acceptance of Shop Drawings, Product Data, Samples and other submittals unless the Work Package Contractor has specifically informed the Architect in writing attached to the submittal of such deviation at the time if submittal and the Architect has given written approval to the specific deviation. The Work Package Contractor shall not be relieved of responsibility for errors or omissions in Shop Drawings, Product Data, Samples or similar submittals by the Districts approval thereof. Any deviation shall also be indicated on such Shop Drawing, Product Data, Sample or related submittal.

B. After review of submittals by the District, Construction Manager, Architect and the Architect's Consultants if applicable, submittals will be returned to the Work Package Contractor, indicating one of the following actions:

"Unreviewed" – If the submittal is not required or if it is not complete or if does not meet the form, format and number requirements specified, it may be returned unreviewed. If the submittal is not required, work may commence; if the submittal was returned due to form requirements, it shall be resubmitted and approval obtained prior to commencement of the work.

"Reviewed- No Exceptions Taken": No corrections or re-submissions required.

"Reviewed- Make Corrections Noted": No re-submission required. Fabrication may proceed on the basis that corrections noted are incorporated in the work. If the Work Package Contractor cannot comply of disagree with the corrections noted, he shall revise the submittal as indicated.

"Revise and Resubmit": Re-submission required. Fabrication shall not proceed. Revise in submittal as indicated.
"Rejected": Re-submission required. Fabrication shall not proceed. Revised in accordance with the Contract Documents.

C. The District / Construction Manager will return the reproducible copy of each shop drawing, two each of copies of catalogue cuts, brochures, calculation, etc. (or as many additional copies submitted by the Work Package Contractor over the required seven (7) minimum and four (4) each of samples. The Work Package Contractor is responsible to obtain and pay for additional copies required for distribution to subcontractors, suppliers and the like. The Work Package Contractor shall transmit one copy of all submittals marked "Reviewed – No Exceptions Taken" and "Reviewed Make Corrections Noted" to the Contractors Field Office.

3.0.4 RESUBMITTALS

A. The Contractor shall direct specific attention, in writing, for resubmitted Shop Drawings, Product Data, Samples and other submittals, to revisions other than those requested by the Architect on previous submittals.

END OF SECTION

SECTION 01 3516
ALTERATION PROJECT PROCEDURES

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Products and installation for patching and extending work.

B. Transition and adjustments.

C. Repair of damaged surfaces, finishes, and cleaning.

D. Salvage materials.

1.02 RELATED SECTIONS

A. Section 01 7329 - Cutting and Patching.

1.03 ALTERATIONS, CUTTING AND PROTECTION

A. Assign the work of moving, removal, cutting and patching, to trades qualified to perform the work in manner to cause least damage to each type of work, and provide means of returning surfaces to appearance of new work.

B. Perform cutting and removal work to remove minimum necessary, and in a manner to avoid damage to adjacent work.

1. Cut finish surfaces such as concrete, masonry, drywall, plaster or metals, by methods to terminate surfaces in a straight line at a natural point of division, or where indicated.

C. Cutting, boring, saw cutting, notching or drilling through the new or existing structural elements to be done only when specifically detailed on drawings or approved by Architect, Structural Engineer and DSA Representative.

D. Protect existing finishes, equipment, and adjacent work, which is scheduled to remain, from damage.

1. Protect existing and new work from extremes of temperature.

a. Maintain existing interior work above 60 degrees F.
b. Provide heat and humidity control as needed to prevent damage to remaining existing work and to new work.

E. Provide temporary enclosures to separate work areas from existing building and from areas occupied by District.

PART 2 PRODUCTS

2.01 PRODUCTS FOR PATCHING AND EXTENDING WORK

A. New Materials. As specified in product Sections; match new materials to Work.

1. Provide same products or types of construction as that in existing structure, as needed to patch, extend or match existing work.
2. Presence of a product, finish, or type of construction, requires that patching, extending or matching shall be performed consistent to, or better than, existing standards of quality.

B. Type and Quality of Existing Products: Determine by inspection and testing existing products where necessary, referring to existing Work as a standard.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that demolition is complete, and areas are ready for installation of new Work.

B. Beginning of restoration Work means acceptance of existing conditions.

3.02 PREPARATION

A. Cut, move, or remove items as necessary for access to alterations and/or renovation Work. Replace and restore at completion. The full extent of cutting and patching is not shown nor specified. The Contractor shall perform all cutting and patching as required.

B. Remove unsuitable material not marked for salvage, such as rotted wood, corroded metals, and deteriorated masonry and concrete. Replace materials as specified for finished Work.

C. Remove debris and abandoned items from area and from concealed spaces.

D. Prepare surface and remove surface finishes to provide for proper installation of new work and finishes.

3.03 INSTALLATION

A. Coordinate work of alterations and renovations to expedite completion and to accommodate District occupancy. Patch and extend existing work using skilled mechanics that are capable of matching existing quality of workmanship. Quality of patched or extended work shall be not less than that Specified for new work.

B. Room Finishes. Complete in all respects consistent with the Contract Documents.

C. Remove, cut, and patch Work in a manner to minimize damage and to provide a means of restoring Products and finishes to specified condition.

D. Install Products as specified in Individual Sections.

3.04 TRANSITIONS

A. Where new Work abuts or aligns with existing, perform a smooth and even transition.

B. Patch Work to match existing adjacent Work in texture and appearance, without breaks, steps or bulkheads.

C. When finished surfaces are cut so that a smooth transition with new work is not possible, terminate existing surface along a straight line at a natural line of division and make recommendation to Architect.

3.05 ADJUSTMENTS

A. Where change of plane of 1/4 inch or more occurs, submit recommendation for providing a smooth transition.

B. Where extreme change of plane of two inches or more occurs, request Instructions from Architect as to method of making transition.

C. Trim existing doors as necessary to clear new threshold installation. Refinish trim as required.

D. Fit work at penetrations of surfaces as shown on drawings.

3.06 SALVAGED MATERIALS

A. Salvaged Materials from existing facilities, which are specified in the Special Provisions or tagged in the field prior to the pre-bid walk-through to be salvaged, shall remain the property of the District. The Contractor shall include the removal, disassembly, preparation, marking, bundling, packaging, tagging, hauling, and stockpiling of salvaged materials or facilities to the location specified in the Special Provisions, or as directed by the District's Representative. Materials include parts, articles, and equipment of assembled facilities. Salvaging does not include the preparation of existing material that is to be reused in the work.

B. When only specific materials from the facility are designated to be salvaged, the remaining materials from that facility shall be removed and disposed of as provided for elsewhere in the Contract Documents. Materials to be salvaged shall not be removed until their use in the existing facility is no longer required, as determined by the District's Representative.

C. When practicable, salvaged materials shall be hauled directly to the location specified in the Special Provisions and stockpiled; however, salvaged materials may be temporarily stored at a location selected by the Contractor and approved by the District's Representative and later hauled to and stockpiled at their final location. Materials which are lost before stockpiling at their final location shall either be replaced by the Contractor, at the Contractor's expense, or, at the discretion of the District's Representative, the estimated cost of replacement may be deducted from any moneys due or to become due to the Contractor.

D. Materials designated to be salvaged that are damaged, as determined by the District's Representative, shall be segregated from undamaged material. After review of the damaged materials by the District's Representative, all damaged materials that are rejected by the District's Representative shall become the property of the Contractor and shall be disposed of as provided elsewhere in the Contract Documents.

E. Materials to be salvaged that are damaged as a result of the Contractor's operations shall be repaired by the Contractor, at the Contractor's expense, to the satisfaction of the District's Representative. Materials that are damaged beyond repair as a result of the Contractor's operations shall be disposed of as provided elsewhere in the Contract Documents and replaced at the Contractor's expense; or, at the discretion of the District's Representative, the estimated cost of replacement may be deducted from any moneys due or to become due to the Contractor.

F. Replacements for lost or damaged materials shall be of the same kind and of the same or better quality and condition as the lost or damaged materials were prior to their removal. Replacement materials should also be of the same size, color, weight, etc. of the original materials. Matching or exceeding quality and condition alone may not permit the reuse of material.

3.07 REPAIR OF DAMAGED SURFACES

A. Patch or replace portions of existing surfaces, which are damaged, lifted, discolored, or showing other imperfections.

B. Repair substrate prior to patching finish.

3.08 FINISHES

A. Finish surfaces as specified in Individual Product Sections.

B. Finish patches to produce uniform finish and texture over entire area. When finish cannot be matched, refinish entire surface to nearest intersections.

3.09 CLEANING

A. Clean adjacent District occupied areas of work soiled by work of this Contract (See General Conditions).

END OF SECTION

SECTION 01 4300
QUALITY ASSURANCE

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Quality assurance and control of installation.

B. References.

C. Field samples.

D. Mock-up.

E. Inspection and testing laboratory services.

F. Manufacturers' field services and reports.

1.02 RELATED SECTIONS

A. Section 00 7200-General Conditions. Paragraph 46 Submittals, shop drawings, cut and samples

B. Technical Specifications

1.03 QUALITY ASSURANCE/CONTROL OF INSTALLATION

A. Monitor quality control over suppliers, manufacturers, Products, services, site conditions, and workmanship, to produce Work of specified quality.

B. Comply fully with manufacturers' instructions, including each step in sequence.

C. Should manufacturers' instructions conflict with Contract Documents, request clarification from Architect before proceeding.

D. Comply with specified standards as a minimum quality for the Work except when more stringent tolerances, codes, or specified requirements indicate higher standards or more precise workmanship.

E. Perform work by persons qualified to produce workmanship of specified quality.

F. Secure Products in place with positive anchorage devices designed and sized to withstand stresses, vibration, physical distortion or disfigurement.

G. Contractors Line of Authority: Contractor shall provide one person who shall be both knowledgeable and responsible for all work to be performed on this project at all times during normal work hours. In Contractors absence, Contractors appointed representative shall be responsible for all directions given him and said directions shall be binding as if given to the Contractor. Contractor's representative shall be responsible to coordinate all work to be performed.

H. Shop and fieldwork shall be performed by mechanics skilled and experienced in the fabrication and installation of the work involved. All work on this project shall be done in accordance with the best practices of the various trades involved and in accordance with the drawings, approved shop drawings and these specifications.

I. All work shall be erected and installed plumb, level, square and true and in proper alignment and relationship to the work of other trades. All finished work shall be free from defects. The Architect reserves the right to reject any materials and workmanship which are not considered to be up to the highest standards of the various trades involved. Such inferior material or workmanship shall be replaced at no additional cost to the Owner.

J. All work shall be installed by a knowledgeable contractor and defined "certified to install" by the specified materials manufacturers. The specifications and recommendations of the manufacturer whose materials are used shall be strictly adhered to during the application or installation of materials.

K. Any additional work beyond that specified or illustrated, or any modification thereto, that is necessary for the furnishing of guarantee shall be provided by the Contractor without additional cost to the District.

1.04 REFERENCES

A. Conform to reference standards by date of issue current on date of the Contract Documents.

B. Should specified reference standards conflict with Contract Documents, request clarification from Architect before proceeding.

C. The contractual relationship of the parties to the Contract shall not be altered from the Contract Documents by mention or inference otherwise in any reference document.

D. The Contractor shall be responsible for being current and knowledgeable of all building codes involved for all trades under his direction.

E. Provide all work and materials in full accordance with the California Building Standards Code (CBC), the State Fire Marshal, Safety Orders of the Division of Industrial Safety, the National Electric Code, the Uniform Building Code, Uniform Mechanical Code, Uniform Plumbing Code, and any other applicable laws or regulations. Nothing in these plans or specifications is to be construed to permit work not conforming to these Codes.

F. Furnish without extra charge any additional material and labor required to comply with these Rules and Regulations.

1.05 FIELD SAMPLES

A. Install field samples at the site as required by individual specifications Sections for review.

B. Acceptable samples represent a quality level for the Work.

C. Where field sample is specified in Individual Sections to be removed, clear area after field sample has been accepted by Architect.

1.06 MOCK-UP

A. Assemble and erect specified items, with specified attachment and anchorage devices, flashings, seals, and finishes.

B. Where mock-up is specified in Individual Sections to be removed, clear area after mock-up has been accepted by Architect.

1.07 INSPECTION AND TESTING LABORATORY SERVICES

A. Inspection and Testing labs shall be DSA-Approved and directly employed by the District.

1.08 MANUFACTURERS FIELD SERVICES AND REPORTS

A. Submit qualifications of observer to Architect 30 days in advance of required observations.

B. When specified in individual specification Sections, require material or Product suppliers or manufacturers to provide qualified staff personnel to observe site conditions, conditions of surfaces and installation, quality of workmanship, start-up of equipment, test, adjust, and balance of equipment as applicable, and to initiate instructions when necessary.

C. Individuals to report observations and site decisions or instructions given to applicators or Installers that are supplemental or contrary to manufacturers' written instructions.

D. Submit report in duplicate within 30 days of observation to Architect for review.

PART 2 PRODUCTS

Not Used.

PART 3 EXECUTION

Not Used.

END OF SECTION

SECTION 01 5000
TEMPORARY FACILITIES AND CONTROLS

PART 1 GENERAL

1.01 WORK INCLUDED

A. Temporary Facilities and controls required for this Work include, but are not necessarily limited to:

1. Parking and storage areas.
2. Site fencing and security.
3. Sanitary facilities.
4. Final and course of construction cleanup and removal of debris.

1.02 TEMPORARY UTILITIES

Not Used.

1.03 FIELD OFFICE/STORAGE CONTAINERS

Not Used.

1.04 PARKING OF VEHICLES

A. Each Contractor shall assume all responsibility for job site vehicle parking of his and his subcontractor's vehicles. Locations of parking shall be as directed by the Owner's Representative.

1.05 STORAGE AND LAYDOWN AREAS

A. The Owner's Representative will coordinate use of available laydown areas among various contractors. Only areas designated by Owner's Representative can be used by Contractors. Each contractor is responsible for providing his own fenced storage facilities (trailers or cargo containers.)

1.06 TEMPORARY SITE FENCING AND SECURITY

A. Each Contractor shall provide and maintain temporary fencing surrounding the buildings and/or rooms under construction, and staging areas. Set-up/relocation of temporary fencing shall be included for each phase of work as shown on the Preliminary Construction Schedule. Contractor is responsible for the security of all equipment, material, and completed construction items. Contractor is also responsible for securing any breeches to existing security system/building caused by his Work. Temporary measures may include watchman, temporary doors, temporary alarm, etc.

1.07 SANITARY FACILITIES

A. Each Contractor shall provide sanitary toilet facilities for use of all Workers employed on Project, in accordance with State and Local health departments. Use of District toilet facilities will not be allowed.

1.08 CLEANUP AND REMOVAL OF DEBRIS

A. Each Contractor shall assume all responsibility for cleanup and removal of debris created by his Scope of Work on a daily basis. No community dumpsters will be provided. In the event unidentifiable job site clutter or debris becomes a problem, at Owner's Representatives request, each contractor shall provide sufficient labor to be directed by Owner's Representatives personnel in a group cleanup effort. If a Contractor's clean-up is found to be deficient, the District may backcharge the Contractor for clean-up and/or withhold progress payments as determined appropriate by the District in accordance with Section 12.08, Paragraph E, General Conditions Section 00 7200.

1.09 TEMPORARY CONSTRUCTION, EQUIPMENT AND PROTECTION

A. Contractor shall provide, maintain and remove upon completion of Work, all temporary rigging, scaffolding, hoisting equipment, rubbish chutes, ladders, barricades, lights and all other protective structures or devices necessary for safety of Workers and public property as required to complete the Bid Package Scope of Work.

1. Safety:
   The contractor is responsible for the complete safety of district personnel, students, and the general public at all times.

2. Walkways and barricades:
   If Contractor's portion of Work interferes with pedestrian traffic, provide pedestrian walkway protection conforming to City standards and CAL OSHA requirements.

3. Access:
   The contractor is responsible to maintain access to the buildings at all times. Temporary covered walkways and/or barricades may be required.

4. Protection:
   Each Contractor must protect all Workers and equipment from power lines by maintaining safe distances and by providing protective devices where and as required by Industrial Safety Commission and CAL-OSHA.

5. Temporary construction and equipment:
   All temporary construction and equipment shall conform to all regulations, ordinances, laws and other requirements of State and any other authorities having jurisdiction (including insurance companies), with regards to safety precautions, operations and fire hazards.

1.10 STORM WATER RUN-OFF PLAN:

Not Used.

PART 2 PRODUCTS

Not Used.

PART 3 EXECUTION

Not Used.

END OF SECTION

SECTION 01 7123
FIELD ENGINEERING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Contractor to provide and pay for field engineering services required for the execution of Work, including, but not limited to:

1. Survey Work required in execution of the Bid Package Work scope.
2. Civil, structural or other professional engineering services specified, or required to execute Contractor's construction methods.

B. Provide field staking of site improvements included in Bid Package; identify existing survey reference points and property line corner stakes indicated on Drawings.

C. Locate and be aware of all existing on-site utility lines and improvements.

1.02 QUALIFICATIONS OF SURVEYOR OR ENGINEER

A. Qualified California registered professional engineer or registered land surveyor, acceptable to Contractor and Owner's Representative.

B. Registered professional engineer of discipline required for specific service on Project, licensed in State of California.

1.03 SUBMITTALS:

A. Submit name, address, and license of surveyor and professional engineer to Owner's Representative.

1.04 PROJECT SURVEY REQUIREMENTS

A. Establish and maintain lines and levels as necessary to locate and layout entire scope of Work in Bid Package.

B. Preserve and protect all on-site underground utilities lines and existing on-site improvements in the area of construction.

PART 2 PRODUCTS

Not Used.

PART 3 EXECUTION

Not Used.

END OF SECTION

SECTION 01 7329
CUTTING AND PATCHING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Execute cutting, fitting or patching of Work, required to:

1. Make parts fit properly.
2. Uncover Work to provide for installation of ill-timed Work.
3. Remove and replace Work not conforming to requirements of Contract Documents.
4. Remove and replace defective Work.
5. Remove samples of installed Work as specified for testing.
6. Remove existing materials (demolition) required prior to installation of specified Work.
7. Uncover Work to provide for Architect's observation of covered Work.

B. Do not endanger structural integrity of any Work by cutting or altering any part of it.

C. The Contractors with structural responsibility within their scope of Work shall solely execute structural cutting and patching required for this Project, according to DSA Approved Drawings.

D. Minor cutting and patching of finishes and/or trim will be performed by the Contractor where required for the execution of his Work. Locations of all cutting and patching (core boring, etc.) shall be reviewed and approved by the Architect, Structural Engineer and DSA Representative prior to the start of Work.

E. Cutting, boring, saw cutting, notching or drilling through the new or existing structural elements to be done only when specifically detailed on drawings or approved by Architect, Structural Engineer and DSA Representative.

F. The Contractor shall make the field measurements necessary for his Work and be responsible for its accuracy. Also, should any structural difficulties prevent a Contractor from installing his material properly, the District's Representative and Architect shall be notified in writing within 24 hours. Cutting into the walls, ceilings and floors, if necessary, shall be carefully and neatly performed and then be repaired as specified in the Contract Documents. The Architect shall be consulted prior to the start of Work in all cases where cutting into a structural portion of the building is either desirable or necessary so that satisfactory reinforcement may be provided.

G. Patching of all exposed architectural finishes shall be performed under the supervision of the Inspector. Cutting and patching of existing architectural finishes shall be minimized to the extent possible through careful routing and placement of new Work. The Architect or Inspector shall have the authority to reject substandard or unacceptable patching.

H. Patching of openings that are cut in any fire rated walls or membranes shall be sealed tightly using approved materials only. Verify that fire rating envelopes are maintained and inspections provided prior to concealing Work. Cutting and patching, if required by Agencies to verify adequacy of protection after concealment, shall be performed at no cost to the District.

1.02 RELATED SECTIONS

A. Section 01 5000 - Temporary Facilities and Controls.

1.03 SUBMITTALS

A. Prior to cutting which affects structural safety of Project, submit written notice to Architect requesting consent to proceed with cutting. See items "C" and "F", Section 1.01.

B. Should conditions of Work or schedule require change of materials or methods, submit written recommendation to Architect, within 48 hours, including:

1. Conditions requiring change.
2. Recommendations for alternative materials or methods.
3. Submittals as required for substitutions.
4. Quotations of charges or credits.

C. Submit 48-hour advance written notice to Architect (with a copy to the District's Representative) designating the time Work will be uncovered.

D. Submit all materials to be used in cutting and patching in accordance with Special Conditions.

PART 2 PRODUCTS

2.01 MATERIALS

E. Primary Products: Materials for replacement of Work removed are to comply with Technical Specifications and are required to match original installation.

F. Product Substitution: For any proposed change in materials, submit request for substitution in accordance with Special Conditions.

PART 3 EXECUTION

3.01 EXAMINATION

G. Examine existing conditions prior to commencing Work, including elements subject to movement or damage during cutting and patching.

H. After uncovering existing Work, examine conditions affecting installation of new products and performance of Work.

I. Beginning of cutting or patching operations means acceptance of existing conditions.

3.02 PREPARATION

A. Provide means of shoring, bracing and temporary supports as required to maintain structural integrity of the Work.

B. Provide devices, enclosures and methods to protect adjacent surfaces and areas of the property from damage, dust or disruption.

C. Provide protection from the elements for areas, which may be exposed during cutting or patching.

D. Maintain excavations free of water.

3.03 CUTTING

A. Execute cutting, fitting and adjustment of products to permit finished installation to comply with specified tolerances and finishes.

B. Perform cutting and demolition by methods, which will prevent damage to other Work, and will provide proper surfaces to receive installation of repairs and new Work.

C. Uncover Work to install improperly sequenced Work.

D. Remove and replace defective, rejected or non-conforming Work.

E. Remove samples of installed Work for testing when requested.

F. Provide openings in the Work for penetration of Mechanical and Electrical Work.

G. Employ only experienced installers to perform cutting for weather exposed, moisture resistant and sight-exposed surfaces.

H. Cut concrete, tile plaster and other rigid materials using masonry/concrete saws and core drills. Pneumatic tools are not allowed without prior approval.

3.04 PATCHING

A. Execute patching to match adjacent Work.

B. Fit products together to integrate seamlessly with adjacent Work.

C. Execute patching by methods to avoid damage to adjacent Work, and which will provide appropriate surfaces to receive finishing Work.

D. Employ only experienced installers to perform patching for weather exposed, moisture resistant and sight-exposed surfaces.

E. Restore Work with new products in accordance with requirements of the Contract Documents.

F. At penetrations of fire rated walls, partitions, ceiling or floor construction, completely seal voids with approved fire rated material in accordance with the manufacturer's installation instructions and applicable Codes.

G. Fit Work to pipes, sleeves, ducts, conduits and other penetrations through affected surfaces neatly and leave in finished condition.

H. All patched surfaces are to match adjacent finishes in all respects: Type, texture, thickness and color. For continuous surfaces, refinish to nearest intersection or natural break. For an assembly, refinish entire unit or area.

END OF SECTION

SECTION 01 7423
FINAL CLEANING

PART 1 GENERAL

1.0.1 SUMMARY

A. The General Works Package Contractor #2 is responsible for daily cleanup and a final cleaning prior to occupancy. This section only addresses the final cleaning required prior to punch listing and occupancy.

B. Cleaning Program:
- The cleaning program shall include all construction areas and surrounding areas affected by the construction including site, exteriors of buildings / structures, roofs and interior of buildings.
- The areas to be cleaned shall be turned over to the owner in a "move-in" condition.
- All areas shall be free of all construction materials, dust, debris, markings and dirt.
- All surfaces shall be washed, cleaned and cleared of markings.
- All existing and new fixtures shall be cleaned, sanitized and ready for use.
- All new and existing hard surface floors will be stripped and waxed.

1.0.2 PROJECT CONDITIONS

A. Comply fully with Federal and local environmental and antipollution regulations.

B. Do not dispose of volatile wastes, such as mineral spirits, oil, or paint thinner, in storm or sanitary drains.

C. Burning or burying of debris, rubbish, or other waste material on the premises is not permitted.

PART 2 PRODUCTS

2.0.1 MATERIALS AND METHODS

Use cleaning materials and methods which will not create hazards to health or property or cause damage to products and which are recommended by manufacturers of products to be cleaned.

PART 3 EXECUTION

3.0.1 FINAL CLEANING

A. General: Provide final cleaning operations. Employ experienced workers or professional cleaners for final cleaning. Clean each surface or unit of Work to the condition expected from a commercial building cleaning and maintenance program. Comply with manufacturer's instructions.

B. Complete the following cleaning operations before requesting inspection for certification of Substantial Completion for the entire Project or a portion of the Project.

- Clean the Project Site, yard and grounds, in areas disturbed by construction activities, including landscape development areas, of rubbish, waste material, litter, and foreign substances.

- Sweep paved areas broom clean. Rake grounds that are neither planted nor paved to a smooth, even-textured surface.

- Remove petrochemical spills, stains, and other foreign deposits.

- Remove tools, construction equipment, machinery, and surplus material from the site.
- Clean exposed exterior and interior hard-surfaced finishes to a dirt-free condition, free of stains, films, and similar foreign substances. Avoid disturbing natural weathering of exterior surfaces. Restore reflective surfaces to their original condition.

- All walls not newly painted shall be washed to clean readily removable dirt, markings, dust, and grime.

- Remove debris and surface dust from limited access spaces, including roofs, attics and similar spaces.

- All existing floors shall be thoroughly stripped of old wax and have at least four (4) coats of a combination wax/sealer, or two (2) coats of sealer and four (4) coats of wax. General Works Package Contractor #2 shall submit for prior approval manufactures information on floor finish to be applied. All new floors shall have their factory seal stripped off and shall have a floor finish applied according to the recommendations of the manufacturer.

- New carpeted areas shall be thoroughly vacuumed, including edges. Any spotting during construction shall be removed. Existing carpeted areas shall be thoroughly shampooed.

- 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. Polish mirrors and glass, taking care not to scratch surfaces. Clean interior and exterior of all windows.

- Clean all Toilet Rooms thoroughly and sanitized. All wall surfaces shall be free of grime, dirt, dust, markings and graffiti. All mirrors, fixtures, and partitions will be cleaned free of dirt and markings.

- Scrub and seal all ceramic and terrazzo floors and walls.

- Remove labels that are not permanent labels.

- Touch up and otherwise repair and restore marred, exposed finishes and surfaces. Replace finishes and surfaces that cannot be satisfactorily repaired or restored or that already show evidence of repair or restoration.

- Wipe surfaces of mechanical and electrical equipment, elevator equipment, and similar equipment. Remove excess lubrication, paint and mortar droppings, and other foreign substances.

- Clean plumbing fixtures to a sanitary condition, free of stains, including stains resulting from water exposure.

- Replace disposable air filters and clean permanent air filters. Clean all exposed surfaces of diffusers, registers, and grilles.

- Clean ducts, blowers, and coils if units were operated without filters during construction.

- Clean light fixtures, lamps, globes, and reflectors to function with full efficiency. Replace burned out bulbs; defective and noisy starters in fluorescent fixtures, and defective dimming switches.

- Leave the Project clean and ready for occupancy.

C. Removal of Protection: Remove temporary protection and facilities installed during construction to protect previously completed installations during the remainder of the construction period. Repair any damage from removal.

D. Compliances: Comply with governing regulations and safety standards for cleaning operations. Remove waste materials from the site and dispose of lawfully.

E. 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

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SECTION 1. ASBESTOS BIDDING REQUIREMENTS

Part 1.1 - Site Investigations

By submitting a bid for asbestos related work, the asbestos abatement contractor acknowledges that they have investigated and satisfied themselves as to: a) the conditions affecting the work, including but not limited to, physical conditions of the site which may bear upon site access, handling, and storage of tools and materials, access to water, electric, or other utilities, or otherwise affect performance of required activities; b) the character and quality of all surface and subsurface materials or obstacles to be encountered, in so far as this information is reasonably ascertainable from an inspection of the site, including exploratory work done by the Owner or a designated consultant, as well as, information presented in drawings and specifications included with this contract. Any failure by the asbestos abatement contractor to acquaint themselves with available information will not relieve them from the responsibility for estimating properly the difficulty or cost of successfully performing the work. The Owner is not responsible for any conclusions or interpretations made by the asbestos abatement contractor on the basis of the information made available by the Owner.

Part 1.2 - Insurance Requirements

Successful asbestos abatement contractor shall purchase and maintain insurance that will protect them from claims that may arise out of or result from the activities under this Contract, whether those activities are performed by the asbestos abatement contractor, by any Subcontractor, or by anyone directly or indirectly employed by any of them or by anyone for whose acts any of them may be liable.

Successful asbestos abatement contractor shall submit proof of coverage, as well as, Subcontractors under the Worker's Compensation Insurance system of the State of California or other similar benefit acts.

Successful asbestos abatement contractor shall submit a certificate of general liability insurance protecting against liability for bodily injury and property damage arising from asbestos abatement contractor's activities under this contract.

Such certificate of insurance must contain the following provisions:

(a) The limit of liability shall not be less than $1,000,000.00 per occurrence for bodily injury and property damage liability combined.

(b) The Owner, Owner's Agents, and Consultant must be named as additional insured, but only in respect to liability arising or resulting from activities under this contract.

(c) In the event of cancellation of the insurance policy, the Owner shall be given thirty days' advance written notice.

(d) The insurance certificate must state that the insurance includes liability coverage for asbestos abatement work. Successful asbestos abatement contractor's Subcontractors shall submit a certificate of general liability insurance protecting against liability for bodily injury and property damage arising from Contractor's activities under this contract.

Such certificates of insurance must contain the following provisions:

(a) The limit of liability shall not be less than $1,000,000.00 per occurrence for bodily injury and property damage liability combined.

(b) The Owner, Owner's Agents, and Consultant must be named as an additional insured, but only in respect to liability arising or resulting from activities under this contract.

(c) In the event of cancellation of the insurance policy, the Owner shall be given thirty days' advance written notice.

Part 1.3 - Licenses and Qualifications Requirements

The asbestos abatement contractor shall be duly licensed in the State of California with the Contractors State License Board (CSLB) in accordance with the provisions of Chapter 9 of Division 3 of the Business and Professions Code, as amended. This includes certification for asbestos-related work, and all other trades or work required under this contract and within these specifications.

The asbestos abatement contractor shall submit a statement, signed by an officer of the company, containing the following information:

1. A record of any citations issued by Federal, State, or Local regulatory agencies within the last 3 years, relating to asbestos abatement activity. Include projects, dates, and resolutions.

2. A list of penalties incurred through non-compliance with asbestos abatement project specifications, including liquidated damages, overruns in scheduled time limitations, and resolutions.

3. Situations in which an asbestos-related contract has been terminated including projects, dates, and reasons for terminations.

4. A list of any asbestos-related legal proceedings/claims in which the Contractor (or employees scheduled to participate in this project) has participated or is currently involved. Include descriptions or role, issue, and resolution to date.

The asbestos abatement contractor is fully and totally responsible at all times for compliance with payment of prevailing wage rates pursuant to provisions of the California Labor Code, for compliance with Division 2, Part 7, Chapter 1, California Labor Code, including but not limited to Section 1776; and for compliance with California Labor Code, Section 1777.5 for all apprentice able occupations.

SECTION 2. ASBESTOS GENERAL REQUIREMENTS - DEFINITIONS

Abatement - Procedures beyond a special operations and maintenance program to control fiber release from asbestos-containing materials. Includes removal, encapsulation, enclosure, repair.

ACGIH - American Conference of Governmental Industrial Hygienists, 6500 Glenway Avenue, Building D-5, Cincinnati, Ohio 45211

AHERA - Asbestos Hazard Emergency Response Act

AIHA - American Industrial Hygiene Association, 475 Wolf Ledges Parkway, Akron, Ohio 44311

Air Filtration Device - See "Pressure Differential Unit"

Airlock - A system for permitting ingress and egress with minimum air movement between a contaminated area and an uncontaminated area, typically consisting of two curtained doorways separated by a distance of at least three (3) feet such that one passes through one doorway into the airlock, allowing the doorway sheeting to overlap and close off the opening before proceeding through the second doorway, thereby preventing flow-through contamination.

Air monitoring - The process of measuring the fiber content of a known volume of air collected during a specific period of time. The procedure normally utilized for asbestos follows the NIOSH Standard Analytical Method for Asbestos in Air P&CAM 239 or Method 7400. For clearance air monitoring, electron microscopy methods may be utilized for lower detection and specific fiber identification.

Air Sampling Professional - The professional contracted or employed by the Owner to supervise and/or conduct air monitoring and analysis schemes. This individual may also function as the Asbestos Project Manager, if qualified. Supervision of air sampling and evaluation of results should be performed by an individual certified in the Comprehensive Practice of Industrial Hygiene (C.I.H.) or having specialized experience in air sampling for asbestos. Other acceptable Air Sampling Professionals include Environmental Engineers, Architects, Chemists and Environmental Scientists or others with equivalent experience in asbestos air monitoring. This individual shall not be affiliated in any way other than through this contract with the contractor performing the abatement work.

Ambient Air - The air outside the buildings and structures or the air as it normally exists in a space prior to abatement.

Amended water - Water to which a surfactant has been added.

ANSI - American National Standards Institute, 1430 Broadway, New York, New York, 10018

Asbestos - Means the asbestiform varieties of serpentine (chrysotile), riebeckite (crocidolite), cummingtonite grunerite (amosite), anthophyllite, actinolite, and tremolite.

Asbestos-Containing Hazardous Waste - Materials defined by the State of California to be packaged, labeled, transported, and disposed of as an asbestos hazardous waste. This includes all friable asbestos-containing material over one-percent (1%) asbestos. This also includes all asbestos-containing material containing less than one-percent asbestos for which one or more bulk samples have not been point counted and found to contain less than one-percent (1%) asbestos.

Asbestos-containing material (ACM) - Cal/OSHA - Material composed of asbestos of any type and in an amount greater than one-tenth of one percent (0.1%) either alone or mixed with fibrous or non-fibrous materials. EPA - Asbestos-containing materials with more than one percent asbestos.

Asbestos-containing waste material - Asbestos-containing material or asbestos-contaminated objects requiring disposal.

Asbestos Project Manager (APM) - (Also known as Clerk-of-the-Works or Competent Person) - An individual qualified by virtue of experience and education, designated as the Owner's representative and

responsible for overseeing the asbestos abatement project.

ASTM - American Society for Testing and Materials, 916 Race Street, Philadelphia, PA 19103.

Authorized visitor - The Owner (and any designated representative) and any representative of a

regulatory or other agency having jurisdiction over the project.

Bidder - A duly licensed and accredited asbestos contractor who was present at the bid-walk and has submitted a bid.

Cal/OSHA - California Division of Occupational Safety and Health, 525 Golden Gate Avenue, P.O. Box 603, San Francisco, CA 94101.

Certified Industrial Hygienist (CIH) - An industrial hygienist certified in Comprehensive Practice by the American Board of Industrial Hygiene.

Clean room - An uncontaminated area or room which is a part of the worker decontamination enclosure system with provisions for storage of workers' street clothes and clean protective equipment.

Competent Person - A person who has successfully completed EPA-abatement supervisor training whose accreditation is current. Certificate must show 4 or 5-day training.

Containment - Isolation of the work area from the rest of the building to prevent escape of asbestos fibers.

Contract Documents - Written contractual agreements between the Owner and the Contractor that pertain to the work on this project.

Contractor - The individual and/or legal entity and its subcontractors and employees of the contractor and subcontractor awarded the contract.

Contractor/Supervisor - A person who successfully completed an initial U.S. EPA and/or state-approved five-day AHERA accreditation course and who has maintained that training through approved annual refresher training, and possesses current and valid AHERA accreditation documentation as a AHERA accredited Contractor/Supervisor.

Class I, II, III, or IV Work - Work classes described in 8 CCR 1529 that describe different levels of asbestos work.

Critical Barrier - Critical Barriers used to restrict water and air flow. Critical Barriers are the barriers placed over openings in the walls and ceilings of a work area in order to ensure that airborne fibers cannot escape the work area via these openings. The Contractor will construct impermeable barriers at all exits or openings, including doorways, duct chases, mechanical shafts, elevator shafts, floor openings, drains, and the like, so that all possible exit or entrance routes are effectively barricaded and sealed. Unless otherwise specified in the Contract documents, critical barriers shall be constructed of at least one layer of 6-mil thick poly.

Critical Barrier Negative Pressure Test - Required test for negative pressure with only critical barriers and air filtration units installed. This test must be conducted prior to the installation of cleaning barriers, but may be conducted with or without the decontamination unit in place.

Curtained Doorway, Z-Flapped - A device to allow ingress or egress from one room to another while permitting minimal air movement between spaces (such as the various rooms of the decontamination chamber). Each Curtained Doorway will consist of three sheets of poly. The first barrier will be a sheet of poly covering the entire passage and taped to the ceiling, walls, and floor. This sheet will be slit vertically in order for the workers to pass through it. Another sheet of poly will cover the first sheet but be taped only to the ceiling (or top of the first barrier) and down one wall. The third sheet of poly will be placed on the opposite side of the slit poly from the second sheet. The third sheet of poly will be attached in a similar manner as the second sheet except the wall attachment will be to the opposite wall. Each barrier must be

weighted at the bottom in order to ensure that it will lay flat against the slit sheet opening should the negative pressure system fail.

Decontamination Enclosure System - (Also known as Decon or Waste Transfer Decon) A series of connected rooms designed for the decontamination of workers and equipment that is separated from the work area and from each other by z-flapped curtained doorways. This unit shall be constructed with at least two layers of six-mil poly for the floors, walls, and ceiling. The floor of the dirty room shall consist of two layers of six-mil poly plus a third layer of poly, four-mil or thicker, to be used as a removable drop layer. Drop layer is to be removed as needed, but not less than daily. All decontamination enclosure systems used for worker entry and exit shall be equipped with a shower. At no time shall z-flaps of Decontaminations Enclosure System chambers be taped, held or otherwise blocked open.

Demolition - The wrecking or taking out of any load-supporting structural member of a facility together with any related handling operations.

DOP - Dioctylphthalate particles which are normally used as an agent for testing the efficiency of HEPA filters.

Dust or Debris - Any visible dust or debris remaining in an abatement area will be considered asbestos-containing residue.

Encapsulant - A liquid material which can be applied to asbestos-containing material which controls the possible release of asbestos fibers from the material either by creating a membrane over the surface (bridging encapsulant) or by penetrating into the material and binding its components together (penetrating encapsulant).

EPA - U.S. Environmental Protection Agency

Equipment Decontamination Enclosure System - That portion of a decontamination enclosure system designed for controlled transfer of materials and equipment into or out of the work area, typically consisting of a washroom and holding area.

Equipment Room - A contaminated area or room which is part of the worker decontamination enclosure system with provisions for storage of contaminated clothing and equipment.

Exterior of Containment HEPA Filtered Pressure Differential Unit - An air-purifying unit positioned outside, rather than inside the regulated work area. The face, or filter portion of the unit is integrated within the work area, and the remainder of the unit (housing, wheels, rivets, control panel, etc.) is located outside of the work area. This allows filters on the air intake to be changed from within the regulated area but access to the machine itself is available to those outside the area. Pressure differential units which pass DOP testing across the HEPA filter, but fail at rivets, control panels, wheels, etc. may be used in this fashion as long as the failure point of the unit can remain on the exterior of containment while the face of the unit and filters are inside containment.

Facility - Any institutional, commercial or industrial structure, installation, or building.

Facility component - Any pipe, duct, boiler, tank, reactor, turbine, or furnace at or in a facility or any structural member or a facility.

Fed OSHA or OSHA - Federal Occupational Safety and Health Administration.

Fixed object - A piece of equipment or furniture in the work area which cannot be removed from the work area.

Friable asbestos - Asbestos-containing material which can be crumbled to dust when dry, under hand

pressure.

Glove bag technique - A method with limited applications for removing small amounts of friable asbestos-containing materials from ducts, short piping runs, valves, joints, elbows, and other non-planar surfaces. The glove bag assembly is a manufactured or fabricated device consisting of a glove bag (typically constructed of 6 mil transparent polyethylene or polyvinylchloride plastic), two inward projecting long sleeves, an internal tool pouch, and an attached, labeled receptacle for asbestos waste. The glove bag is constructed and installed in such a manner that it surrounds the object or material to be removed and contains all asbestos fibers released during the process. All workers who are permitted to use the glove bag technique must be highly trained, experienced and skilled in this method. All techniques and procedures employed by the Contractor shall be approved by the asbestos project manager/Owner's agent/site representative.

HVAC - Heating, ventilation and air conditioning system.

HEPA Filter - A high efficiency particulate air filter capable of removing particles 0.3 microns in diameter from an air stream with 99.97% efficiency.

HEPA Vacuum - A vacuum system equipped with HEPA filtration.

Holding Area - A chamber or airlock between the shower and clean or dirty rooms.

Lock-down - To mist the air and to wet surfaces with an agent designed to bind asbestos fibers together.

Magnehelic gauge - Instrument for measuring the static air-pressure differential across a barrier.

Manometer - See "Magnehelic gauge".

Mini-Enclosures - Mini-enclosures may be used where glove bag setups are not feasible. The use of them must be approved by the asbestos project manager/Owner's agent/site representative. Mini-enclosures shall be constructed of 6 mil polyethylene (attached with tape and/or glue to walls and floors) and shall be small enough for only one worker who can enter the enclosure one time, complete the abatement exercise, pass out the containerized debris and exit. The worker shall have available a change room contiguous to the work area where he can clean his coveralls prior to leaving the area.

"Monitoring" - May include:

a) Visual inspection for the presence of visible emissions; or
b) Air monitoring performed in accordance with accepted methods;
c) Core samples of encapsulated or bridged materials.
d) Bulk sampling of soil during and following abatement.
e) Sampling substrata following abatement.

Movable object - An unattached piece of equipment or furniture in the work area which can be removed from the work area.

NVLAP - National Voluntary Laboratory Accreditation Program.

NESHAP - The National Emissions Standards for Hazardous Air Pollutants (40 CFR Part 61, Nov. 20, 1990)

NIOSH - The National Institute for Occupational Safety and Health CDC-NIOSH, Building J N.E. Room 3007, Atlanta, GA. 30333

Outside air - The air outside buildings and structures.

Owner - The Owner or Owners authorized Repreeentative.

PCM - Phase contrast microscopy according to NIOSH Method 7400.

Plasticize - See "Poly".

Poly - Polyethylene sheeting. Used to cover floors, walls, ceilings, create critical barriers, and seal open vents on mechanical systems, etc. *Note: All poly on this project must be flame-retardant.*

Pressure Differential Unit (PDU) - A portable exhaust system equipped with HEPA filtration and capable of maintaining a constant low velocity air flow into contaminated areas from adjacent uncontaminated areas. Air intake must have a filter on it which can be changed within a containment.

Prior experience - Experience required of the contractor on asbestos projects of similar nature and scope to ensure capability of performing the asbestos abatement in a satisfactory manner. Similarities shall be in areas related to material composition, project size, abatement methods required, number of employees and the engineering, work practice and personal protection controls required.

Regulated Area - means an area established by a Contractor to demarcate areas where airborne concentrations of asbestos exceed, or there is a reasonable possibility they may exceed, the permissible exposure limit. Additionally, "Regulated Area" means any measure used to restrict access to an area where personnel impacting asbestos-containing materials are required to wear respiratory protection and/or protective clothing by the project specifications regardless of airborne asbestos concentration levels.

"Regulations" - shall include but not be limited to:

a. U.S. Environmental Protection Agency Regulations for Asbestos (Title 40, Code of Federal Regulations, Part 61, Subparts A & B)

b. U.S. Environmental Protection Agency, Office of Toxic Substances, Asbestos-Containing Materials in School Buildings, A Guidance Document, Parts 1 & 2.

c. Title 8, Chapter 4, Subchapters 1 through 21, California Administrative Code, General Industry Safety orders, Section 5208 "Asbestos" or the applicable sections of the Federal Asbestos Regulations. Cal/OSHA Construction Safety Orders, Section 1529.

d. "Asbestos Hazard Emergency Response Act", U. S. Environmental Protection Agency, 40 CFR, Part 763. Final Rule and Notice.

e. Applicable local county Air Pollution Control Owners and Air Quality Management Districts.

Removal - The stripping of any asbestos-containing materials from surface or components of a facility.

Renovation - Altering in any way one or more facility components. Operations in which load-supporting structural members are wrecked or taken out are excluded.

Shower Room - A room between the clean room and the equipment room in the decontamination enclosure with hot and cold or warm running water controllable at the tap and suitably arranged for complete showering during decontamination. The shower room must be equipped with an overflow pan to contain water splashed, leaked or spilled out of the shower unit.

Staging area - Either the holding area or some area near the waste transfer airlock where containerized asbestos waste has been placed prior to removal from the work area.

Strip - To take off friable asbestos materials from any part of a facility.

Structural member - Any load-supporting member of a facility, such as beams and load-supporting walls or any non-load-supporting member, such as ceilings and non-load supporting walls.

Submittals - Pre, interim, and post job documents submitted by the contractor to Owner/Owner's Representative as indicated in General Requirements and Bidding Requirements.

Surfactant - A chemical wetting agent added to water to improve penetration.
TEM - Transmission Electron Microscopy according to AHERA specifications for Level II analysis.

Temporary Enclosure System - A system by where the regulated work area is isolated from the rest of the building or structure in a manner that prevents the escape of airborne asbestos fibers. Also see "Containment".

Visible emissions - Any emissions containing particulate asbestos material that are visually detectable without the aid of instruments. This does not include condensed uncombined water vapor.

Waste Load-out/Transfer System - A decontamination system utilized for transferring containerized waste from inside to outside of the work area. A series of three connected rooms used for the load-out of asbestos-containing materials that have been properly containerized. The waste load out chamber system shall normally consist of three connected chambers adjacent to the work area. Each chamber shall be constructed with at least two layers of six-mil thick poly for the floors, walls, and ceiling. The chamber located closest to the work area is known as the dirty chamber, and in addition to the two layers of six-mil thick poly on the floor, shall also have a third layer of poly, four-mil or thicker, to be used as a removable drop layer. The drop layer is to be removed as needed but at least daily. The chamber located closest to the outside the work area is known as the clean chamber. See Section 16 for proper use of waste Load-out/Transfer System.

Wet cleaning - The process of eliminating asbestos contamination from building surfaces and objects by using cloths, mops, or other utensils which have been dampened with water and afterwards thoroughly decontaminated or disposed of as asbestos contaminated waste.

Work area - Designated rooms, spaces, or areas of the project in which asbestos abatement actions are to be undertaken or which may become contaminated as a result of such abatement actions. A contained work area is a work area which has been sealed, plasticized, and equipped with a decontamination enclosure system. A non-contained work area is an isolated or controlled-access work area which has not been plasticized nor equipped with a decontamination enclosure system.

Worker - Contractor employee who has completed course work and passed the exam for an EPA accredited, AHERA asbestos abatement worker. Certificate must show a minimum of three or four days training and a currently valid one-day refresher certificate, as appropriate.

SECTION 3. NOTIFICATIONS, SUBMISSIONS, POSTINGS

Part 3.1 - Notification

Prior to commencement of work the Contractor shall send notices of work to be completed to the agencies listed below with a copy of each to be provided to the Owner or its representative at the pre-construction meeting. For compliance with 40 CFR part 61.148 of Subpart M, send notice at least 10 working days prior to start of work to the following appropriate agencies:

Mail Original to:
Mr. Kingsley Adeduro

Send Copy or Fax to:
California Air Resources Board

US EPA - Region IX
Asbestos NESHAP Notification (Air 5)
75 Hawthorne Street
San Francisco, CA 94105

Enforcement Division
Asbestos NESHAP Notification
Attn: Ahmad Najjar
PO Box 2815
Sacramento, CA 95812

For compliance with Title 8, California Administrative Code, Construction Safety Order 1529, Asbestos Regulations send written notice at least one day prior to start of work to:

State of California Department of Occupational Safety and Health (Cal'OSHA)

These notices shall include, at a minimum, the name and address of the Contractor, the name and address of the work site, the type of work to be done including the percent asbestos content of the material, the methods used to prevent migration of the fibers, personal protective measures, the number of his workers involved, any union representation of the workers and the methods of disposal including the names and EPA numbers of both the certified hauler and the waste disposal site. The notices shall also include start and finish dates. Changes in start and completion dates shall be reported immediately to the proper agency. Use forms provided by agency whenever possible.

Part 3.2 - Pre-Construction Submittals

Submit copies of documents required to be included in the Bidding Requirements. At a minimum these documents will include:

1. Copy of State of California Contractor License Issued by CSLB
2. Copy of State of California CSLB Active License
3. Copy of State of California CSLB Asbestos Certification
4. Copy of Department of Industrial Relations; Division of Occupational Safety and Health; Certificate of Registration for Asbestos-related Work
5. Copy of signed statement from company officer listing citations and pending proceedings against the Contractor, or if there have been no citations, a copy of the statement that no actions by regulatory agencies have occurred in the last three years signed by an officer of the company.

Submit copies of insurance certificates which meet requirements as outlined in Section 1, Part 1.2, of this Specification.

Submit copies of notifications to government agencies.
Submit proof satisfactory to the Owner that required permits have been acquired applicable to the project being performed and specific to the project site and location. If no city, county, or other permits for parking, waste container location, or variances for scheduled work hours are required this should be stated in writing and submitted to the Owner.

Submit Sub-contractor's information or statement that Sub-contractors will not be required or used during this project. This statement should also include that if it becomes necessary to use a Sub-contractor during this project that Sub-contractor will not be allowed to perform work until all required documentation has been submitted for review by the Owner or Owner's agent/site representative, and the Contractor receives written approval for use of the Sub-contractor on this project.

Submit a complete list of all rented equipment, or equipment expected to be rented from an outside contractor for use in "Regulated Areas", "Work Areas", or "Containments", where the equipment may be

exposed to elevated levels of airborne asbestos. If no equipment is to be rented a statement should be submitted stating, no equipment will be used on the project. The statement should also include that if it becomes necessary to use rented equipment that written statements from each rental company will be provided to the Owner prior to its use, indicating the rental company's acknowledgment that the equipment is provided for and may be used in areas where airborne levels of asbestos may be present.

Submit non-emergency telephone numbers, other then 911, for the appropriate Police, Sheriff, and Fire Departments. This list of numbers shall also include the Name, pager or cell phone numbers of the on-site supervisor and his immediate company supervisor.

Submit detailed written directions from the project site to the medical facility to be used in case of an

emergency. Also include a map which sufficiently shows the route to be taken from the site to the designated medical facility.
Submit written emergency procedures pertinent to the work to be performed and which can be implemented by site personnel if the need arises.

Submit detailed information on preparation of work area, personal protective equipment, employee experience, training and assigned responsibilities during the project. Also list decontamination procedures for personnel, work area and equipment, abatement methods and procedures, required air monitoring program, procedures for handling and disposing of waste materials and procedures for final decontamination and cleanup.

Submit a detailed work schedule. The schedule shall have, as a minimum, the work area and the day/month for beginning and terminating work in each work area. During progress of work, it shall be the Contractor's responsibility to keep the schedule current and up to date.

Submit documentation satisfactory to the Owner that the Contractor's employees, including foremen, supervisor, and any other company personnel or agents who may be exposed to airborne asbestos fibers or who may be responsible for any aspects of abatement activities, have received required US EPA AHERA training.

Submit documentation from physician that all employees or agents who may be exposed to airborne asbestos in excess of background levels have been provided with an opportunity to be medically monitored to determine whether they are physically capable of working while wearing the respirator required without suffering adverse health effects. In addition, document that personnel have received medical monitoring as required by Cal/OSHA regulations. The Contractor must be aware of and provide information to the examining physician about unusual conditions in the workplace environment (e.g., high temperatures, humidity, chemical contaminants) that may impact on the employee's ability to perform work activities.
Submit documentation of respirator fit-testing for all Contractor employees and agents who must enter any work area where asbestos-containing materials may or will be impacted. This fit-testing shall be in accordance with qualitative procedures as required by OSHA regulations or be quantitative in nature. Documentation pertaining to NIOSH approvals for all respiratory protective devices utilized on site shall also be included.

Submit copy of waste transporters Department of Toxic Substances Control, Hazardous Waste Transporter Registration if hazardous asbestos-containing waste is to be removed during the project. If hazardous asbestos-containing waste will not be generated submit the name, address, and registration information for the waste hauler to be used for transporting the waste.

Submit documentation listing the name and site address of the waste facility designated to receive asbestos-containing waste generated during this project. This documentation shall also include the EPA Identification number, and a copy of the current permit authorizing the waste facility to accept and dispose of asbestos-containing waste.

Submit Material Safety Data Sheets (MSDS) for any and all applicable materials, supplies, etc. These documents must be legible and completely reveal information required to be communicated to the Contractor's employees, visitors, and Owner Representatives.
Submit manufacturers' certifications that high efficiency particulate air (HEPA) vacuums, pressure differential units and other local exhaust ventilation equipment conform to ANSI Z9.2-79.

Submit name of laboratory/person to be used for Phase Contrast Microscopy (PCM) analysis and copy of current NVLAP Certificate of Accreditation (if applicable), and most recent NIOSH Proficiency Analytical Testing Program results.

Submit a written statement that OSHA monitoring will be performed for all asbestos-related activities

performed during this project. This statement must be on company letterhead, dated, include name of the site or project being worked on, and signed by an authorized agent of the company performing the asbestos-related work.
Submit manufactures documentation pertaining to the capability of waste water filters to filter particles of 1.0 micron in size.

Part 3.3 - Submittals During the Work Process

Submit weekly - copies of work site entry/exit logs as well as information on worker and visitor access.

Submit weekly - copies of results of air sampling data collected during the course of the abatement including OSHA compliance air monitoring results.

Submit weekly - copies of air-differential manometer graphs and HEPA filter change logs. (see Section 13)
Submit weekly - copies of all transport manifests, trip tickets, weights and disposal receipts as applicable for all asbestos waste materials removed from the site during the abatement process.

Submit as applicable - copies of current insurance certificates, notifications, worker documentation, etc. if these items expire during the course of the project.

During abatement the Owner will upon request submit to the Contractor results of bulk material analyses and air sampling data collected during the course of the abatement. These serve only to monitor Contractor performance during the project.

Submit upon request during or after completion of the project, documentation deemed by the Owner to be pertinent to the project.

Part 3.4 - On-Site/Clean-Room Area Postings and Documentation

The following items shall be posted at the entrance to "Regulated Areas", "Work Areas", and "Containments", or in the possession of the Contractor's on-site supervisor where respiratory protection or protective clothing is required by this Specification.

A Cal/OSHA Information poster and a Cal/OSHA Construction Site poster.

A copy of the CAL-OSHA and the local AQMD/APCD or EPA NESHAP Notification (if applicable).

Non-emergency telephone numbers, other then 911, for the appropriate Police, Sheriff, and Fire Departments. This list of numbers shall also include the Name, pager or cell phone numbers of the on-site supervisor and his immediate company supervisor. Detailed written directions from the project site to the medical facility to be used in case of an emergency. Also a map which sufficiently shows the route to be taken from the site to the designated medical facility.

Written emergency procedures pertinent to the work to be performed and which can be implemented by site

personnel if the need arises.

Written entry/exit procedures shall be posted in the clean room and equipment room. (See Section 12)

List of persons authorized to be in restricted area. The list shall include, among others, the following names with addresses and phone numbers:

Contractor	Air-sampling Professional	Asbestos Project Manager
Testing Laboratory	Owner's representatives	Any other designated by the Owner

Entry/exit log for work performed in all "Regulated Areas", "Work Areas", and "Containments" where respiratory protection or protective clothing is required by this Specification. Contractor shall maintain copies of all entry/exit logs on the site during the performance of asbestos-related work.
All of the Contractor's personnel and area air sampling results shall be posted in the clean room area or in the possession of the Contractor's site supervisor if no decontamination unit is required for the work being performed within 72 hours of collection, and submitted to Owner's agent/site representative weekly unless otherwise noted.
Copies of Material Safety Data Sheets (MSDS) for all materials on-site.

Part 3.5 - Job Site Documents

The following shall be in the possession of the Contractor's supervisor at each job site:

1. All contract specifications to include, change orders, etc. Contractor competent person must sign a document stating he has full knowledge of all Sections included in this specification.
2. Written Injury and Illness Prevention Program.
3. Written Respiratory Protection Program
4. An updated list of all contractor employees who have worked on this job.
5. List of all US EPA AHERA competent employees (supervisors).
6. Training records
7. Medical records
8. Respiratory fit test records

Part 3.6 - Project Close-out Documents

Contractor shall submit post-construction submittals to Owner/Owner's Representative within thirty (30) days of the completion of asbestos-related work. This documentation shall include at a minimum any and all applicable documents as outlined in Part 3.2 and Part 3.3 of this Section. In addition, the Contractor should consult and submit as applicable documents identified in Section 24, Part 24.3 - Post Construction Submittal List.

SECTION 4. SITE SECURITY

The work area is to be restricted to authorized, trained and protected personnel. A list of authorized personnel shall be established prior to job start and posted in the clean room of the work decontamination facility, or in the possession of the on-site supervisor for the Contractor.

Contractor shall report to the Owner immediately entry into the work area by unauthorized individuals.

A log book shall be maintained during the project. Anyone who enters the work areas must record name, affiliation, time in, and time out for each entry.

Access to all "Regulated Areas", "Work Areas", and "Containments" shall be through a designated entry point. All other means of access (doors, windows, hallways, etc.) shall be blocked or locked so as to

prevent entry to or exit from these areas. The only exceptions for this rule are the waste pass out air-lock, and emergency exits in case of fire or accident.
Emergency exits shall NOT be locked, however, they shall be sealed with polyethylene sheeting and tape until needed. All emergency exits shall be clearly designated. They shall also have a razor knife permanently in place to facilitate emergency exit.

Contractor should have control of site security during abatement operations whenever possible, in order to protect work efforts and equipment. During off-hours access to the abatement area shall be restricted by a lockable entry.

Contractor will have Owner's assistance in the enforcement of restricted access by Owner's employees. Storage of debris will be such that access to it is limited to the Contractor. Lockable bins shall be utilized and they shall be locked at all times except when loading occurs. No soft covers will be allowed for any storage containers. When a container with rolling tops is being used all access points to the interior of the container must be secured by the Contractor with locks of sufficient strength to require special effort to gain access to the interior of the waste container.

SECTION 5. EMERGENCY PLANNING

Emergency planning and procedures shall be developed by the Contractor and shall include considerations of fire, explosion, toxic atmospheres, electrical hazards, slips, trips and falls, and heat related injury and agreed to by Contractor and Owner prior to abatement initiation. These emergency procedures shall be established and presented to all employees and the Owner prior to the beginning of any work. A written emergency plan shall be posted or in the possession of the on-site supervisor for the Contractor regardless of the work being performed.

A copy of the Contractor's written Injury and Illness Prevention Program shall be posted or in the possession of the on-site supervisor for the Contractor regardless of the work being performed.

Employees shall be trained in evacuation procedures in the event of workplace emergencies. Telephone numbers of all emergency response personnel shall either be in the possession of the on-site supervisor, or be prominently posted in the clean change area and equipment room, along with the locations of the nearest telephone indicated on a map or diagram.

At least two fire extinguishers shall be present on site and in close proximity to the work being performed regardless of the type of work being conducted. At least one fire extinguisher shall be present outside of any containment. Additional extinguishers shall be distributed according to CalOSHA requirements or as identified in this Specification.

When open abatement is being performed, an emergency blast horn (canned air horn) shall be placed inside of containment for emergency evacuation in the event of a fire or other emergency.

If noted in any other section of this Specification, a means of radio communication shall be established between inside and outside of containment whenever a decontamination setup is required, particularly for all open abatement projects. This requirement may be met through walkie talkies or by wired communication systems.

During hot working conditions, such as in an attic space during summer, or in containments where live steam or hot water lines are exposed, special attention must be given to the possibility of heat stress and burns. The Owner's site representative may make recommendations for work breaks for employees, but the supervisor is ultimately responsible for his workers.

SECTION 6. PRE-CONSTRUCTION MEETING (See also Section 3)

A pre-construction meeting will be held at a time and location to be determined by the Owner. The

successful Bidder, his on-site supervisory personnel, and Air Sampling Professional (if applicable), representatives of the Owner, Owner's Representative, and other individuals as necessary shall be present at this meeting. At this meeting the Contractor shall provide all required submittals, as indicated above in Section 3, Part 3.2. The Contractor should use the Pre-Construction Submittal List provided in Section 24, Part 24.1 to assure all required submittals are included in his submittal package.

SECTION 7. MATERIALS AND EQUIPMENT

Part 7.1 - Contractor Equipment and Supplies

Deliver all consumable materials in the original packages, containers or bundles bearing the name of the manufacturer and brand name (where applicable). These must be approved by the Owner. Polyethylene (Poly) sheeting, of appropriate thicknesses for walls, floors, and ceilings, (4 mils' thick for walls, 10 mils' thick for lining of waste containers, 6 mils' thick for floors and all other uses), shall be provided in widths selected to minimize the frequency of joints.
All poly shall be flame-retardant regardless of its designated use inside or outside any building.

Poly sheeting utilized for worker decontamination enclosure shall be opaque white or black in color and each layer shall be a minimum of 6 mils thick. At least two layers shall be required. Modesty barriers are to be erected whenever and wherever the Owner's agent/site representative determines one is needed.

Disposal bags shall be constructed of 6 mil poly with labels required by OSHA, CDPH, Toxic Substance Control regulations. Disposal drums shall be metal or fiber board with locking ring tops to be used only if required and/or allowed by selected waste facility.

Stick-on labels as per CDPH and OSHA requirements for disposal drums shall be provided.
Warning signs as required by OSHA shall be provided and posted per regulations.

Surfactant (wetting agent) shall be a 50/50 mixture of polyoxyethylene ether and polyoxyethylene ester, or equivalent, mixed in a proportion of one (1) fluid ounce to five (5) gallons of water or as specified by manufacturer. If amosite asbestos in present in the materials being removed, the Contractor shall use a surfactant that is designed to wet amosite. This information shall be submitted to the Owner's agent/site representative before the start of the project.

A sufficient quantity of pressure differential units equipped with HEPA filtration and operated in accordance with ANSI Z9.2-79 and EPA guidance document EPA 560/5-83-002 Guidance for Controlling Friable Asbestos-Containing Materials in Buildings, Appendix F: Recommended Specifications and Operating Procedures for the Use of Negative Pressure Systems for Asbestos Abatement, shall be utilized so as to meet the requirements of Section 12. All HEPA filtration equipment must be tested with DOP or an equivalent testing agent (see Section 12).

An adequate number of respirators for the work force shall be on hand. These respirators will include, when specified:

a. Type 'C' air-supplied respirators in positive pressure or pressure demand mode with full face pieces and HEPA-filtered disconnects.

b. Powered-air respirators with HEPA-filters, full face piece.

c. Half mask or full face respirators with HEPA filters.

All respirators shall be NIOSH-approved and be equipped with supplies for immediate replacement of defective parts.

Full body disposable protective clothing, including head, body, and foot coverings consisting of material

impenetrable by asbestos fibers (Tyvek or equivalent) shall be provided to all workers and authorized visitors in sizes adequate to accommodate movement without tearing.

Additional safety equipment (e.g., hard hats, eye protection, safety shoes, disposable PVC gloves), as necessary shall be provided to all workers and authorized visitors.

Non-skid footwear shall be provided to all abatement workers.

If launder-able clothing is to be worn underneath disposable protective clothing, it shall be provided by the Contractor to all abatement workers. Laundering must occur in accordance with applicable OSHA requirements.

A sufficient supply of scaffolds, ladders, lifts and hand tools (e.g., scrapers, wire cutters, brushes, utility knives, wire saws, etc.) shall be provided as needed.

Rubber dustpans and rubber squeegees shall be provided for cleanup.

A sufficient supply of HEPA-filtered vacuum systems shall be available.

The Owner's agent/site representative may require the use of additional equipment if he feels the number or amount of certain items or materials is not sufficient.
Vacuums and pressure differential units shall arrive on site sealed and free of debris. Pre-filters of all pressure differential units must be new and unused.

No product or material will be used on the project unless the product data sheets and all MSDS's have been submitted, reviewed, and approved by the Owner for use. Any product or material found on the project which has a product data sheet and/or MSDS available and has not been approved will be removed from the site by the Contractor until review and approval has been completed by the Owner.

Part 7.2 - Rental Equipment and Supplies

Any equipment rented and delivered to the site for the purpose of conducts asbestos abatement work must be accompanied with documentation verifying that the rental agency has been notified, and acknowledges receipt of notification that the equipment being rented will be used for asbestos abatement work. This documentation must be submitted to the Owner's agent/site representative prior to the equipment being delivered to the job site. Rental equipment, including scaffolding, will be held to the same standard of cleanliness as all other equipment on this project.

All rented equipment must be inspected and accepted by Owner's agent/site representative as it arrives onsite. Any equipment covered with dust (no matter the source of dust), plaster debris, multiple layers of encapsulant and/or spray glue, or any other debris will not be accepted. Delays caused by a lack of clean equipment will not extend Contractor's schedule. Equipment rejected due to a lack of cleanliness must be removed from Owner's grounds in order to be cleaned. Dirty equipment wrapped in plastic will not be acceptable.

The Owners' agent/site representative must be informed 24 hours prior to the delivery of any rental equipment.

The decision of the Owner or its representative on all rental equipment and supplies shall be final.

SECTION 8. WORK SITE FACILITIES

The Owner shall provide sanitary facilities for abatement personnel outside of the enclosed work area. To

use these facilities all workers shall wear normal street clothes, not bathing suits or Tyveks.

The Owner shall provide water for construction purposes. Contractor shall connect to existing Owner system.

The Owner shall provide the electrical source.

The Owner or its representative shall specify the waste water discharge location and location of waste containers.

The Owner shall specify on-site parking areas, if available, and access to the site.

SECTION 9. RESPIRATORY PROTECTION

All respiratory protection shall be provided to workers in accordance with the submitted written respiratory protection program, which includes all items as required by OSHA. This program shall be posted in the clean room of the worker decontamination enclosure system or adjacent to the clean room.

The Contractor shall ensure that all workers entering the regulated area wear appropriate respiratory protection. Respiratory protection provided workers shall be in accordance with 8 CCR 1529, and 8 CCR 5144 and the respiratory protection program submitted by the Contractor. This program shall be available at the project site.

The Owner or their representative may deny access to a regulated area to anyone who, in the final judgement of the Owner or their representative, is not properly wearing adequate respiratory protection for the project conditions. This includes but is not limited to those wearing unidentified respirators, those with improperly sealed respirators, those wearing respirators in an improper manner such as over their protective suit hood, or in any other fashion judged by the Owner or their representative to be improper or inadequate to protect the individual from the airborne asbestos at the project site.

The Contractor shall provide each worker needing respiratory protection with his or her own, individually identified, NIOSH-approved respirator. At a minimum, these respirators will be equipped with a P-100 series HEPA filter. The Contractor shall provide additional filter types if that becomes necessary for specific hazards discovered on the job site or if required in the contract documents.

The Contractor shall ensure that all workers use the respirator in compliance with the manufacturer's instructions for proper use and care of that product.

Workers must perform positive and negative respirator seal checks each time a respirator is put on, provided the respirator design so permits.

The Contractor shall ensure that those workers wearing powered air purifying respirators test the air flow rate according to the frequency and methods specified by the manufacturer.

Workers shall be given, at least, a qualitative fit test in accordance with procedures detailed in the Cal/OSHA requirements for all respirators to be used on this abatement project. An appropriately administered quantitative fit test may be substituted for the qualitative fit test.

The Contractor shall ensure and provide written records to the Owner's agent/site representative that all workers wearing tight-fitting respirators have been appropriately fit tested in accordance with the requirements of 8 CCR 5144.

The Contractor shall ensure that nothing interferes with the seal of the respirator to the face of the worker. This includes but is not limited to facial hair, clothing, protective clothing, equipment or anything else that comes between the respirator and the face of the worker.
Use of any respirator must be in compliance with the manufacturer's instructions for proper use and care of

that product.

The Contractor shall ensure that workers wear respirators underneath protective clothing.

Workers conducts any work that may create an airborne release of asbestos must wear appropriate respiratory protection. This includes, but is not limited to the pre-cleaning of asbestos contamination off of furniture, equipment and floors, and the set-up of contaminated work areas.

The judgement of the Owner's agent/site representative shall be final if there is a disagreement between the Owner and the Contractor regarding the need for wearing or the type of personal protection required. In no event will a negative exposure assessment be allowed to lower respiratory protection, from that listed in the Scope of Work or required by regulation in the absence of an NEA, prior to the start of a project. Air samples used for negative exposure assessments created after the project has started must be from work conducted under this contract.

Minimum Respiratory Protection for OSHA Class I Work
Unless specified differently in the contract documents, the Contractor's employees conduct Class I work will wear tight-fitting, full-face powered-air purifying respirators for all Class I work that will take more than one hour to complete. They must wear a minimum of a half-face negative air–purifying respirator for Class I work lasting less than one hour. Contract documents may require additional respiratory protection, such as the use of supplied air respirator systems if, in the opinion of the Owner's agent/site representative, the airborne asbestos levels are expected to exceed one fiber per cubic centimeter of air (1 f/cc).

After work has begun, If the Contractor wishes to lower respiratory protection requirements, such as for glove bag or other work, he or she must demonstrate to the Owner's agent/site representative that personal air sampling results from that project prove that airborne fibers levels are below the Cal/OSHA Permissible Exposure Limit. The Owner's agent/site representative will normally require sampling results used for this purpose to include several days of sampling taken during the work expected to generate the highest airborne levels. The Owner's agent/site representative will have final authority regarding whether or not the respiratory protection may be reduced below the need for powered-air purifying respirators.

Unless stated otherwise in the contract documents, for the purposes of respiratory protection, Class I work will include the removal of materials such as gypsum board surfaces that are covered with a texturing or skim coat material that contains over one percent asbestos.

Minimum Respiratory Protection for Class II and III Work Practices
Unless specified differently in the contract documents, the Contractor's employees conduct Class II or III work will wear a minimum of half-face, air-purifying respirators. Contract documents may require additional respiratory protection, such as the use of full face air-purifying respirators or powered-air-purifying respirators.

After work has begun, If a Contractor wishes to lower respiratory protection requirements, he or she must demonstrate to the Owner's agent/site representative that personal air sampling results from that project prove that airborne fibers levels are below the limit of quantification for the phase contrast microscopy method. The Owner's agent/site representative will normally require sampling results used for this purpose to include several days of sampling taken during the work expected to generate the highest expected

airborne levels. The Owner's agent/site representative will have final authority regarding whether or not the respiratory protection may be reduced or eliminated. For example, the Owner's agent/site representative may require personal samples be analyzed by TEM before determining that asbestos does not pose an airborne health risk.

Respiratory Protection for All Work Classes and Unclassified Work
Respiratory protection will always be required if thermal system or surfacing materials are disturbed or if any asbestos-containing materials will not be removed substantially intact.

The Owner's agent/site representative has full authority to raise the level of respiratory protection required for access to the regulated area if in his or her judgement additional respiratory protection is required. For example, if personal air sample results collected by either the Contractor or Owner's agent/site representative indicate higher than expected levels, the Owner's agent/site representative is authorized to increase the level of required respiratory protection. The Owner's agent/site representative will determine if the increased respiratory protection is due to new, unexpected developments such as the discovery of new materials, or if the increase is due to the Contractor failing to follow good work practices. The judgement on this matter by the Owner's agent/site representative will be final.
The Owner is not responsible for increased costs or delays resulting from the need to increase respiratory protection should the reason for the increased respiratory protection be due to the Contractor's failure to adequately utilize wet work methods and/or the prompt cleanup of debris.

The Contractor may only implement respiratory protection changes after receiving written approval for the change from the Owner's agent/site representative.

Waste transport and disposal personnel must wear at least half-face, air-purifying respirators when handling intact sealed bags. Powered-air purifying respirators must be worn if waste containers spill, break, or in any other fashion require a Class I work cleanup be performed.

The Contractor shall comply with the respiratory protection requirements listed in 8 CCR 1529 until that date that 8 CCR 5144 includes assigned protection factors for all respirators. The following list of respirators and their assigned "protection factors" shall be the criteria for the selection of respiratory protection.

Respirator Selection	Protection Factor
Half-face or full-face air purifying respirator equipped with HEPA filter.	10
Full-face air purifying respirator equipped with HEPA filter with quantitative fit test.	50
Full-face Type C continuous flow supplied air.	1000
Half-face or full-face, powered air purifying respirator equipped with HEPA filter.	1000
Full-face supplied air respirator operated in pressure demand mode.	1000
Full-face supplied air respirator operated in pressure demand mode, equipped with an auxiliary positive pressure self-contained breathing apparatus.	1000

Workers shall be provided, as a minimum, with personally issued and marked respirators equipped with HEPA filters approved by NIOSH to be worn in the designated work area and/or whenever a potential exposure to asbestos exists. Owner or its representative may refuse entry to the work area to a worker with an unidentified respirator.

Sufficient filters shall be provided for replacement as required by the workers or applicable regulations. Disposable respirators shall not be used.

No worker shall be exposed to levels greater than 0.01 f/cc as determined by the protection factor of the respirator worn and the work area fiber levels.

Whenever type C respirator protection is used, compressed air systems shall be designed to provide air volumes and pressures to accommodate respirator manufacturer specifications. The compressed air system shall have a reservoir of adequate capacity to allow the escape of all respirator wearers from contaminated areas in the event of compressor failure.

Compressors must meet the requirements of 29 CFR 1910.134(d).

Location of compressors must be approved by Owner for exhaust and noise considerations.

Compressors must have an in-line carbon monoxide monitor and periodic inspection of carbon monoxide monitors must be documented. Documentation of adequacy of compressed air systems/respiratory protection systems must be retained on site. This documentation will include a list of compatible components with the maximum number and type of respirators that may be used with the system. Periodic testing of compressed air shall insure that systems provide air of sufficient quality (Grade D breathing air). Documentation of this testing, including a description of the process used to perform the test and results of each test must be submitted to the Owner's agent/site representative weekly.

Location of compressors must be approved by Owner for exhaust and noise considerations.

Whenever powered air-purifying respirator protection is used, a sufficient supply of replacement batteries and HEPA filter cartridges shall be provided to the workers. At least one spare fully charged battery must be available on-site for each PAPR in use. The flow rate delivered to the face piece shall be checked and recorded by the Contractor on the sheet provided by the Owner's agent/site representative each time a worker dons the respirator. Written respiratory protection program must detail how this testing is to be performed by each employee or the onsite supervisor. The Contractor shall ensure that the flow rate for PAPRs meets the requirements listed in 8 CCR 1544 regarding tight and loose fitting respirators as appropriate. The Contractors shall also ensure that PAPRs are worn, checked and maintained according to the directions of the manufacturer.

During encapsulation operations or usage of other organic base aerosols (e.g. spray glue, expanding foam, etc.) workers shall be provided with combination organic vapor/HEPA filter respirator cartridges.

The Contractor shall comply with OSHA CFR 1926.110(h) (Respiratory Protection) and Cal/OSHA Title 8 5144. The following list of respirators and their associated "protection factors" shall be the criteria for the selection of respiratory protection.

Sufficient filters shall be provided for replacement as required by the workers or applicable regulations. Disposable respirators shall not be used.

No worker shall be exposed to levels greater than 0.01 f/cc as determined by the protection factor of the respirator worn and the work area fiber levels.

Whenever powered-air-purifying respirator protection is used, a sufficient supply of replacement batteries and P100 HEPA filter cartridges shall be provided to the workers. At least one spare fully charged battery

must be available on-site for each PAPR in use. The flow rate delivered to the face piece shall be checked and recorded by the Contractor on the sheet provided by the Owner's agent/site representative each time a worker dons the respirator. Written respiratory protection program must detail how this testing is to be performed, and whether it will be performed by each employee or the onsite supervisor.

During encapsulation operations or usage of other organic base aerosols (e.g. spray glue, expanding foam, etc.) workers shall be provided with combination organic vapor/HEPA filter respirator cartridges.

During application of spray-poly, appropriate NIOSH approved respirators shall be worn.

SECTION 10. PERSONNEL PROTECTION REQUIREMENT AND TRAINING

Prior to commencement of abatement activities all personnel who will be required to enter the work area or handle containerized asbestos containing materials must have received adequate training in accordance with the OSHA, EPA AHERA and NESHAP regulations.

Special on-site training on equipment and procedures unique to this job site shall be performed by the Contractor as required by law or recommended by the equipment manufacturer.

The Contractor shall provide training in emergency response and evacuation procedures.

See Section 8 for respiratory protection requirements.

Disposable clothing, including head, foot and full body protection, shall be provided in sufficient quantities and adequate sizes for all workers and authorized visitors. Damaged coveralls shall be immediately repaired or replaced.

Hard hats, protective eye-wear, proper protective gloves, rubber boots and/or other footwear shall be provided by the Contractor as required for workers and authorized visitors. Safety shoes may be required for some activities.
Contractor personnel shall not wear street clothes or clothes of any type underneath the protective disposable clothing. Upon exiting the work area, no items worn in the work area, such as clothing, personal protective gear, footwear, or hair coverings will be allowed to be worn past the shower of the decontamination unit. Contractor worker(s) have the option of wearing disposable undergarments underneath protective clothing, or they may be nude underneath the protective disposable clothing.

Each time the worker(s) enter the work area they will don new disposable clothing and undergarments. Street clothes (including underwear and shoes) shall not be allowed inside the work area, except during visual clearance activities.
The Owner's agent/site representative may use personal judgement to allow authorized personal to wear street clothes under protective clothing during the construction of final visual or other short-duration visits into the regulated area during times which asbestos is not being disturbed and gross debris is not present. In these situations, approved by the Owner's agent/site representative, the authorized person shall deposit the protective clothing on the dirty side of the decontamination system and may proceed through the shower and clean room wearing the clothes they wore under their protective clothing.

SECTION 11. WORKER DECONTAMINATION ENCLOSURE SYSTEMS

Worker decontamination enclosure systems shall be provided at all locations where workers will enter or exit the work area. One system at a single location for each contained work area is preferred. Enclosure systems may be constructed out of metal, wood or plastic support as appropriate. Plans for construction, including materials and layout, shall be submitted as shop drawings and approved, in writing, by the Owner or its representative prior to work initiation. Detailed descriptions of portable, prefabricated units, if used, must be submitted for the Owner's approval. The worker decontamination enclosure system shall consist of at least a clean room, a shower room, and an equipment room, separated from the work area by airdock. The aircock shall be, at least, three feet square. All fabricated units shall have, at least, two layers of 6 mil poly sheeting.

All decontamination units and pressure differential units outside the building shall be covered with a 2"x 4" wood studs and ½" plywood enclosure for security. Pressure differential units shall be secured as necessary to the building or ground. Exhaust openings shall have metal grates to prevent objects from being put into the exhaust openings. Pressure differential exhaust shall be exhausted to an area acceptable to the Owner or Owner's agent/site representative.

Entry and exit from all air locks and decontamination enclosure system chambers shall be through

doorways designed to restrict air movement between chambers when not in use. The dirty side shall have an extra layer of 6 mil poly sheeting on the floor as a "boat layer" and it shall be replaced at least daily.

The clean room shall be sized and equipped to adequately accommodate the work crew. Lighting, heat and electricity shall be provided as necessary for comfort. This space shall not be used for storage of tools, equipment or materials (except as specifically designated), or as office space.

Shower room shall contain one or more showers as necessary to adequately accommodate workers. The shower enclosure shall be constructed to ensure against leakage of any kind. In addition, the shower shall be a separate unit from the decon walls. The shower unit cannot be made from poly. Metal or hard plastic is acceptable. An adequate supply of soap, shampoo and towels shall be supplied by the Contractor and available at all times. Shower water shall be drained, collected and filtered through a system with at least 5.0-micron particle size collection capability.

The shower pan in the shower chamber shall be, at least, 3' x 3' in size. The shower chamber shall be constructed so that no water from the shower can spray out of the chamber, nor any water run down the sides of the poly and miss the pan. The shower chamber dimensions shall be determined by the size of the shower pan but are not to be smaller than 3' wide by 3' long by 6' tall. At least one shower shall be provided for each 10 workers. A minimum of two showers will be required for more than 10 workers.

Each decontamination chamber shall have, at least, a 4" lip of poly from the floor up the wall to prevent possible transfer of water and debris between chambers. Excess poly at the corners of this floor is to be fitted to the sides of the chamber by folding poly and taping, as opposed to cutting away excess poly and taping seams. In addition to this 4" lip of poly the shower chamber shall have an overflow pan, in which the shower unit sits, that is capable of holding 2" of water. The filter system and any hose connections transferring contaminated water shall be located in a secondary containment, such as a metal pan. Any leakage shall be double-bagged or re-filtered.

Unless otherwise specified in the scope of work, the minimum size of the decontamination chambers shall be the following:

Clean Room	5' x 6'
Shower	3' x 3'
Dirty Room	5' x 6'
Air Locks	3' x 6' (If five chambers are specified)

Abatement work will be stopped if decontamination unit is not kept in acceptable condition.

Storage or consumption of food and/or beverages shall not be permitted inside the containment or within any of the decontamination chambers. Food or drink consumption within containment will result in the abatement worker(s) dismissal from the site for the duration of the project.

SECTION 12. WORKPLACE ENTRY AND EXIT PROCEDURES

All workers and authorized personnel shall enter the work area through the worker decontamination enclosure system.

All personnel who enter the work area must sign the entry log, located in the clean room. This log shall have space for the worker's name, social security number, time in, time out, and be identified with the project name, date, and containment location.

All personnel, before entering the work area, shall read and be familiar with all posted regulations, personal protection requirements (including workplace entry and exit procedures) and emergency procedures. A sign-off sheet shall be used to acknowledge that these have been reviewed and understood by all personnel prior to entry.

All personnel shall proceed first to the clean room (or area), remove all street clothes and don appropriate respiratory protection and disposable coveralls, head covering and foot covering. Hard hats, eye protection and gloves shall also be worn, as appropriate. Clean respirators and protective clothing shall be provided and utilized by each person for each separate entry into the work area.

Personnel wearing designated personal protective equipment shall proceed from the clean room through the shower room and equipment room to the main work area.

Before leaving the work area all personnel shall remove gross contamination from the outside of respirators and protective clothing by brushing and/or wet-wiping procedures. (Small HEPA vacuums with brush attachments may be utilized for this purpose.) Each person shall clean bottoms of protective footwear in the walk-off pan just prior to entering the equipment room.

Personnel shall proceed to equipment room where they remove all protective equipment except respirators. Deposit disposable clothing into appropriately labeled containers for disposal.

Reusable, contaminated footwear shall be stored in the equipment room when not in use in the work area. This footwear shall be cleaned prior to being removed from the work area. Placing footwear in two 6 mil poly bags is sufficient for moving from one containment to another, but not for moving from one site to another.

Still wearing respirators, personnel shall proceed to the shower area, clean the outside of the respirators and the exposed face area under running water prior to removal of respirator, then shower and shampoo to remove residual asbestos contamination. Various types of respirators will require slight modification of these procedures.

After showering and drying off, proceed to the clean room and don clean disposable clothing if there will be later re-entry into the work area, or street clothes if it is the end of the work shift.

These procedures shall be posted in the clean room and equipment room.

SECTION 13. DIFFERENTIAL AIR PRESSURE SYSTEMS (See also Section 14)

Part 13.1 - Negative Pressure Requirements

Negative pressure shall be maintained at 0.03" water differential at all times during abatement activities, including entry/exit and bag out procedures. Contractor shall assign crew members to determine cause of loss of pressure any time containment's negative pressure drops below 0.03" water differential. All work will be stopped in any containment for which the negative pressure drops below 0.025" water differential, until problem is resolved and pressure returns to 0.03" water differential or better.

In the event that containment cannot be brought up to 0.03" water differential, abatement contractor must increase number of negative pressure differential units until 10 air changes per hour is taking place. If this fails to raise negative pressure to acceptable levels, Contractor may request in writing a reduction in negative pressure requirements. If Owner's agent/site representative agrees that Contractor has tried all possible remedies, Owner's agent/site representative may grant reduction in negative pressure requirement. Owner's agent/site representative is under no obligation to grant this request.

All negative pressure units installed, but not operating, must be sealed at both the exhaust location and the intake of the machine. This will prevent back draft which could allow asbestos fiber contamination from the HEPA filter.

Part 13.2 - DOP (or equivalent) Testing

Contractor shall provide differential air pressure systems for each work area in accordance with Appendix J of EPA "Guidance for Controlling Asbestos-Containing Materials in Buildings," EPA 560/5-85-024.

All HEPA filtered systems used on this project shall be tested and certified by an independent company, approved in advance by Owner's agent/site representative, on-site and prior to use. All vacuums and pressure differential units shall meet ANSI Z9.2, using an appropriate testing agent. Documentation of these tests shall be provided to the Owner's agent/site representative prior to the use of any HEPA system.

DOP, or equivalent, testing must be conducted on-site, unless stated otherwise in the Scope of Work. All HEPA filtered units, including but not limited to, vacuums, air pressure differential units, and make-up air filters must be tested onsite. Testing of air pressure differential units must include testing of the wheel attachments, control panel, and seam and rivets of the housing, as well as the HEPA filter itself. A unit which passes DOP testing across the filter, but which fails testing for any component of the housing may be certified as an "Exterior of Containment HEPA Filtered Unit" only.

All HEPA equipped equipment to be used on the project must be delivered to the site empty of all debris, clean and free of dust, and in full operating condition. Covering dirty units with poly, other than the HEPA filter surface, will not be acceptable.

DOP or equivalent testing must be conducted by an independent testing company approved in advance by Owner's agent/site representative Contractors may not test their own equipment.
DOP or equivalent testing is required when any HEPA filters are changed.

All HEPA filtered machines, including but not limited to vacuums and negative pressure differential machines, shall be utilized in the manner in which they were DOP tested.

Any negative pressure unit turned upside down, or on its side, must be returned to an upright position and re-DOP tested. Negative pressure units shall not be used on this project while laid on their side or upside down.

In case of a power outage, Contractor must seal exhaust ducts against back draft into containment.

All negative air units will have the filter sealed with poly and tape before being shutdown to prevent back drafting.

Part 13.3 - Differential Pressure Recording Requirements

Differential air pressure shall be continuously monitored by Contractor using a recording instrument, Dwyer Instrument Co., "Photohelic Gauge" or equivalent, connected to an appropriate circular chart recorder or a comparable recorder that maintains a record of dates, times and pressure differentials. The location of the pressure measurement tap shall be approved in advance by the Owner's agent/site representative. During the operation of the unit, circular charts shall be collected on a daily basis, dated, and signed by an OSHA Competent Person present on site. Pressure differential shall be checked a minimum of every hour during the work shift by a person familiar with the operation of the pressure-differential-filtration units, as well as the recording device. Each check shall be documented with a time and date notation on the circular chart and "Manometer Readings" form along with the initials of the person performing the check. A copy of the circular chart record shall be submitted to the Owner's agent/site representative on a daily basis. The circular chart shall record time, date, pressure differential, coordinates, and location.

In the event the manometer recording mechanism fails, the Contractor shall be responsible for manually recording the pressure differential at fifteen (15) minute intervals. The log shall be kept until the recording device is operational. The log shall be provided to the Owner's agent/site representative on a daily basis.

The "Manometer Readings" form shall be a record of dates and times of pressure readings and instrument stability.

Connect recording instrument to an audible alarm which will activate at pressure differential of-0.025 inches' water gauge air pressure. Defective or non-operating instrumentation may require temporary stoppage of work until instrumentation is replaced.

For larger projects at least one manometer station shall be in place for each 25,000 square feet of containment space.

Part 13.4 - Differential Pressure System

Selection of pressure differential unit (PDU) air exhaust locations and avenues shall require careful consideration with regard to the work being performed and needs of the owner. Unless there is no viable alternative all air exhaust from PDU's shall be directed out of the building. This is expected to be accomplished through use of a temporary duct system (flexible or rigid) provided by the Contractor, or permanent, dedicated exhaust duct systems present within the building. The first choice should always be to direct PDU air exhaust out of the building through Contractor supplied ducts. The first alternative would be to use an existing dedicated exhaust duct system located within the building. The second alternative would be to direct exhaust air into an above ceiling space with no applied fireproofing, loose insulations or

to allow exhaust from pressure differential air systems to remain within the buildings occupied spaces. The three alternatives may only be utilized with approval of the owner.

When directing exhaust to a building's exterior through the use of temporary supplied duct, the Contractor shall select a path of travel (if applicable) for these ducts which does not impede building occupants or other trades, result in creation of a hazard to building occupants, or restrict the closing of entry and exit doors to the building. The exhaust opening must not be within 10' of any air intake vents, open windows or open doors, and must not be directed at paths of travel into or out of the building.

When utilizing a dedicated exhaust duct system present within the building the system must be investigated to determine its capability of handling the volume of exhaust air expected to be produced by the pressure differential system. Sufficient air volume of the existing dedicated exhaust duct system should have a minimum of 5X but preferably up to about 10X the total volume capacity of the exhaust of the pressure differential air system. For example, if a single 2,000 cfm PDU is to be used, the dedicated exhaust fan system which will exhaust the air produced by the PDU should be capable of handling about 10,000 cfm of total exhaust air capacity. Use of permanent dedicated exhaust duct systems may also require sealing of adjacent registers in the same exhaust system to allow the PDU exhaust to make up the difference in exhaust volume.

The owner shall provide approval prior to the contractor utilizing any permanent dedicated exhaust systems which might be considered, since the dedicated exhaust systems will be required to operate at all times the pressure differential air system is operable, and sealing any adjacent registers may not be acceptable. It is critical to note that a dedicated exhaust system is not the same as a return air duct system which re-circulates air from a given building space back to the HVAC fan unit and ultimately is supplied back to the work space. Return air duct systems will not be allowed for exhaust from PDU's.

Directing PDU air exhaust into an attic or above ceiling space may only be utilized in specific conditions and is limited to attic spaces with only exposed wood, metal or concrete undersides of roof or flooring systems. The space may not under any circumstances have any existing known or assumed asbestos containing materials present regardless of their condition. The attic or above ceiling space may also not contain any spoiled fireproofing, loose insulations or un-jacketed fiberglass insulation materials which could be dislodged from the force generated by any exhaust air.

When no other choice or alternative is available and the Contractor must exhaust air from pressure differential systems into the building's interior spaces the following requirements must be met. Exhaust air must pass through two HEPA filter equipped PDU's placed in series and be dispersed or diffused within a

"mixing" chamber prior to release into the building's interior. This method offers redundancy in the cleaning of exhaust air and is commonly referred to as a "piggyback" system. The first unit in line exhausts air into a second unit through use of a sealed duct connecting the two units. This system results in any exhaust air being cleaned twice prior to release within the buildings occupied spaces.

If the "piggyback" system is considered, there are two key provisions which must be met prior to its use. The first provision is the second PDU downstream of the first unit must be capable of moving at least 25% more volume of air than the first unit. For example, if the first (upstream) unit is rated at 1,500 cubic feet of air per minute (cfm), the second (downstream) unit must be rated for at least 2,000 cfm. Both units must be capable of demonstrating these volume capacities by measurement with velocity meters or other applicable test methods. PDU's originally rated at 2,000 cfm commonly do not provide 2,000 cfm. The purpose of the second unit being capable of moving a higher volume of air than the upstream unit is to minimize the possibility of creating a positive pressure within the connection between the two units resulting in a failure of the connection and ultimately negating the effects of the downstream unit.

The second provision which must be met if the "piggyback" method of exhaust is chosen, is the downstream

unit shall have a new unused HEPA filter installed specifically for this project. This downstream unit shall be marked and identified in some fashion as the downstream unit to be used. Use of a new unused HEPA filter in the downstream unit removes any possibility of dislodging existing particles which may be present from previous asbestos, mold, or lead related work on other projects. All exhaust must ultimately be directed into a mixing chamber to reduce the speed of exhaust air prior to release into the building.

Regardless of the exhaust system utilized, the system and its components shall be inspected daily by the Contractor to ensure compliance with the requirements of this specification, remains in good repair and is otherwise not compromised in any way which could negate its designed purpose. Any deficiencies found in the system being used shall be repaired immediately and if necessary all work will cease until those repairs can be accomplished.

The work area shall have a differential air pressure of -0.03 inches' water whenever the work is being performed including removal, gross clean-up, encapsulation of surfaces, bag-out operations and worker entry and exit procedures. If pressure differential ever drops below 0.025 inches' water differential, all work, other than cleanup of waste on the floor of containment, must be halted until reason for pressure differential drop has been determined and corrected.

Only unused pre-manufactured, reinforced flexible ducts shall be used within the containment area for exhausting of filtered air. Contractor may not construct ducts using poly or other materials.

All interior of containment PDU's and flexible ducts must be wrapped in poly during all abatement activities. This poly wrap is to be removed after "finish detail" work has been completed, but prior to clearance visual.

Flexible ducts must be supported by solid surface at point of exit from containment. This may require Contractor to install plywood, or similar, structura for exhaust point.

SECTION 14. EXECUTION, WORK SCHEDULE

Part 14.1 - Execution

Contractor and Owner's agent/site representative shall investigate the work area and agree (in writing, if necessary) on the pre-abatement condition of the work area.

Contractor shall post danger signs meeting the OSHA specifications at locations and approaches to locations where airborne concentrations of asbestos may exceed ambient background levels.

When electrical supply within area of abatement poses a hazard, Contractor, in conjunction with the Owner,

shall shut down and lock out electric power to all work areas. Contractor shall provide temporary power and lighting sources, ensure safe installation (including ground faulting) of temporary power sources and equipment by complying with all applicable electrical code requirements and OSHA requirements for temporary electrical systems. Contractor shall have a licensed electrician shut down and lock out electric power, and setup temporary power and lighting sources. All cost of electricity shall be paid for by the Owner unless specified differently in the Scope of Work. Cost for set-up of temporary power is the responsibility of the abatement contractor unless specified differently in the Scope of Work.

When plumbing is required to be altered or becomes damaged, Contractor shall have a licensed plumber disconnect and cap all water as necessary within the work area. Water shall be provided by the Owner from a location near the work area, but not necessarily within the work area.

Shut down and lock out all heating, ventilating and air-conditioning-system (HVAC) components that are in, supply, or pass through the work area. Seal all intake and exhaust vents in the work area with tape and 6-mil polyethylene within the work area (interior) and on the exterior of the building. Also seal any seams in system components that pass through the work area.

Pre-clean all fixed objects in all work areas using HEPA-filtered vacuums and/or wet-cleaning techniques as appropriate and deemed necessary by the Owner's agent/site representative. Careful attention must be paid to machinery behind grills or gratings where access may be difficult but contamination significant. After pre-cleaning, enclose fixed objects in 6-mil polyethylene sheeting and seal securely in place with tape. Pre-clean all surfaces in all work areas using HEPA filtered vacuums and/or wet cleaning methods as appropriate. Do not disturb asbestos-containing materials during the pre-cleaning phase.

Unless otherwise stated in the Scope of Work or by agreement with the Owner's agent/site representative Project Manager all non-asbestos-containing materials left in the work area shall be covered by two layers of 6-mil polyethylene sheeting. If any non-asbestos containing materials become contaminated with asbestos during removal activities these materials shall be disposed of as asbestos-containing materials by the Contractor. The Owner's agent/site representative shall determine the friability of these materials prior to disposal. These materials shall be manifested appropriately.

Contractor shall seal all windows, doorways, elevator openings, corridor entrances, drains, ducts, grills, grates, diffusers, skylights and other openings between the work area and uncontaminated areas outside of the work area. These openings must be sealed with 6-mil polyethylene sheeting and tape. These protective layers shall be in addition to the two polyethylene layers on floors, ceilings and walls. These openings are referred to as critical barriers. Seal all cracks in critical barrier areas with tape, caulk, or foam prior to sealing critical barriers.

A critical barrier only, negative pressure check shall be required prior to the set-up of interior containment. Prior to the Contractor covering critical barriers with additional layers of wall, floor, or ceiling poly, the installation and integrity of critical barrier seals must be approved by the Owner's agent/site representative. Wall, floor and ceiling poly installed prior to the critical barrier negative pressure check shall be removed by the Contractor if deemed required by the Owner's agent/site representative in order to properly test critical barriers.

All items attached to asbestos-containing materials and items which cannot be removed without disturbing asbestos-containing materials shall be removed by the Contractor after establishment of containment and negative pressure. If these items are to be "saved and returned" or "reused" by the Owner, the Contractor must remove and clean them without damage. These items must be cataloged using the attached "Return Item Inventory Sheet" provided by Owner's agent/site representative

Contractor shall cover floors in the work area with polyethylene sheeting. Floor shall be covered with a minimum of two layers of 6-mil polyethylene sheeting. Plastic shall be sized to minimize seams. A distance of at least six (6) feet between seams is sufficient. DO NOT locate any seams at wall/floor joints. Floor sheeting shall extend at least twelve inches (12") up the sidewalls of the work area. Sheeting shall

be installed in a fashion so as to prevent slippage between successive layers of material. A layer of 10-mil polyethylene sheeting and/or plywood may be required by the Owner's agent/site representative to protect certain flooring materials -- carpets, hardwood floors, tiles, etc. At no time will wall or ceiling materials be permitted to be dropped onto unprotected floors. This includes areas where the floor surfaces contain asbestos.

Contractor shall cover walls in the work area with polyethylene sheeting. Walls shall be covered with a minimum of two layers of 4-mil polyethylene sheeting. Plastic shall be sized to minimize seams. Seams shall be staggered and separated by a distance of at least six feet (6'). DO NOT locate any seams at

wall/floor joints. Wall sheeting shall overlap floor sheeting by at least twelve inches (12") beyond the wall/floor joint to provide a better seal against water damage and for pressure differential maintenance. Wall sheeting shall be secured adequately to prevent it from falling away from the walls. This may require additional support/attachment when pressure differential systems are utilized.

Contractor shall cover ceilings in the work area with polyethylene sheeting. Ceilings shall be covered with a minimum of two layers of 4 mil polyethylene sheeting. Plastic shall be sized to minimize seams. Seams shall be staggered and separated by a distance of at least six feet (6'). DO NOT locate seams at wall/ceiling joints. Ceiling sheeting shall overlap wall sheeting by at least twelve inches (12") beyond the ceiling/wall joint to provide a better seal against water damage and for pressure differential maintenance. Ceiling sheeting shall be secured adequately to prevent it from falling away from the walls. This may require additional support/attachment when pressure differential systems are utilized.
The Contractor shall add clear sight windows in the containment walls at least 1' x 2' in size. The Owner's agent/site representative will approve quantity and placement of these inspection windows. Owner's agent/site representative has the right to require more clear sight windows or require placement of windows to be altered.

The equipment room shall be used for storage of equipment and tools at the end of a shift after they have been decontaminated using a HEPA-filtered vacuum and/or wet-cleaning techniques as appropriate. A walk-off pan shall be located in the work area just outside the equipment room. A six-mil. disposal bag or a drum lined with a labeled 6-mil polyethylene bag for collection of disposable clothing shall be located in this room.

Contractor shall obtain written containment visual clearance from Owner's agent/site representative prior to the start of abatement in any and all containments.

Contractor is not responsible for normal tape damage due to tape requirements for containment set-up, unless specifically mentioned in the Scope of Work. Contractor is responsible for excessive tape damage and damage from spray glue application, staples, nails, hooks, etc. installed to support containment.

Install and initiate operation of pressure differential equipment as needed to maintain differential-air pressure of -0.030 inches of water. There shall be a sufficient number of differential air pressure units to maintain a minimum of four air changes per hour. All pressure differential units shall have pre-filters at the intake of the system which must be changeable from inside the containment area. Openings made in the enclosure system to accommodate these units shall be made airtight with tape and/or caulking as needed. They shall NOT be exhausted into occupied areas of the building. Twelve inch (12") extension ducts shall be used to reach from the work area to the outside when required. Careful installation, air monitoring and daily inspections shall be done to ensure that the ducts does not release fibers into uncontaminated building areas.

All flexible ducts, protected by poly during abatement or not, pre-filters and intermediate filters shall be manifested and discarded as friable, hazardous asbestos-containing materials. A flexible tube may be used for multiple containments on the same job as long as it is moved from one containment to another in two 6 mil poly bags.

Once the containment has been constructed and reinforced as necessary with pressure differential units in operation as required, the Contractor shall test the enclosure for leakage utilizing smoke tubes. The containment shall be repaired or reconstructed as needed.

All HEPA systems used on this project shall be tested and certified onsite by an independent company prior to use. (See section 12)

Contractor shall submit logs documenting filter changes for each pressure differential unit.

Contractor shall clearly identify and maintain emergency and fire exits from the work area.

Work shall not begin each day until:

a. Enclosure systems, or modifications thereof, have been designed and built by the Contractor and each step approved by the APM. If design of containment is to be altered in any way, after it is approved by the Owner's agent/site representative, a written explanation of how and why the containment is to be altered must be submitted to the Owner's agent/site representative for approval.
b. Pressure-differential systems are functioning according to an acceptable design.
c. All pre-abatement submissions, notifications, postings and permits have been provided and are satisfactory to the Owner or its representative.
d. All equipment for abatement, clean-up and disposal is on hand.
e. All worker training (and AHERA certification) is completed and documented. f. The Contractor has installed all required clear transparent view ports made of plastic or equivalent, in the polyethylene wall so that activities can be visually monitored by the Owner's agent/site representative from outside the containment. This window shall measure approximately 1' wide by 2' high. It shall be installed at a location approved by the Owner's agent/site repreesentative. It is recognized that viewing ports are not possible in all locations.
g. All pressure-differential units and vacuums have received and passed onsite DOP testing.
h. Contractor has at least one competent person at each site in which work is taking place.
I. All necessary documents and information have been posted or are on the work site. See Section 2.

Part 14.2 - Power Outage Procedures

The following procedures shall be followed in the event of a power outage (no matter the source of the outage):

1. Immediately stop abatement activities.
2. Wet all debris and/or friable materials within the containment.
3. Depart containment area as soon as reasonable. Shower out or use Hudson sprayers to decontaminate worker if shower is inoperable due to power outage.
4. Seal containment area including:
    A. Decontamination units
    B. Makeup air ports
    C. Bag out chambers
    D. Negative pressure air exhausts or inlets (must be sealed in a fashion that will allow for exhaust of air to occur when power is restored)
    E. Re-establish APD before starting abatement

5. Contractors will be given credit against liquidated damages for all actual down time plus two hours for shut down procedures, decontamination procedures and start up, (total of 6 hours) unless power outage is attributable to abatement contractor actions.

If a generator is required in the specifications, made necessary due to extended power outages, or chosen to be used by the abatement contractor the following issues must be addressed:

1. Generator must not violate any local noise ordinances nor disturb adjacent building occupants.
2. Generator exhaust must not be allowed to contaminate the makeup air being pulled into the containment. It must, also, not be allowed to mix with HVAC air supplied to adjacent occupied buildings.

Part 14.3 - Work Schedule

Contractor shall schedule work as required to meet the needs of the project. During progress of work, it shall be the Contractor's responsibility to inform the Owner's agent/site representative 48 hours or earlier of any and all work shifts to be performed. If at least 48 hours' notice is not given, the proposed work shift may be canceled by the Owner's agent/site representative.

Contractor shall be responsible for informing the Owner's agent/site representative in writing at least 48 hours or earlier prior to the proposed addition of any off hours' work, work expected to include more than one shift per day, or extend beyond 10 hours in a shift. If 48 hours' notice is not given, work shift may be canceled by the Owner's agent/site representative. The Owner's agent/site representative reserves the right to deny any changes in the work schedule.
If the Contractor wishes to work on a Federal or State holiday, more than five days a week, or more than 9 hours a day, Contractor becomes responsible for cost of project management fees to cover extended hours. If Contractor fails to appear on-site without notifying Owner's agent/site representative at least 24 hours in advance of a scheduled work shift, the Contractor becomes responsible for all Owner's agent/site representative travel fees, on-site time fees, and other associated project management fees for that day.
At no time shall a work shift extend beyond 12 hours in a day.

SECTION 15. REMOVAL PROCEDURES

Wet all asbestos-containing material with an amended water solution using equipment capable of providing a fine spray mist, in order to reduce airborne-fiber concentrations when the material is disturbed. Saturate the material to the substrate; however, do not allow excessive water to accumulate in the work area. Keep all removed material wet enough to prevent fiber release until it can be containerized for disposal. Maintain high humidity in the work area by misting or spraying to assist in fiber settling and reduce airborne concentrations. Wetting procedures are not equally effective on all types of asbestos-containing materials but shall none-the-less be used in all cases.

Saturated asbestos-containing material (ACM) shall be removed in manageable sections. Removed material should be containerized immediately. Surrounding areas shall be periodically sprayed and maintained in a wet condition until visible material is cleaned up. Gross debris shall be cleaned up and bagged prior to end of each shift.

Material removed from building structures or components shall not be dropped or thrown to the floor. Material should be removed as intact sections or components whenever possible and carefully lowered to the floor.

Containers (6 mil poly bags or drums) shall be sealed when full. Double bagging of waste material is necessary. Bags shall not be overfilled. They should be securely sealed to prevent accidental opening and leakage by tying tops of bags in an overhand knot or by taping in gooseneck fashion. Do not seal bags with wire or cord.

Asbestos-containing waste with sharp-edged components (e.g., nails, screws, metal lath, tin sheeting) will

tear the polyethylene bags and sheeting and shall be placed into drums or burlap bags and then poly bags (at least 8 mils' thick) for disposal.

After completion of all stripping work, surfaces from which asbestos-containing materials have been removed shall be wet-brushed and sponged or cleaned by some equivalent method to remove all visible residue.

After the work area has been rendered free of visible residues (and verified clean by the APM), a thin coat of a satisfactory encapsulating agent shall be applied to lock-down non-visible fibers on all surfaces in the work area including structural members, building components and plastic sheeting on walls, floors and covering non-removable items, to seal in non-visible residue.

SECTION 16. WASTE CONTAINER PASS-OUT PROCEDURES

Asbestos-contaminated waste that has been containerized shall be transported out of the work area through the waste transfer airlock or through an approved pass-out arrangement.

Waste pass-out procedures shall utilize two teams of workers, an "inside" team and an "outside" team. The inside team, wearing appropriate protective clothing and respirators for inside the work area, shall clean the outside, including bottoms, of properly labeled containers (bags, drums, or wrapped components) using HEPA vacuums and wet-wiping techniques and transport them into the waste container pass-out airlock. Provisions for spray cleaning exterior of bags, equipment, and removable items shall be present in the waste pass-out. Waste water from this operation shall be collected and filtered as required through a 1.0-micron filter. No worker from the inside team shall further exit the work area through this airlock. The three-chamber system is utilized in the following manner. Workers inside the work area place the waste in the initial waste container, which is usually a bag. They then rinse the bag and seal it. They hand it to a worker in the dirty chamber room who inspects the bag and, if it is clean, places it in the secondary waste container. The secondary container is either another bag or a lined rigid-wall container such as a barrel or box. The worker then seals the secondary container and may attach the proper labeling. The worker places the container in the middle chamber. The worker in the clean chamber then reaches in and lifts the container into the clean chamber. The worker inspects it and if not already labeled, attaches the proper labels. The worker then passes the container to the outside worker who transports the container either to the waste transport vehicle or to a holding area. At no time shall z-flaps of transfer system chambers be taped, held or otherwise blocked open. The Contractor must not allow more than one poly airlock doorway to be open at any one time. This prevents a tunnel system and a breakdown in the isolation of the work area. Negative pressure must be maintained during all waste load-out activities.

The contract documents or the Owner's agent/site representative may in allow a one or two chamber system to be used for some projects, as long as the liability to the client, in the judgment of the Owner's agent/site representative is not increased. As with a three-chamber system, in a one or two chamber system, the Contractor may never allow more than one poly air flap doorway to be open at any one time. For example, a one chamber system would function in the following manner. Workers in the work area rinse and seal the initial waste container. They hand the initial container to a worker in the load-out chamber. That worker verifies that the container is clean and then places it into the secondary container which will be either another bag or lined ridged-wall container depending on the specifications. The load-out worker then seals the container and applies the appropriate labels. The sealed, labeled container is then passed to the outside workers who transport it to the waste transport container or holding area.

The exit from this airlock shall be secured to prevent unauthorized entry.

SECTION 17. CLEAN-UP PROCEDURE

Part 17.1 - Clean-up Procedure

Remove and containerize all visible accumulations of asbestos-containing material and asbestos-contaminated debris utilizing rubber dust pans and rubber squeegees to move material around. DO NOT use metal shovels to pick up or move accumulated waste. Special care shall be taken to minimize damage to floor sheeting.

Wet-clean all surfaces in the work area using rags, mops and sponges as appropriate. (Note: Some HEPA vacuums might not be wet-dry vacuums.) To pick up excess water and gross wet debris, a wet-dry shop vacuum with HEPA filter may be used.

Airless sprayers and water hoses shall not be used in a "power washing" fashion on any surfaces. Contractor shall remove each cleaned layer of polyethylene sheeting from walls and floors. Windows, doors, HVAC system vents and all other critical barriers shall remain sealed. The pressure differential units shall remain in continuous operation. Decontamination enclosure systems shall remain in place and be utilized.

Remove all containerized waste from the work area.

Decontaminate all tools and equipment and remove at the appropriate time in the cleaning sequence. Contractor shall clean work area and conduct pre-clearance visual. Once pre-visual has been passed by Contractor, Contractor shall allow dust to settle within containment for 24 hours, then return and re-clean by HEPA-vacuuming and/or wet-cleaning all objects and surfaces in the work area again. At this point Owner's agent/site representative will conduct the final visual. If final visual fails, Contractor must re-clean area until final visual passes. Once final visual is passed, Contractor will be instructed to encapsulate the containment area, unless encapsulation of containment has been disallowed in the Scope of Work or material specific specification.

Contractor may request a reduction in the 24 hour waiting period, if personal samples collected during the abatement work and detail clean-up work have shown fiber levels below the PEL. Reduction of waiting period must be made in writing, accompanied by personal sample results from this project. Contractor must acknowledge that reduction in waiting period may result in failed clearance air samples and that retaking and re-analyzing these air samples will be at the Contractor's expense. Reduction in waiting time will be at the discretion of the Owner's agent/site representative and client.

Part 17.2 - Visual Clearance Criteria

The Contractor shall perform a pre-final visual of the removal area and adjacent surfaces prior to requesting that the Owner's representative conduct a final visual inspection. The pre-final visual performed by the Contractor shall verify that all materials have been completely removed from the work area, and that the work area meets the requirements specified in Section 17.

Upon completion of the pre-final visual inspection by the Contractor a final visual of the containment area will be performed by the Owner's representative. The Owner's agent/site representative will determine the clearance criteria for the project. At a minimum, no three dimensional debris shall be left within the work area; all poly shall be wet wiped so that no visible dust or debris is left; the decontamination chambers shall be clean of all debris, the waste transfer area shall be clean of all debris, all equipment and supplies shall be clean of all debris. The Contractor shall not be released to encapsulate the containment until receiving written acceptance by the Owner's representative stating the removal area and the containment have met

the criteria of the Owner's representative for completeness of removal and cleanliness of the containment barriers and surfaces.

When required, clearance air sampling shall be performed following the requirements specified in Section 18 after encapsulation of the containment has taken place and a sufficient amount of time has passed to allow the encapsulant to dry. The Owner shall determine the method of analysis to be used based on the amount and type of material removed within a containment. If at a K through 12 site and the quantity of

Asbestos-Containing Material (ACM) exceeds 160 square feet or 260 linear feet, analysis of air samples must be by transmission electron microscopy (TEM) per US EPA AHERA regulations.
The Owner's agent/site representative will conduct the final visual inspection of the work area for visible residue. If any accumulation of residue is observed, it will be assumed to be asbestos and the 24 hour settling period/cleaning cycle will be repeated.

Additional cleaning cycles shall be provided by the Contractor, as necessary, at no cost to the Owner until the specified clean criteria have been met.

Owner's agent/site representative has final say on whether or not an area meets these requirements.

Following the satisfactory completion of clearance-air monitoring, remaining barriers may be removed and properly discarded as non-asbestos containing waste. If contamination exists behind these critical barriers, additional cleaning and air monitoring may be required.

Final visual will be conducted by at least one Owner's agent/site representative. Owner's agent/site representative may supply additional personnel for inspection in order both to speed the inspection and to more thoroughly inspected the containment areas.

Owner, Contractor and Owner's agent/site representative shall jointly review the work area and make a damage assessment, after clearance air samples have passed and containment has been torn down.

SECTION 18. CLEARANCE AIR MONITORING

Following the completion of clean-up operations, the Contractor shall notify the Owner's agent/site representative in writing that work areas are ready for final visual inspection. This notification is to be made only after Contractor foreman has made a visual inspection of his own.

After the Owner's agent/site representative has given a final written approval of the clean-up operations, the Contractor shall proceed to "lock-down" the containment area with an encapsulant. Exception to this is for containments that are not to be encapsulated prior to clearance air testing according to the Scope of Work (i.e. floor tile only projects).

Owner shall then arrange for an Air Monitoring Professional to sample the air in the work area for airborne fiber concentrations. Clearance-air monitoring shall proceed 24 hours after lock-down or when the area is dry, whichever is later.

Contractor may request a reduction in the 24 hour waiting period, if personal samples collected during the abatement work and detail clean-up work have shown fiber levels below the PEL. Reduction of waiting period must be made in writing, accompanied by personal sample results from this project. Contractor must acknowledge that reduction in waiting period may result in failed, or overloaded (with encapsulant) clearance air samples and that retaking and re-analyzing these air samples will be at the Contractor's expense. Reduction in waiting time will be at the discretion of the Owner's agent/site representative and the Owner.

Air samples will be taken using the "aggressive" air sampling techniques described in the AHERA regulations unless noted differently in the Scope of Work for non-AHERA sites. In the case aggressive samples cannot be collected (e.g. in a dirt floor area) this will be noted in the Owner's agent/site representative's notes.

If PCM analysis is used for clearance air samples, all clearance samples at all locations shall indicate a fiber concentration of less than or equal to 0.01 f/cc for release of the work area.

If TEM analysis is to be used for clearance air samples, then the clearance criteria shall be the same as

AHERA, unless otherwise specified in the Scope of Work.

Areas exceeding these levels shall be re-cleaned and, if appropriate, re-encapsulated at no additional cost to the owner. All areas where clearance air samples fail will be re-tested.

The Contractor shall be responsible for all subsequent air sampling costs if air samples fail to meet clearance criteria levels. This cost includes four hours of time for Owner's agent/site representative personnel to collected the air samples and the cost of laboratory analysis.

SECTION 19. MONITORING

Owner reserves the right to perform air and performance monitoring at any time.

Contractor shall provide personal air monitoring in accord with OSHA regulations. Results shall be made available to the Owner's agent/site representative within 72 hours of collection. Hard copies of these results shall be supplied to the Owner's agent/site representative within 7 days of collection. Failure to supply these sample results in specified time may cause work to be stopped until all delinquent results have been submitted. Loss of Contractor work time because of noncompliance with the provisions of this paragraph will not extend the date for work completion.

Owner's agent/site representative may take air samples prior to, during, and after the project. Work shall not be considered complete until all air sampling has been completed and satisfactory levels have been obtained. "Satisfactory levels" shall be those established by AHERA, unless more stringent requirements have been identified in any other section of this Specification. In areas where soil contamination may be present, soil samples must meet specified criteria in any other section of this Specification prior to clearance air samples collection.

Owner, or Owner's agent/site representative, shall be authorized to issue a STOP WORK order whenever Contractor's work or protective measures are not in accord with published regulations or contract specifications.

SECTION 20. DISPOSAL PROCEDURES

Part 20.1 - Disposal Procedures

Waste transport and disposal personnel must wear at least half mask HEPA-cartridge type respirators when handling intact sealed bags. If any bags are broken or if visual debris is observed, powered air respirators (HEPA-filtered) must be worn.

Disposal bags shall be of 6 mil poly, pre-printed with labels as required by CDPH, Toxic Substance Control regulations.

Disposal drums shall be metal or fiber board with locking ring tops to be used only if required and/or allowed by selected dump site.

Stick-on labels as per OSHA and Cal/EPA requirements for disposal containers shall be provided. All containers shall be labeled in accordance with Cal/EPA regulations that require a "Caution" label and a "Hazardous Waste" label with the generator's name, address, and Manifest Document number.

As the work progresses, to prevent exceeding available storage capacity on site, sealed and labeled containers of asbestos-containing waste shall be removed and transported to the prearranged disposal location.

Disposal must occur at an authorized site in accordance with regulatory requirements of NESHAP and applicable State and Local guidelines and regulations, including the California State Department of Health

Services, Toxic Substances Control Division.

Transport vehicles shall be marked with the sign prescribed by OSHA during loading and unloading to warn people of the presence of asbestos.

All dump receipts, trip tickets, waste manifests, NESHAP Waste Shipment Record (WSR) and other documentation of disposal shall be delivered to the Owner, for its records. The WSR is not required if the cubic yards of asbestos-containing waste is indicated on the Waste Manifest. The manifest should be signed by the Owner, the hauler, and the Disposal Site Operator as the responsibility for the material changes hands. If a second hauler is employed, his name, address, telephone number and signature should also appear on the form.

The WSR, if used, shall be signed by the Owner or its agent and the disposal site operator.

All manifests shall have asbestos waste identified as: "RQ, Asbestos, 9 NA2212, III". This requirement may be changed as new regulations are issued. See "Waste Disposal" requirements at end of "General Requirements".

All manifests shall be accompanied by a "Notice and Certification". A signed copy of this must be provided to the Owner or its agent.

Part 20.2 - Transportation to the Landfill

Once drums, bags and wrapped components have been removed from the work area, they shall be loaded into an enclosed (solid walls, ceiling and floor) truck or waste container, which has been lined with 6 mil poly sheeting (walls and floor).

When moving containers, utilize hand trucks, carts and proper lifting techniques to avoid back injuries. Trucks with lift gates are helpful for raising drums during truck loading.

Personnel loading asbestos-containing waste shall be protected by disposable clothing including head, body and foot protection and, at a minimum, half-face, air-purifying, dual cartridge respirators equipped with high-efficiency filters. Any debris or residue observed on containers or surfaces outside of the work area resulting from clean-up or disposal activities shall be immediately cleaned up using HEPA filtered vacuum equipment and/or wet methods as appropriate.

No waste containers shall be on site which contain other hazardous waste, or hazardous waste from any other source or job site. Waste from multiple sites of the Owner within the same waste container is acceptable; however, it must be manifested separately.

If Contractor is storing waste from various sites of one owner, all transportation vehicles shall be covered by

the same regulations as the waste container or truck being used to haul the waste to the dump. If equipment or supplies are to be left in vehicles during hauling of waste to waste container or truck, waste and equipment/supplies must be separated by a solid (wood or metal) barrier which has been sealed as a critical barrier. A poly wall barrier is not sufficient.

Waste container, truck, or storage bin must be locked at all times except when being filled.

It is the Contractor's responsibility to see that all waste containers, trucks, and storage bins arrive on site completely free from debris.

The contractor shall provide a weight receipt that identifies the net weight of the material being discarded.

Part 20.3 - Disposal at the Landfill

Upon reaching the landfill, trucks are to approach the dump location as closely as possible for unloading of

the asbestos-containing waste.

Bags, drums and components shall be inspected as they are off-loaded at the disposal site. Material in damaged containers shall be re-packed in empty drums or bags as necessary. (Local requirements may not allow the disposal of asbestos waste in drums. Check with appropriate agency and institute appropriate alternative procedures.)

Waste containers shall be placed on the ground at the disposal site, not pushed or thrown out of the trucks (weight of wet material could rupture containers).

Personnel off-loading containers at the disposal site shall wear protective equipment consisting of disposable head, body and foot protection and, at a minimum, half-face, air-purifying, dual cartridge respirators equipped with high-efficiency filters.

Following the removal of all containerized waste, the truck cargo area shall be decontaminated using HEPA vacuums and/or wet methods to meet the no visible residue criteria. Poly sheeting shall be removed and discarded, along with contaminated cleaning materials and protective clothing, in bags or drums at the disposal site.

SECTION 21. PATENTS AND PREVAILING WAGES

Part 21.1 - Patents

Contractor shall pay all royalties and license fees required for the performance of the work. Contractor shall defend suits or claims resulting from Contractor's or any Sub-contractor's infringement of patent rights and shall indemnify Owner and Owner's representative from losses on account thereof.

Part 21.2 - Prevailing Wage Requirements

The asbestos abatement contractor is fully and totally responsible at all times for compliance with payment of prevailing wage rates pursuant to provisions of the California Labor Code, for compliance with Division 2, Part 7, Chapter 1, California Labor Code, including but not limited to Section 1776; and for compliance with California Labor Code, Section 1777.5 for all apprentice able occupations.

SECTION 22. PERMITS AND FEES

If any permits are required to be issued for any of the Work to be performed by Contractor, Sub-contractor(s) or Sub-subcontractor(s) as part of the Project, it shall be the sole responsibility of the Contractor to expeditiously obtain all such permits and any costs incurred by the Contractor in obtaining such Permits shall be included within the Contract Price.

SECTION 23. SPECIFIC PROCEDURES AND REQUIREMENTS

NOTE: All Specific Procedures and Requirements listed in Section 20 shall be reviewed by the Contractor along with the Scope of Work issued for the project. If any perceived conflicts are present between the Scope of Work and these specifications or within the General Requirements specification itself, the Contractor shall ask for a written interpretation from the Owner's agent/site representative prior to submission of his bid. If conflicts in the "Scope of Work" and this specification or with the General Requirements specification itself are discovered after the start of abatement, the more stringent specification and/or requirements will be enforced. The Owner's agent/site representative shall make the determination as to what which requirements and/or specifications are more stringent.

Part 23.1 - General Repair of Damaged Thermal System Insulation (TSI)

Where TSI has been damaged, and it is feasible to repair the small nicks, cuts, and exposed ends, the following procedures shall be performed:

6. Piece of 4-6 mil poly sheeting shall be placed directly under the area to be worked to collect any fallen debris or repair compound.

7. Half-masks and disposable suits (at a minimum) shall be used during this work.

8. The area shall be restricted to those personnel involved in the work, so posting of the accesses is required. In some cases, poly shall be used to cover the access points.

9. A HEPA vacuum must be in the immediate area to pre-clean any debris observed surrounding the damaged section, or in the event of a mishap.

10. If work is performed indoors, the ventilation system shall be off in the areas worked in to prevent fiber distribution. Ventilation supply and exhaust ducts shall be covered with poly sheeting.

11. It will be necessary to remove small sections of other insulation material, such as fiberglass, if debris from the damaged pipe covering has contaminated it.

12. In some cases, HEPA vacuuming the damaged section will collect all loose, hanging, friable insulation material prior to any further repair work.

13. Very small cracks, holes, nicks, and cuts can be repaired with only a joint compound or with a single layer of wettable cloth and appropriate bridging encapsulant. Larger sections of damaged pipe covering, particularly where pipe hangers or metal channel have damaged the insulation, will require at least two layers of wettable cloth such as Hard Cast by Carlisle Industries.

14. Where the pipe covering cannot be removed completely from penetrations in the walls, floors, or ceilings, the pipe covering shall be removed at least 1" into the opening and sealed with a bridging encapsulant to grade. The Contractor may choose to fill large gaps with fiberglass insulation, prior to sealing with the encapsulant.

15. All of the Contractor's materials, including poly sheeting, tape, joint compound, etc. shall be removed at the completion of the work performed.

Part 23.2 - Glove Bag Technique Requirements

Where glove bag technique is specified for removal of Thermal System Insulation (TSI), or in those areas where the Contractor opts to use glove bags, all of the following conditions must be met:

1. The Contractor shall follow the procedures recommended by the manufacturer of the glove bags, and the specifications required by Federal OSHA and Cal/OSHA regulations.

2. All critical openings shall be sealed prior to set up of the containment.

3. At least one layer of 6 mil poly must be used to fully enclose/contain the abatement area.

4. Stationary objects in the immediate area of the room which cannot be removed from the work area must be covered with at least one layer of 4 mil poly sheeting after being pre-cleaned.

5. A minimum three stage decontamination unit with a shower shall be contiguous with the containment for areas requiring removal of more than 6 linear feet of TSI, or 10 square feet of surfacing material.

6. Negative pressure shall be established and a circular graph recording manometer shall be attached to the containment per Section 13.

7. A HEPA filtered vacuum shall be in the immediate area for use in conjunction with the bags or in case of a spill.

8. Glove bags may not be used on surfaces where temperatures exceed 150 degrees Fahrenheit.

9. Glove bags may be used only once, and may not be moved or slid for removal of a second section of TSI.

10. At least two persons shall perform Class I glove bag removal as defined by Federal and Cal/OSHA.

11. Before beginning the operation, loose and friable material adjacent to the glove bag operation shall be wrapped and sealed in two layers of 6 mil poly sheeting or otherwise rendered intact.

12. Where the system uses an attached waste bag, such bag shall be connected to a collection bag using a hose or other materials which shall withstand pressure of ACM waste and water without losing its integrity.

13. The Contractor shall apply a sufficient volume of amended water to all pipe covering scheduled for removal while it is enclosed in the glove bag.

14. A sliding valve or other device shall separate the waste bag from the hose to ensure no exposure when the waste bag is disconnected.

15. Prior to placement in the disposal bag, glove bags shall be collapsed by removing air within them using a HEPA filtered vacuum.

16. Upon detachment, the glove bag must be immediately placed into at least two 6 mil thick disposal bags. The disposal bags must be sealed using the "gooseneck" sealing technique.

17. Where pipes enter walls, floors, or ceilings which are not within the scope of the project, the pipe covering shall be removed at least 1" into the structure and the pipe covering end must be sealed with bridging encapsulant and/or wettable cloth.

18. If the Contractor chooses to use a Negative Pressure Glove Bag System, Negative Pressure Glove Box System, or Water Spray Process System in lieu of the traditional Glove bag System, the Contractor shall submit to Owner's agent/site representative detailed written procedures on those systems which will be used. In addition, air sampling data, generated by the Contractor, must be provided to Owner's agent/site representative. Owner's agent/site representative must provide prior approval to alternate techniques and approaches to those specifications detailed here.

19. The Contractor is responsible for salvage and decontamination of all pipe system supports, hangers, brackets, saddles, etc. These items shall be inventoried by the Contractor, and verified by the Owner's agent/site representative before and after abatement. The Contractor will be responsible for replacement of any items lost or damaged.

20. The Contractor shall be responsible for ensuring the piping system remains adequately supported at all times. This may be achieved by readjusting existing hanger brackets as insulation is removed, or by other approved methods, such as inserting wood blocks to replace the thickness of the removed insulation.

Part 23.3 - Mini-Cube Enclosure Requirements

1. For the purposes of these specifications, "mini-cube enclosure", enclosure", "mini-enclosure", and

"mini-cube" are all used interchangeably and mean the same. The mini-cube enclosure is required to be constructed whenever small sections of walls, ceilings, or pipe insulation are to be removed for electrical, plumbing, mechanical, etc., work. The purpose is to create an enclosed and controlled work environment while removing asbestos or accessing an attic space which is contaminated.

2. Enclosure walls and floors must be constructed of at least two layers of fire-rated 6 mil poly sheeting. No visible holes, cracks, penetrations, etc. shall be within this enclosure. The upright frame shall be adjustable in order to butt the top of the enclosure to the wall or ceiling area. A single drop layer of 6 mil poly sheeting shall be put down and removed daily at the end of the work shift. For work involving removal of TSI by glove bag technique, only one layer of 6 mil poly sheeting is required for construction of the mini-enclosure.

3. At least two chambers shall be present, separated by flapped poly sheeting doors. The first chamber upon entrance will be called the "clean" chamber, while the second chamber will be called the "dirty" chamber.

4. Since the top of the enclosure must be open in the chamber where ceiling access will take place, special care must be taken prior to moving the enclosure. If the mini-enclosure is designed to be portable, the enclosure must be sealed at the top prior to being moved to the next location. This may be achieved by temporarily sealing the top with poly and tape from the inside.

5. For access to an attic space, position the enclosure at the location to be worked. The enclosure must be butted up to the ceiling surface to form a semi-seal between the top of the enclosure and the ceiling. The enclosure can then be completely sealed to the ceiling, using tape. After a seal has been established, access into the ceiling can then proceed.

6. A HEPA vacuum shall be used to establish "negative pressure" or airflow into the enclosure. This shall be verified by using ventilation smoke tubes.

7. The following equipment and materials, at a minimum, must be present inside the mini-enclosure "dirty" chamber.

6 mil poly bag with clean rags for cleaning.

Amended water in a Hudson-like sprayer for the rags.

Empty bag for disposal of items.

Flashlights or drop light as appropriate.

Daily change of 6 mil poly sheeting drop layer.

Other tools needed to perform task.

8. The following equipment and materials, at a minimum, must be present inside of the mini-enclosure "clean" chamber.

Clean potable water in a Hudson-like sprayer which is labeled "Clean Potable Water Only". A new container must be designed for potable water only. No container used previously to hold liquids will be allowed. No open containers will be allowed.

Clean disposable shower or hand towels for drying hands, arms, and face.

6 mil poly bag for disposal of towels and other items.

Any other tools the Contractor requires, such as tape, screwdrivers, etc.

9. The outside of the poly-flapped entry to the mini-cube must be posted with OSHA required warning signs.

10. Clean disposable coveralls must be worn entering the mini-enclosure, and must be removed prior to leaving the mini-enclosure. Depending upon the work being performed, the Contractor may choose to "double suit" in disposable coveralls. All workers shall use the Clean Room and its supplies for personal hygiene prior to exiting the enclosure.

11. For work involving removal of more than 6 linear feet of TSI, or greater than 10 square feet of surfacing material (regardless of method to be used), a shower must be attached to the mini-cube enclosure and be contiguous with the work environment, and comply with all other requirements in related sections of this Specification.

12. If there is removal of greater than 3 linear feet of TSI, or greater than 3 square feet of surfacing material (regardless of the method used), the enclosure must remain in place until a final visual is passed, and clearance air samples are collected by Owner's agent/site representative. Where work involves less than these quantities, only a final visual inspection by Owner's agent/site representative will be required prior to removal of the mini-enclosure.

Part 23.4 - Roofing Abatement Requirements

General Requirements

1. Except as amended here and in Section 24, Asbestos Specification/ Procedures, all other Sections of this Specification shall be followed.

2. The work shall be coordinated and scheduled when there are favorable weather conditions, such as, performing the abatement work when the forecast is for "clear skies" and no rain for three or more consecutive days. The Contractor shall remove only that amount of roofing material which can be re-roofed or covered, and secured from the weather.

Work may be halted at the discretion of the Owner's agent/site representative if wind conditions occur which can or does cause removed roofing materials to be blown off the roof area, or beyond the designated removal area perimeter. All roofing work shall be coordinated to allow other trades to work at the same time as long as their work is located in areas where contamination cannot occur. No cutting, sanding, grinding, or removal of any type will take place until all preparations for removal have been completed and inspected by the Owner's agent/site representative. This section may be amended in other sections of this Specification for this project.

The words "clear skies" are used as a means of indicating favorable weather conditions. These two words do not mean, nor are they intended to require skies be clear and free of clouds, fog, or other meteorological conditions which are not expected or forecast to produce measurable rain. The follow up requirement of no rain for three or more consecutive days is to help clarify the favorable weather condition requirement. The last sentence concerning the amount of roofing to be removed is to further instruct and direct the Contractor not to be over optimistic and create more open roof areas than can be re-roofed, secured, or properly protected from weather in case the forecast changes unexpectedly or without warning.

3. All work hours at the site shall be determined by the Owner or as defined in other sections of this Specification. Unless otherwise stated, the buildings will be reoccupied each morning Monday through Friday.

4. All work shall be coordinated with the other trades involved on this project, with central coordination being primary between the abatement Contractor and the General Contractor for the project. However, Owner's agent/site representative must be notified of projects in advance as stated in other sections of this Specification.

5. The Contractor shall provide all necessary equipment, tools, materials, lighting, labor, etc. to perform the work. Sufficient lighting shall be provided to illuminate the entire removal and transit areas for removal of roofing material, and for the final visual inspection by the Owner's agent/site representative if the work is to be performed at night.

6. All HEPA equipment to be used on the project must be delivered to the site empty of all debris, clean, free of dust, and in full operating condition. HEPA equipment to be used inside any building must have been DOP tested within the last 90 days. This DOP certification must be verified by Owner's agent/site representative prior to its use.

7. The Contractor shall provide worker safety according to all OSHA regulations (Title 8), including use of tie-offs, harnesses, and lanyards. Particular attention shall be given to the placement and securing of accesses (ladders, etc.) to the roof.

8. All ladders used shall conform to Cal/OSHA requirements. The ladders shall extend at least three feet above the roof line, and shall be tied off to the building to prevent them from sliding.

Contractor Responsibilities

1. The Contractor shall be responsible for securing all exposed roof surfaces, including any roof penetrations against weather after roofing materials have been removed. Protection of the roof must be made with an impermeable barrier to prevent water from entering the building structure.

2. The Contractor will be responsible for all clean-up and costs associated with the decontamination of occupied spaces in the event of contamination of an occupied space.

3. The Contractor is responsible for any contamination of the attic space above the existing ceilings inside the buildings caused by their work, except as noted specifically in Section 24, Asbestos Specification/Procedures.

4. The Contractor is responsible for damage to the roofing substrate, and will be responsible for repair or replacement if damaged.

5. The Contractor is responsible for removal of all roofing layers and associated materials such as roofing nails, insulation, fiberboard, etc. down to the wood or metal substrate regardless of asbestos content, unless otherwise noted in Section 24, Asbestos Specification/ Procedures. Where it is unknown how many layers of roofing materials exist, it must be assumed that there are multiple roofing layers present. The Contractor may, upon request and approval by the Owner, collect core samples of any roof to be removed for the purpose of determining its depth and structure. If coring is conducted, it is the responsibility of the Contractor to repair to industry standards using non-asbestos materials the areas affected.

6. The Contractor is responsible for removing all roofing nails, and driving in all nails used for securing the roofing substrate after roof material has been removed. The Contractor will not be required to remove silver painted or tar coating on conduit, roof jacks, heating, ventilation, and air conditioning (HVAC) equipment, flashings, etc. which will be reused by the Owner. Where flashing is to be reused, the Contractor shall carefully remove and save the flashing in an undamaged condition, unless otherwise required by the Owner. This section may be amended in Section 24, Asbestos Specification/Procedures for this project.

7. The Contractor is responsible for removal and replacement of wood block or metal supports which may be present under conduit, gas lines, piping, HVAC units, ducts, etc. in order to perform the work. The Contractor is also responsible for temporarily installing wood blocks for any existing roof structures during the roofing removal, when it is necessary to remove existing support members to accomplish the work.
8. The Contractor is responsible for damage to all equipment and existing cables which are present on the roof. The Contractor is responsible for damage to electrical wiring, telephone lines, antenna wires, and other conduits which are present. An inspection for pre-existing conditions is the responsibility of the Contractor, but may also be conducted by Owner's agent/site representative.

9. The Contractor is responsible for obtaining all necessary permits to perform this work, including any local permits for work in the evening/night hours.

10. Standards of cleanliness for fluted metal decks located underneath asbestos-containing roofing materials. It is possible for the abatement crew to remove the asbestos-containing roofing materials without breaking through or removing the light grey insulation material beneath it. If removal of asbestos roofing materials is performed as described above, and the insulation material remains intact, Owner's agent/site representative can conduct a final visual for asbestos-containing debris. Once this inspection has been completed, and the requirement for no remaining asbestos-containing debris on the roof is met, the insulation layer is removed.

At this point, asbestos is no longer an issue, and Owner's agent/site representative will allow minor amounts of the non-asbestos debris to remain in the fluted areas of the deck. General cleaning of the flutes is conducted to a point where the amount of debris remaining is reduced to a minimal amount without having to completely clean or vacuum the flute channel.
The Owner is unaware of any potential hazard which could be caused by leaving some non-asbestos debris, and does not consider it necessary to have the flute channels detailed beyond generally clean conditions. However, if the fiberboard layer is extensively damaged during removal of the asbestos-containing materials, and asbestos-containing roofing debris cannot be distinguished from non-asbestos containing roofing materials, all flutes shall be vacuumed and cleaned as set forth in the project specifications.

Owner Responsibilities

1. The Owner is responsible for closing all windows in the building where the asbestos roofing material will be removed. This must be done prior to the asbestos abatement contractor arriving onsite for the work shift, in order to prevent delays.The Owner shall also be responsible for cutting or trimming back all trees and limbs which may impact the removal of the existing roofing materials.

General Roof Removal Instructions and Requirements

1. Removal of non-friable asbestos-containing roofing is designated as Class II work. Half-face respirators and disposable coveralls shall be used at a minimum by all workers, at all times, when within the regulated area.

2. No personnel will be allowed into the regulated area during actual removal work without proper respiratory and personal protective equipment. Work boots with hard soles are required to be worn by all abatement personnel. No athletic, street, or dress shoes are to be worn during work activities.
3. All roofing material shall be removed in an intact state to the extent feasible.
4. All roofing is to be removed wet by an amended water solution or encapsulant as necessary.

5. The abated roof area shall be HEPA vacuumed after roofing materials have been removed. Particular attention shall be directed at the flute channels of metal decks.
Pre-Abatement Preparation Requirements

1. The Contractor shall seal all air intakes associated with the HVAC units which are on or near the roof under abatement, and at adjacent HVAC units, particularly downwind from roofing removal activity. In addition, all louvers, window mounted fan systems, attic openings, etc., shall be sealed as critical barriers. The Contractor is responsible for sealing all HVAC openings as critical barriers using one layer of 6 mil poly. These critical barriers shall be installed at the beginning of each shift, and removed at the end of each shift prior to reuse by the Owner. If the building will not be reoccupied daily, the barriers may stay in place.

The perimeter of the roof where removal is to be conducted, shall be posted with barrier tape at a distance of at least 20 feet from the edge of the removal area. This barrier tape will provide a buffer zone, and assist in the restriction of non-abatement personnel.
Poly sheeting shall be placed on the ground directly below the work area or on the adjacent roof surfaces at least 10 feet. The Contractor shall secure the poly to the ground using tape, weights, or other means to secure the poly from being picked up by wind or becoming a trip hazard. The Contractor shall secure the poly to the adjacent roof surfaces with tape, etc.

Waste containers and Waste Container Preparations

1. The Contractor is responsible for inspecting all waste containers delivered to the job site for load worthiness. The Owner's agent/site representative reserves the right to refuse any waste container without any additional cost to the client, which upon examination, and in the opinion of the site representative, has a high probability of failure of doors, skids, walls, floors, or which contains other debris.

2. The Contractor shall be required to place footing materials of sufficient thickness, strength, and size under the casters, footings, and/or runners of waste container(s) to prevent damage of property surfaces. The Contractor is responsible for all damages to Owner's property caused by the delivery, placement, or removal of a waste container. Damaged property shall be repaired to equal or better condition than was present prior to the activity causing the damage. This section may be amended in Section 24, Asbestos Specification/Procedures for this project.

3. Unless the roofing material is carried or passed to the ground by hand, it shall be lowered to the ground via covered, dust-tight chute, crane, or hoist. All waste shall be sufficiently wetted with amended water to prevent fiber release. If fiber release cannot be prevented, then the chute and bin must be within a negative pressure enclosure. In no case shall roofing materials be dropped or thrown into bins or waste containers from the roof.

Posting and Label Requirements for:

Regulated Area Entry Points and Waste Container Perimeters

Access to regulated areas shall be posted as outlined by CalOSHA Title 8, 1529 (k)(7)(B) 1 and 2 with warning signs. Perimeters of waste container(s) shall also be posted as outlined by CalOSHA Title 8, 1529 (k)(7)(B) 1 and 2 with barrier tape bearing the following information:

DANGER
ASBESTOS
CANCER AND LUNG DISEASE HAZARD
AUTHORIZED PERSONNEL ONLY
RESPIRATORS AND PROTECTIVE CLOTHING ARE
REQUIRED IN THIS AREA

These postings are required to warn non-abatement personnel of the restricted access, and potential hazard which exists in the vicinity of the regulated areas and waste container(s).

Building Perimeter at Ground Level

Building perimeters shall be posted with barrier tape bearing one of the following descriptions:

CAUTION in black letters on a solid yellow background.
DANGER in black letters on a solid red background.
DANGER ASBESTOS HAZARD in black letters on a solid red background. **Waste Material Containers**

Waste material containers, including the "burrito wrapped" material, shall have warning labels affixed in accordance with CalOSHA Title 8, 1529 (k)(8) (A-D).

DANGER
CONTAINS ASBESTOS FIBERS
AVOID CREATING DUST
CANCER AND LUNG DISEASE HAZARD

Waste Disposal and Documentation Requirements

1. Roofing waste may be disposed as non-hazardous asbestos waste, in a landfill permitted to accept non-friable, non-hazardous asbestos roofing material. If the asbestos roofing material is currently friable, or becomes friable during its removal, it shall be disposed of in a landfill permitted to accept friable asbestos waste.

It is acceptable to dispose of bagged or sealed roofing waste into open topped waste containers lined with a single layer of 10 mil poly sheeting. The Contractor shall completely enclose all roofing waste material commonly known as "burrito wrap" in the waste container using 10 mil poly sheeting. Upon being lowered, unwrapped material shall be transferred to a closed receptacle in such a manner as to preclude the dispersion of dust. In addition to the 10 mil poly sheeting, the top of the waste container shall be completely enclosed with a tarp which is secured to the vehicle for transport or storage on-site if left overnight. The type of material for the tarp shall meet all requirements for transport of hazardous materials.

2. The Contractor is required to provide to Owner's agent/site representative a copy of the "trip tickets" indicating the actual weight of waste material.

Part 23.5 - Vinyl Floor Tile (VFT) & Associated Adhesive Abatement Requirements

General Requirements

For the purposes of this project any direction to remove asbestos-containing or assumed asbestos-containing VFT shall include the full removal by the abatement contractor of the adjacent base cove, as well as, the adhesive/mastic used to secure the VFT and/base cove regardless of its asbestos content. Any mastic which has not been tested for asbestos content must be assumed to contain asbestos and removed by the abatement contractor prior to the performance of a final visual by the Owner's agent/site representative, and final air testing of the containment.

Removal of more than 100 square feet of contiguous asbestos-containing VFT shall require a full enclosure/containment be constructed prior to removal. Any full enclosure/containment constructed for the purposes of removing asbestos-containing VFT, and/or the adhesive/mastic used to secure the VFT and/base cove, shall include critical barriers, a temporary poly ceiling fully connected to poly walls, a sufficient number of DOP tested negative air units to attain a level of at least -0.03" of negative air pressure within the containment, a circular recording manometer, and at a minimum, a three-stage decontamination unit with an operational shower and water filtration system. The filtration system must have at least a

5.0-micron particle size collection capability. Documentation of this capability shall be provided to Owner's agent/site representative.

Whenever and wherever possible, the Contractor shall enclose multiple rooms within a building or wing into a single containment. Where rooms are joined by a common interior hallway or have a common exterior walkway, multiple spaces shall be joined together creating one containment using poly enclosures. Where multiple rooms in a building do not have a common interior hallway, multiple rooms shall be joined using a common work chamber built by the Contractor. The common work chamber shall be constructed of wood studs and plywood sheeting for security purposes, and shall be part of the decontamination chamber. Decontamination units and joined "common areas" outside of a building shall have lockable doors or gates created with temporary fencing for security during off-hours.

Where appropriate floor tile adhesive/mastic may be removed either by solvent or wet buffing with a solvent. **Bead blasting of materials will only be allowed with approval of Owner. Contractor must declare use of bead blasting to Owner/Owner's Representative prior to use of this method.** If a solvent is used, the negative air unit exhaust shall be directed down wind of make-up air vents a sufficient distance to preclude the re-entrainment of vapors back into the building. Any solvents used for removing adhesive/mastic shall be non-toxic, low odor, non-flammable, and compatible with the new flooring adhesive/mastic.

A material safety data sheet for the solvent(s) proposed for use shall be provided in the pre-construction submittal package, all solvent(s) must be approved by the Owner's agent/site representative prior to their use.

Except as amended here and in the "Scope of Work" Section, all other Sections of this exhibit shall be followed. No removal of VFT, VFT adhesive/mastic, carpets over VFT, or base cove with "assumed" or known asbestos-containing adhesive shall be performed prior to the approval of the Owner's agent/site representative.

Contractor Responsibilities

3. The Contractor shall provide all necessary notifications, equipment, tools, materials, lighting, labor, etc. to perform the work. Notification as appropriate to OSHA, EPA, or the delegated Air Quality Management District is the responsibility of the Contractor.

4. All HEPA equipment to be used on the project must be delivered to the site empty of any debris, clean, free of dust, and in full operating condition. HEPA equipment must be DOP tested at the beginning of the set-up phase and prior to installation into the containment or use on the project. Any equipment removed from the site for more than 10 working days must be DOP tested again prior to re-use on the project.

5. DOP certification testing shall be observed and witnessed by an Owner's agent/site representative. Copies of DOP test results and certification must be submitted to Owner's agent/site representative within 24 hours of the testing being performed.

6. All poly sheeting to be used for the construction of full enclosures/containments must be fire retardant. MSDS information reflecting this requirement must be submitted prior to use.

7. All personnel used by the Contractor to conduct removal or handling of asbestos-containing waste materials must possess a current accreditation certificate as a worker or contractor/supervisor as described in 40 CFR Part 763, Appendix C to subpart E, Asbestos Model Accreditation Plan.

8. The Contractor shall be responsible for all clean-up and costs associated with the decontamination of occupied spaces adjacent to any containment where removal of asbestos-containing material is conducted. The Contractor shall also be responsible for damage to building finishes and costs associated

with removal of tape glue, staining of wall finishes, or destruction of wall surface integrity. It is the responsibility of the Contractor to identify with the General Contractor all aspects of the project requirements pertaining to these types of damages.

Owner Responsibilities

1. The Owner shall provide the Contractor with access to the building during scheduled work hours through their representative. This representative is expected to be the General Contractor in charge of the site. The Owner shall also be responsible for arming and disarming alarm systems on buildings where work will be performed.

2. The Owner shall also provide the Contractor access to water and electrical hook-ups. However, the Contractor is responsible for all connections, electrical cords, GFCI's, water hoses, and hose bibs necessary for attachment. GFCI's are required to be used by the Contractor on all electrical circuits in use.

General VFT & Adhesive/Mastic Removal Instructions and Requirements

1. For the purposes of this project, removal of VFT and associated adhesive/mastic by any method shall be performed by personnel who are properly trained and accredited to perform Class II Work in public buildings, and are currently approved to conduct work on the project.

2. No personnal are allowed into the containmant area during actual removal work without propar respiratory and personal protective equipment. At a minimum this shall include half-face negative pressure respirators, full body coveralls, rubber boots, and gloves. During removal of adhesive/mastic with solvent or other organic based liquid, combination respiratory cartridges (organic vapor/HEPA) shall be worn, by workers to protect against asbestos and the solvent. Rubber gloves shall also be worn to protect workers skin from the solvent material. **No street clothes or shoes shall be worn inside containment during the removal process.**

3. All doors, windows, and penetrations into the room(s) shall be sealed with poly sheeting. All ventilation systems shall be locked-out and sealed with critical barriers of either poly sheeting or plywood

sheeting. **No spray glue may be used on any Owner property or building surface.**

4. Full enclosure of the walls and ceiling with poly sheeting will be required, no matter what method of removal is used. Support of ceiling poly will be at the discretion of the Contractor. Ceiling may be constructed of one layer of 4 mil poly sheeting. Walls shall be constructed of one layer of 6 mil poly, and include a splash guard. The splash guard shall be a minimum of 4 feet in height from the base of the wall upward.

5. Based on the size of the enclosure/containment, a three stage decontamination unit shall be put into place and be fully operable. The clean room of any three stage decontamination unit must be at least 5' in width, 8' in length, and 8' in height.

6. Sufficient negative air units shall be installed which will provide a minimum of four air changes per hour and -0.03" air pressure differential. A manometer with an accurate circular, or equivalent recording chart must be installed and operational. The manometer chart(s) shall reflect the location, times, and dates of all measurements recorded. Once these requirements have been met and the negative pressure has been established, the Contractor shall request a pre-start visual inspection from Owner's agent/site representative.

7. When the Contractor has passed the pre-start visual inspection, removal of base cove/boards may be conducted. Base cove adhesive shall be removed completely on hard surfaced walls where damage to the substrate will not occur, or only to a point of smoothing out high spots on walls which will become damaged due to the work to be performed. Full removal is not expected unless the Contractor is notified in

writing on these types of soft substrate surfaces.

8. Sufficiently wet VFT with amended water prior to and during the removal phase of work, and place into waste containers for disposal. Acceptable methods of containing VFT waste materials include placing VFT into clear properly labeled 6 mil poly bag and deposit this bag into a lined fiberboard drum. The drum shall be sealed when filled and placed into a waste container for disposal.

9 Method of removal pertaining to asbestos-containing adhesive/mastic shall be at the discretion of the Contractor, except methods which are noted in this Exhibit that are prohibited. Hand scraping, solvents, and wet buffing with solvents are acceptable methods. If the Contractor chooses to use solvents, exhaust of negative air units shall be directed downwind as much as possible, or a sufficient length of exhaust hose will be required to prevent re-entrainment of the vapors.

10. Any solvents used for removing adhesive/mastic shall be non-toxic, low odor, and non-flammable. A MSDS for the solvent shall be provided and subject to approval by the Owner's agent/site representative prior to use.

11. Upon completing the removal of all floor tiles and adhesive/mastic, the Contractor shall remove the splash guard from the containment walls, and conduct wet wiping on all surfaces within the containment/enclosure.

12. If a solvent was used to remove any VFT adhesive/mastic, the Contractor shall wash the floors thoroughly using a solution of trisodium phosphate (TSP), or equivalent, and water. Sufficient water shall be used for final rinsing of the floor for a clean finish.

13. It is the sole responsibility of the Contractor to reduce concentrations of any solvents used to a level which will allow new adhesive/mastic to be applied. Owner's agent/site representative will not test the floor for PH levels, and will not attest that the solvents used have been reduced in any way.

Final Visual Inspection

1. Upon the completion of all activities listed above, the asbestos contractor shall provide their own visual inspection prior to Owner's agent/site representative, and shall be present during the inspection by Owner's agent/site representative to remove/clean additional surfaces as needed, prior to encapsulation.

2. The final visual inspection will include an evaluation of all surfaces within the containment area, with emphasis placed on the completeness of materials removed from the floor area. Any three dimensional debris identified by the Owner's agent/site representative, which can be seen using a flashlight placed on the floor and directed across the floor, shall be removed as directed with the use of a HEPA vacuum and other tools as necessary to remove the material. The Contractor shall thoroughly clean all equipment inside the containment, including all parts of the negative air units, and new pre-filters shall be installed into all negative air units.

Final Lockdown-Encapsulation

1. The asbestos contractor may encapsulate the entire containment area upon completion of the final visual inspection by the Owner's agent/site representative, and acceptance of the work as complete.

Clearance Criteria

a. All clearance air samples will be analyzed by transmission electron microscopy (TEM), and performed by a NIST/NVLAP accredited laboratory. The clearance criteria for releasing the Contractor is the AHERA Standard, with the average of all air samples less than 70 asbestos structures per square millimeter. Aggressive air sampling will be used, which includes using a leaf blower in conjunction with fans to dislodge any remaining dust within the containment.

Disposal Requirements

1. All vinyl floor tile waste shall be disposed as hazardous asbestos waste and will require a Uniform Hazardous Waste Manifest. Package all solvent/mastic waste created during the project in sufficient absorbent to eliminate all free liquids, and place in a D.O.T. 7A Type A approved steel drum (49 CFR 178.350). Label the drum as required, and transport to an approved Class 1 landfill with a separate Uniform Hazardous Waste Manifest and Waste Profile Documentation.
2. The Contractor **SHALL NOT** sign any Hazardous Waste Manifests for the Owner. It shall be the responsibility of the Contractor to notify the Owner's agent/site representative and coordinate having any manifest properly signed by an Owner representative.

Part 23.6 - Carpet Removal over Vinyl Floor Tile (VFT)/Tile Adhesive Requirements

General Requirements

The following requirements are for use when the only removal to be performed is of carpet applied over existing VFT or bare VFT mastic. If the intended removal includes the underlying materials and/or any associated base cove refer to and follow the requirements as set forth in Part 23.5 Vinyl Floor Tile (VFT) and Associated Adhesive Abatement Requirements.

For the purposes of this project any direction to remove carpet from over known or assumed asbestos containing VFT or bare VFT mastic where the carpet is found to be directly adhered to those surfaces by carpet glues or carpet mastic the following requirements shall apply. These requirements shall be enforced regardless of the amount of floor tile/mastic expected to be impacted by the removal process.

9. The Contractor shall provide all necessary notifications, equipment, tools, materials, lighting, labor, etc. to perform the work. Notification as appropriate to OSHA, EPA, or the delegated Air Quality Management District is the responsibility of the Contractor.

10. All HEPA equipment to be used on the project must be delivered to the site empty of any debris, clean, free of dust, and in full operating condition. HEPA equipment must be DOP tested at the beginning of the set-up phase and prior to installation into the containment or use on the project. Any equipment removed from the site for more than 10 working days must be DOP tested again prior to re-use on the project.

11. DOP certification testing shall be observed and witnessed by an Owner's agent/site representative. Copies of DOP test results and certification must be submitted to Owner's agent/site representative within 24 hours of the testing being performed.
12. All poly sheeting to be used for the construction of enclosures/containments must be a fire rated material. MSDS information reflecting this requirement must be submitted prior to use.

13. All personnel used by the Contractor to conduct removal of carpets or handling of asbestos-containing waste materials must possess a current accreditation certificate as an asbestos worker or contractor/supervisor as described in 40 CFR Part 763, Appendix C to subpart E, Asbestos Model Accreditation Plan.

14. The Contractor shall be responsible for all clean-up and costs associated with the decontamination of occupied spaces adjacent to any containment where removal of ACM is conducted. The Contractor shall also be responsible for damage to building finishes and costs associated with removal of tape glue, staining of wall finishes, or destruction of wall surface integrity. It is the responsibility of the Contractor to identify with the General Contractor all aspects of the project requirements pertaining to these types of damages.
15. Whenever vinyl floor tiles are to be removed, the base cove shall also be removed as part of the project. When the Contractor has passed the pre-start visual inspection, removal of base coveboards may be conducted. Base cove adhesive shall be removed completely on hard surfaced walls where

damage to the substrate will not occur, or only to a point of smoothing out high spots on walls which will become damaged due to the work to be performed. Full removal is not expected unless the Contractor is notified in writing on these types of soft substrate surfaces. To minimize damage to the existing paint above the base cove, the contractor shall use a utility knife to cut score the paint at the intersection of the base cove. This will allow removal of the base cove with minimal damage to the paint layer.

Owner Responsibilities

1. The Owner shall provide the Contractor with access to the building during scheduled work hours through their representative. This representative is expected to be the General Contractor in charge of the site. The Owner representative shall also be responsible for arming and disarming alarm systems on buildings where work will be performed.

2. The Owner shall also provide the Contractor access to water and electrical hook-ups. However, the Contractor is responsible for all connections, electrical cords, GFCI's, water hoses, and hose bibs necessary for attachment. GFCI's are required to be used by the Contractor on all electrical circuits in use.

General Carpet Removal Instructions and Requirements

1. Carpet removal shall be performed by personnel who are properly trained and accredited to

perform Cal/OSHA Class II Work in public buildings, and are currently approved to conduct work on the project.

2. No personnel are allowed into the containment area during actual removal work without proper respiratory and personal protective equipment. At a minimum this shall include half-face negative pressure respirators with P-100 (HEPA) cartridges and full body coveralls.

3. All ventilation systems shall be locked-out and sealed with critical barriers of poly sheeting. Other penetrations such as doors, vents, etc. must also be sealed with either tape or poly sheeting as appropriate to secure the work area. A single stage cubicle unit of appropriate size for the work to be performed shall be placed on the entrance to the room. At a minimum this unit must be 3' X 3' X 6' in height. **No spray glue may be used on any Owner property or building surface.**

4. A remote clean-up and decontamination unit shall be put into place in a location considered to be central to the work being performed. This decontamination unit shall be equipped with a full shower unit, overflow pan, filtration unit, soap, warm and cold water, towels, etc. as required in other sections of this specifications. Decontamination procedures will be based on the actual amount of asbestos-containing materials impacted during the carpet removal. As a guide, if more than 100 square feet of VFT are impacted during carpet removal, the personnel performing the work shall shower at the end of each work period. If less than 100 square feet of VFT or VFT mastic are impacted during the process modified worker decontamination practices may be used.

5. A sufficient number of pressure differential units shall be installed which will provide a negative air flow and minimum of 4 air changes per hour. A manometer will not be required. Once these requirements have been met and the enclosure area has been established, the Contractor shall request a pre-start visual inspection from Owner's agent/site representative.

6. When the Contractor has passed the pre-start visual inspection, removal of carpet may be conducted.

7. VFT adhered to the surface of the existing substrate will be removed from the carpet utilizing hand methods and hand tools as needed. These tiles shall be placed into waste containers for disposal. If all VFT has been removed from the carpet the carpet may be disposed as regular waste with no restrictions. However, the carpet may not be salvaged without written authorization from the Owner.

8. Any carpet removed from bare VFT mastic and the mastic remains adhered to the carpet will

require the carpet be wrapped in two layers of polyethylene sheeting properly labeled to meet Cal/OSHA requirements and disposed as a non-hazardous asbestos containing waste in an appropriate landfill permitted to accept such waste. **Final Visual Inspection**

1. Regardless of the amount of VFT or VFT mastic impacted, upon the completion of all activities listed above, the asbestos contractor shall provide their own visual inspection prior to Owner's agent/site representative, and shall be present during the inspection by Owner's agent/site representative to remove/clean additional surfaces as needed.

2. The final visual inspection will include an evaluation of all surfaces within the containment area, with emphasis placed on the cleanliness of the work area. All surfaces, fixtures, and cabinetry exposed to the work shall be wet wiped and found to be free of existing dust and possible debris generated during the carpet removal process. Any loose or broken tiles and tile debris must be removed by the contractor prior to acceptance of the work area as complete.

3. Lockdown of the removal area will not be required.

Clearance Criteria

1. Owner's representative will determine if clearance air samples will be required based on actual impact of VFT or VFT mastic determined by the final visual inspection. If clearance air monitoring is performed, all samples will be analyzed by transmission electron microscopy (TEM), and performed by a NIST/NVLAP accredited laboratory. The clearance criteria for releasing the Contractor will be the AHERA Standard, with the average of all air samples less than 70 asbestos structures per square millimeter. Aggressive air sampling will be used, which includes using a leaf blower in conjunction with fans to dislodge any remaining dust within the containment.

Disposal Requirements

1. All vinyl floor tile waste shall be disposed as hazardous asbestos waste and will require a Uniform Hazardous Waste Manifest. The Contractor **SHALL NOT** sign any Hazardous Waste Manifests for the Owner. It shall be the responsibility of the Contractor to notify the Owner's agent/site representative and coordinate having any manifest properly signed by an Owner representative.

Part 23.7 - Boiler Unit Removal Requirements

Regardless of boiler size or method of removal, the entire Boiler Room shall be wet wiped and cleaned of all visible dust, dirt, etc. prior to final visual inspection and clearance air monitoring to be performed by the Owner's Representative. If the boiler unit is to be demolished in place full enclosure shall be required. This will include poly barriers on floors, walls, and ceilings as appropriate in addition to all other requirements set forth in this document which constitutes a full enclosure.

Removal of the unit whole will still require at a minimum the following:

1. All critical openings shall be sealed with at least one layer of six mils thick poly sheeting.
2. Negative pressure shall be established and a circular graph recording manometer shall be attached to the containment per Section 13.

3. A three stage decontamination unit with an operable shower shall be attached to the entrance of the containment.
4. HEPA-filtered vacuums and wet wiping techniques shall be used for detail cleaning of all surfaces.

5. Before beginning the operation, repairs shall be performed on any damaged thermal system insulation in the room which is not scheduled for removal or replacement during the boiler removal operation.

Part 23.8 - Sheetrock and Joint Compound Abatement Requirements

General Requirements

For the purposes of this project any direction to remove sheetrock and joint compound wall and ceiling system materials known to contain <1% asbestos as a composite material and verified by the point count method shall include the full removal by the abatement contractor of all nails, screws, or other fastening units which have visible sheetrock and/or joint compound remaining, as well as, all dust, debris, and waste generated by the removal work.

Removal of more than 100 square feet of contiguous asbestos-containing sheetrock and joint compound wall and/or ceiling systems shall require a full enclosure/containment be constructed prior to removal. Any

full enclosure/containment constructed for the purposes of removing asbestos-containing sheetrock and joint compound wall and/or ceiling system materials, shall include critical barriers, a temporary poly ceiling fully connected to poly walls (as appropriate for surfaces not being removed), a sufficient number of DOP tested negative air units to attain a level of at least -0.03" of negative air pressure within the containment, a circular recording manometer, and at a minimum, a three-stage decontamination unit with an operational shower and water filtration system. The clean room of any three stage decontamination unit must be at least 5' in width, 8' in length, and 8' in height. The filtration system must have at least a 1.0-micron particle size collection capability. Documentation of this capability shall be provided to Owner's agent/site representative.

Removal of less than 100 square feet of asbestos containing sheetrock and joint compound wall and/or ceiling system materials shall require a full enclosure/containment be constructed prior to removal. However, the use of a two stage decontamination unit will not be required and negative pressure requirements may be reduced to verification of negative air flow. All other containment requirements apply.

Whenever and wherever possible, the Contractor shall enclose multiple rooms within a building or wing into a single containment. Where rooms are joined by a common interior hallway or have a common exterior walkway, multiple spaces shall be joined together creating one containment using poly enclosures. Where multiple rooms in a building do not have a common interior hallway, multiple rooms shall be joined using a common work chamber built by the Contractor. The common work chamber shall be constructed of wood studs and plywood sheeting for security purposes, and shall be part of the decontamination chamber. Decontamination units and joined "common areas" outside of a building shall have lockable doors or gates created with temporary fencing for security during off-hours.

Except as amended here and in the "Scope of Work" Section, all other Sections of this exhibit shall be followed. No removal of sheetrock and joint compound wall and/or ceiling system materials shall be performed prior to the approval of the Owner's agent/site representative.

Contractor Responsibilities

1. Except as amended here and in Section 24, Asbestos Specification/Procedures, all other Sections of this Specification shall be followed.

2. The Contractor shall provide all necessary notifications, equipment, tools, materials, lighting, labor, etc. to perform the work. Notification as appropriate to OSHA, EPA, or the delegated Air Quality Management District is the responsibility of the Contractor.

3. All HEPA equipment to be used on the project must be delivered to the site empty of all debris, clean, free of dust, and in full operating condition. HEPA equipment to be used inside any building must have been DOP tested within the last 90 days. This DOP certification must be verified by Owner's

agent/site representative prior to its use.

4. DOP certification testing shall be observed and witnessed by an Owner's agent/site representative. Copies of DOP test results and certification must be submitted to Owner's agent/site representative within 24 hours of the testing being performed.

5. All poly sheeting to be used for the construction of enclosures/containments must be fire retardant. MSDS information reflecting this requirement must be submitted prior to use.

6. All personnel used by the Contractor to conduct removal or handling of asbestos-containing waste materials must possess a current accreditation certificate as a worker or contractor/supervisor as described in 40 CFR Part 763, Appendix C to subpart E, Asbestos Model Accreditation Plan.

7. The Contractor shall be responsible for all clean-up and costs associated with the decontamination of occupied spaces adjacent to any containment where removal of asbestos-containing material is conducted. The Contractor shall also be responsible for damage to building finishes and costs associated with removal of tape glue, staining of wall finishes, or destruction of wall surface integrity. It is the responsibility of the Contractor to identify with the General Contractor all aspects of the project requirements pertaining to these types of damages.

Owner Responsibilities

1. The Owner shall provide the Contractor with access to the building during scheduled work hours through their representative. This representative is expected to be the General Contractor in charge of the site. The Owner shall also be responsible for arming and disarming alarm systems on buildings where work will be performed.

2. The Owner shall also provide the Contractor access to water and electrical hook-ups. However, the Contractor is responsible for all connections, electrical cords, GFCI's, water hoses, and hose bibs necessary for attachment. GFCI's are required to be used by the Contractor on all electrical circuits in use.

General Sheetrock and Joint Compound Wall and Ceiling Systems Removal Instructions and Requirements

1. For the purposes of this project, removal of sheetrock and joint compound wall and ceiling systems by any method shall be performed by personnel who are properly trained and accredited to perform Class II Work in public buildings, and are currently approved to conduct work on the project.

2. No personnel are allowed into the containment area during actual removal work without proper respiratory and personal protective equipment. At a minimum this shall include half-face negative pressure respirators, full body coveralls, rubber boots, and gloves. **No street clothes or shoes shall be worn inside containment during the removal process**.

3. All doors, windows, and penetrations into the room(s) shall be sealed with poly sheeting. All ventilation systems shall be locked-out and sealed with critical barriers of either poly sheeting or plywood sheeting.

4. Full enclosure of the walls and ceiling with poly sheeting (as applicable) will be required, no matter what method of removal is used. Support of ceiling poly will be at the discretion of the Contractor. Ceiling may be constructed of one layer of 4 mil poly sheeting. Walls shall be constructed of one layer of 6 mil poly.

5. Based on the size of the enclosure/containment, a three stage decontamination unit shall be put into place and be fully operable. The clean room of any three stage decontamination unit must be at least 5' in width, 8' in length, and 8' in height.

6. Sufficient negative air units shall be installed which will provide a minimum of 4 air changes per hour and -0.03" air pressure differential. A manometer with an accurate circular, or equivalent recording chart must be installed and operational. The manometer chart(s) shall reflect the location, times, and dates of all measurements recorded. Once these requirements have been met and the negative pressure has been established, the Contractor shall request a pre-start visual inspection from Owner's agent/site representative.

7. When the Contractor has passed the pre-start visual inspection, removal of sheetrock and joint compound wall and ceiling systems may be conducted.

8. Sufficiently wet sheetrock and joint compound wall and ceiling systems to be removed with amended water prior to and during the removal phase of work, and place into waste containers for disposal. Acceptable methods of containing sheetrock and joint compound wall and ceiling system waste materials include placing waste into clear 6 mil poly bag and seal bag with appropriate amount of tape. This bag shall be cleaned of all visible dust and deposited into a second clear 6 mil poly bag and sealed with an appropriate amount of tape using the "goose neck" method. This second bag must then be labeled with the appropriate Cal/OSHA asbestos warning label.

9. Upon completing the removal of all sheetrock and joint compound wall and ceiling systems, the Contractor shall conduct wet wiping on all remaining surfaces within the containment/enclosure.

Final Visual Inspection

1. Upon the completion of all activities listed above, the asbestos contractor shall provide their own visual inspection prior to Owner's agent/site representative, and shall be present during the inspection by Owner's agent/site representative to remove/clean additional surfaces as needed, prior to encapsulation.

2. The final visual inspection will include an evaluation of all surfaces within the containment area, with emphasis placed on the completeness of materials removed. Any three dimensional debris identified by the Owner's agent/site representative, shall be removed as directed with the use of a HEPA vacuum and other tools as necessary to remove the material. The Contractor shall thoroughly clean all equipment inside the containment, including all parts of the negative air units, and new pre-filters shall be installed into all negative air units.

Final Lockdown-Encapsulation

1. The asbestos contractor may encapsulate the entire containment area upon completion of the final visual inspection by the Owner's agent/site representative, and acceptance of the work as complete.

Clearance Criteria

a. All clearance air samples will be analyzed by transmission electron microscopy (TEM), and performed by a NIST/NVLAP accredited laboratory. The clearance criteria for releasing the Contractor is the AHERA Standard, with the average of all air samples less than 70 asbestos structures per square millimeter. Aggressive air sampling will be used, which includes using a leaf blower in conjunction with fans to dislodge any remaining dust within the containment.

Disposal Requirements

1. All sheetrock and joint compound wall and ceiling system waste may be disposed as non-hazardous asbestos waste, in a landfill permitted to accept non-friable, non-hazardous asbestos containing material.

2. Waste material containers, including "burrito wrapped" material, shall have warning labels affixed.

Contractor may either use the Cal/OSHA Title 8, 1529 (k)(8) (A-D) warning:

DANGER
CONTAINS ASBESTOS FIBERS
AVOID CREATING DUST
CANCER AND LUNG DISEASE HAZARD

or

CAUTION
ASBESTOS. HAZARDOUS.
DO NOT DISTURB
WITHOUT PROPER
TRAINING AND EQUIPMENT

3. All non-hazardous asbestos containing waste shall be tracked utilizing some form of system which at a minimum includes: date, document number, generator name and mailing address, description of the waste, waste generating site address, contractor company name and address, special handling instructions, transporter company name, as well as name and address of facility accepting the waste.

Part 23.9 - Impact to and Removal of Transite Pipe, Shingle, or Sheeting Materials

Where transite pipe, shingles, or sheeting is to be impacted or removed the following procedures shall be performed:

3. All requirements of Cal/OSHA Section 1529 and US EPA AHERA regulations apply, and shall be followed, as well as, other applicable Federal, State, and local regulations as they pertain to training, work practices, air monitoring, waste disposal, etc.

4. Personal air monitoring shall be performed in accordance with Cal/OSHA Section 1529

5. Establishment of a work area restricting access to those personnel involved in the work, and posting of the work area is required.

6. An appropriately sized drop cloth of 6-10 mil poly sheeting sufficient in size to contain any debris generated during the removal shall be placed directly under the area to be worked to collect any fallen debris generated during the work.

7. Half-masks and disposable suits (at a minimum) shall be used during this work.

8. A HEPA vacuum must be in the immediate area ready for use.

9. Where the pipe must be cut the contractor may use any method applicable to performing the work. Any use of hand or mechanical saws, or other method which will produce dust and will require the use of the HEPA vacuum and engineering controls which will collect any and all dust generated during the sawing process.

10. The Contractor shall apply a sufficient amount of amended water to all pipe surfaces to be impacted during the work to keep them adequately wet.

11. All of the Contractor's materials, including poly sheeting, tools, etc. shall be properly decontaminated of visible dust and pipe debris utilizing wet cleaning methods and HEPA vacuuming prior to being removed at the completion of the work performed. Disposable materials must be properly disposed.

12. Transite waste generated may be disposed as non-hazardous asbestos waste, in a landfill permitted to accept non-friable, non-hazardous asbestos material. If the transite material is currently

friable, or becomes friable during its removal, it shall be disposed of in a landfill permitted to accept friable asbestos waste. It is acceptable to dispose of non-friable transite waste after placing it into two 6 mil thick polyethylene bags properly sealed and marked to meet current OSHA requirements.

13. The Contractor is required to provide to Owner's Agent a copy of the "trip ticket" indicating the actual weight of waste material and the landfill accepting the waste.

Part 23.10- Demolition with Selected Asbestos Containing Materials Left in Place

Under some circumstances, asbestos-containing materials may remain in or on a building during the building's demolition. This section describes the work practices and requirements for the demolition of a building with asbestos-containing materials remaining in place in or on the structure.

All friable, Category II non-friable materials, and all Category I non-friable materials that are expected to become friable during the demolition must be removed prior to the start of the demolition process. For example, surfacing materials, pipe wrap insulation, vinyl sheet flooring and associated backings, vinyl floor tiles and asbestos cement products must be removed from a building prior to its demolition. Should there be any question as to whether or not a material may remain in or on the building during the demolition, the Contractor shall ask for an opinion in writing from the Owner's agent/site representative. The determination of whether or not a material may remain in a building during the demolition is left solely to the determination of the Owner's agent/site representative.

The only asbestos-containing materials that may remain in or on a building during the building demolition include non-friable materials that the local Air Quality Management District or US EPA has determined may remain in or on the building during the demolition. Approval of this method is determined by the US EPA with the California Air Resources Board having jurisdiction in this county. In general, this will be limited to Category I non-friable materials such as roofing, rubber cove base and associated adhesives, paint, mastics, and other adhesives. In order to be considered for being left in or on the building during demolition, there must be a reasonable assumption that these materials will remain non-friable during the demolition.

The black floor mastic containing greater than 1% asbestos on the concrete may be left in place and demolished with the rest of the building as a non-hazardous asbestos waste, as long as, the materials do not become friable. The US EPA NESHAP has determined if this type of flooring mastic becomes friable during the course of the demolition, then it would be considered RACM. Removal of the concrete sections of floor containing the floor mastic using an excavator would not be considered a mechanical action that renders the floor mastic friable. Running over the concrete floor covered with the mastic using an excavator or other heavy equipment with metal tracks will render the concrete and mastic friable and shall not be allowed. The contractor can use an excavator or other heavy equipment with rubber tires on the concrete and is generally not considered to render the mastic friable. If a contractor uses a heavy equipment with metal track on this project, it will not be allowed to go onto the concrete floor that has black mastic, whether the concrete is covered with carpeting, linoleum, vinyl flooring, or other materials. All work will stop at the direction of Entek if the contractor uses mechanical means that renders the asbestos containing materials left in place friable.

Should the building and materials meet the criteria listed above, the building may be demolished without the prior removal of those materials. However, if previously unidentified materials are discovered during the demolition process, the Contractor must stop demolition and notify the Owner's agent/site representative of the existence of the new material. Under no circumstances may the Contractor continue to disturb the new material until the new material has been properly investigated and the Contractor given permission to proceed by the Owner's agent/site representative.

The demolition of any building on this project with ACM, ACBM, or ACCM remaining in place must be conducted by a California licensed asbestos contractor with current and valid registration with the California Division of Occupational Safety and Health Asbestos Contractors' Registration Unit.

The Federal Occupational Safety and Health Administration (OSHA) has defined the demolition of buildings that contain Class II materials (non-friable materials) to be Class II work. Therefore, the training, work practices, and procedures of Class II work must be followed. The following requirements summarize the requirements for Class II work as listed in the Asbestos Standard for the Construction Industry (Title 8 CCR 1529) for work such as demolition where specific controls have not been listed in the standard.

The supervisor must meet the training requirements for a "competent" person for Class II work as listed in Title 8 CCR 1529 (o)(4)(A). In summary, the supervisor must be an accredited supervisor as set for in the EPA's Model Accreditation Program (40 CFR Part 763, Subpart E). A Competent Person must be present during the course of the asbestos related work. An AHERA accredited asbestos Contractor/Supervisor meets the training and definition of a Competent Person.

The workers must at a minimum meet the training requirements as listed in Title 8 CCR 1529 (8)(k)(9)(D). In summary, they must have a minimum of eight hours of training that includes the subjects listed in Title 8 CCR 1529 (k)(9)(H).

The following procedures must be followed:

1. The work shall be performed using wet methods. At a minimum, one worker must direct a water spray onto the portion of the building being demolished. The amount of water utilized must be adequate to prevent any release of visible dust into the air. The Contractor is responsible for controlling and channeling the flow of the waste water in a manner that meets local ordinances and regulatory agency requirements. The debris generated during the demolition process must be visually wet at all times prior to and while it is being containerized.

2. Effort should be made to remove the sections of asbestos-containing materials in as intact a condition as possible.

3. Debris must be containerized as described below. Debris must be containerized or kept wet during any work breaks. No loose debris may be left on the site overnight. Any building partially impacted by the work which will not be totally demolished by the end of the day must be completely wetted prior to the end of the shift.

4. Debris must be placed in a container that can be closed or sealed with poly sheeting. The container must have the inside lined with a minimum of two layers of reinforced ten-millimeter-thick poly sheeting with enough sheeting remaining on all sides to allow for burrito wrapping of the load. The two layers of poly sheeting must be independently closed and sealed with tape and spray glues. This wrapped material must then be labeled with the sign described in Title 8 CCR 1529 (k)(8) DANGER, CONTAINS ASBESTOS FIBERS, AVOID CREATING DUST, CANCER AND

LUNG DISEASE HAZARD

5. Nonhazardous waste data forms for each container must be supplied to the Owner's agent/site representative no later than the end of each day.

6. Contractor shall provide personal air monitoring for Class II as described in Title 8 CCR 1529 (f)(3)(A).

7. The Contractor shall develop a regulated area that keeps unauthorized persons out of the work area.

8. All personnel in the regulated area must wear, at a minimum, disposable clothing and a half-face respirator with P-100 (HEPA) cartridges.

9. Regardless of any exposure monitoring, the Contractor will require all workers to wear at a

minimum protective suits and half-face negative pressure respirators. This requirement does not relieve the Contractor of performing personal monitoring of its workers.

Part 23.11 - Contaminated Attic Space Procedures

The District considers all existing attic spaces throughout the District to be contaminated with asbestos containing roofing debris unless otherwise determined or reported. The District has restricted access to all attic spaces to properly trained and protected personnel. Excluded from this restriction is opening a ceiling access hatch and entering the attic space with the upper body. Physical access into an attic space which includes a person placing their entire body in the attic space with intent to access other areas of the attic space is prohibited by unprotected and untrained personnel. No entry into these spaces shall be made regardless of duration of time or intent without compliance with the requirements outlined in this Part of the project specifications.

Activities expected to take place in contaminated attic spaces most closely resemble the definition of "Class IV" work which is defined by Cal/OSHA in CCR; Title 8, Section 1529, as maintenance and custodial activities during which employees contact but do not disturb asbestos containing material (ACM) or presumed asbestos containing material (PACM).

To comply with the various regulations pertaining to this type of work in contaminated attic spaces, the following procedures are to be followed by individuals entering these areas.

1. Personnel assigned to enter contaminated attic spaces shall receive a minimum of two hours of asbestos awareness training. This training must include the following:

The possible health effects of asbestos exposure,
the types of asbestos materials normally encountered in such spaces,
the known and possible hazards that may be found in such spaces,
the purpose and proper use of protective clothing,
the proper selection, use, and limitations of respirators.

2. Personnel assigned to wear respirators must be included in a respirator protection program as outlined in California General Industry Safety Order 8 CCR 1544. All full body entry into an attic space with the intent to access the attic space will require use of at least a half-face negative pressure respirator with HEPA filters.

3. Prior to entry of a contaminated attic space each employee must pass a medical evaluation to ensure their fitness to wear a respirator.

5. A certified asbestos competent person must select the appropriate type of respirator(s) for the airborne asbestos levels anticipated to be encountered during such work.

6. Each employee assigned a respirator must successfully pass a qualitative or quantitative fit test prior to entry of a contaminated space.

7. A six (6) mil poly drop sheet must be placed at the entry to the space (approximately 6' X 6' in size) prior to entry.

8. Clean, potable water must be made available at the entry/exit for use to wash hands, faces, and equipment upon exiting from the space.

9. Employees entering contaminated attic spaces shall don two (2) sets of whole body coveralls, including head and foot covering. Appropriate type gloves for the work to be conducted must also be worn.

10. Disposal bags (6 mil poly), with the appropriate labeling, shall be made available at the entry/exit for

disposal of contaminated protective clothing. One bag to be placed inside the space at the exit point and one shall be placed outside the space at the exit point.

11. Personnel working in contaminated attic spaces shall be instructed not to touch or disturb any suspect asbestos debris or materials encountered. If the extent of contamination is such that the employees cannot perform their work without disturbing the material or debris, they shall exit the space until such time a certified asbestos abatement contractor has removed the material or debris and thoroughly encapsulated the area.

12. All tools or other equipment used in the course of the work shall be wiped down with clean, damp rags, prior to being removed from the space.

13. Prior to exiting the contaminated attic space, personnel shall remove their outer set of coveralls immediately adjacent to the exit point, leaving their respirator in place and dispose of the used coveralls in the waste bag.

14. Upon exiting the contaminated attic space, personnel shall remove the inner (or remaining) set of coveralls and place these in the waste bag provided for this purpose.

15. Personnel shall wash their hands prior to carefully removing their respirator and disposing of the filters in the waste bag provided.

16. Personnel shall at this time wash their faces and complete the decontamination of their respirators.

Part 23.12 - Non-Friable, Non-Hazardous, Glazing Abatement Requirements

General Requirements

1. Removal of non-friable, non-hazardous, asbestos-containing glazing materials shall be coordinated and scheduled to be performed when there are favorable weather conditions, such as, low winds and no rain. If possible the work should be conducted when the interior space adjacent to the removal area is unoccupied.

2. Work should be halted if wind conditions occur which can or does cause removed glazing materials to be blown off the perimeter poly sheeting, or beyond the designated removal area perimeter.

3. No cutting, sanding, grinding, or removal by any other method which will result in the glazing being crumbled, crushed, or turned in to powder is to be used without review and approval by the Owner and the Owner's Representative.

General Glazing Removal Instructions and Requirements

1. Removal of non-friable, asbestos-containing, glazing materials, is designated as Class II work. Half-face, negative pressure respirators and disposable coveralls shall be used at a minimum by all workers, at all times, when within the regulated area.

2. All glazing materials shall be removed in an intact state to the extent feasible utilizing hand tools such as a hammer and chisel, or other implement or tool suitable for this type of work. At no time may power tools be used while following these removal requirements.

3. All glazing materials are to be pre-wet with an amended water solution or liquid encapsulant prior to removal, and as needed during removal.

4. All associated surfaces where removal of glazing has taken place shall be wet wiped and HEPA vacuumed prior to removal of the regulated area or any interior poly sheeting/critical barrier. Particular attention shall be directed at assuring all loose debris has been cleaned from the removal surfaces.

5. Upon completion of all activities worker shall clean exposed skin with hot soap and water, and check clothing for any glazing chips. Remove chips by hand or utilize a HEPA filter equipped vacuum.

Pre-Abatement Preparation Requirements

1. The worker may either seal the interior window surface with poly sheeting to create a critical barrier, or place one layer of 6 mil poly sheeting on the floor beneath the window in case a window pane is broken during removal. These critical barriers or floor coverings shall be installed prior to the initiation of the removal work, and removed upon completion of the removal work as appropriate.

2. If the interior space must remain occupied a critical barrier must be installed on the interior surface of the window or opening where removal must occur. This may be waved and a layer of sheeting may be placed on the floor or adjacent surfaces if the interior space is going to remain unoccupied during the entire removal operation.

3. The perimeter of the work area where glazing removal is to be conducted, shall be posted with barrier tape at a distance of at least 20 feet from the edge of the removal area. This barrier tape will provide a buffer zone, and assist in the restriction of non-removal personnel.

4. Poly sheeting shall be placed on the ground directly below the work area or on adjacent surfaces for a distance sufficient to contain all debris which may be generated during the work. The poly sheeting should be secured to the ground using tape, weights, or other means to assure the poly will remain in place and not be picked up by wind or become a trip hazard.

Posting and Label Requirements for:

<u>Regulated Area</u>

Access to regulated areas shall be posted as outlined by Cal\OSHA Title 8, 1529 (k)(7)(B) 1 and 2 with warning signs and barrier tape bearing the following information:

DANGER
ASBESTOS
CANCER AND LUNG DISEASE HAZARD
AUTHORIZED PERSONNEL ONLY
RESPIRATORS AND PROTECTIVE CLOTHING ARE
REQUIRED IN THIS AREA

These postings are required to warn non-abatement personnel of the restricted access, and potential hazard which exists in the vicinity of the regulated area.

If an NEA indicates no respirators are required to be worn to perform the work, be sure to remove the requirement for "respirators and protective clothing".

<u>Work Area Perimeter</u>

Work area perimeters shall be posted with barrier tape bearing one of the following descriptions:

CAUTION in black letters on a solid yellow background.
DANGER in black letters on a solid red background.

DANGER ASBESTOS HAZARD in black letters on a solid red background.

Waste Material Containers

Waste material containers, shall have warning labels affixed in accordance with Cal/OSHA Title 8, 1529 (k)(8) (A-D)

DANGER
CONTAINS ASBESTOS FIBERS
AVOID CREATING DUST
CANCER AND LUNG DISEASE HAZARD

Waste Disposal

1. Glazing waste may be disposed as non-hazardous asbestos waste, in a landfill permitted to accept non-friable, non-hazardous asbestos-containing material as long as the removal work was performed by hand utilizing hand tools, and the materials were not crushed, pulverized, or turned into powder during the removal process. If this does occur the waste must be reclassified as friable. If the asbestos-containing glazing material is currently friable, or becomes friable during its removal, it shall be disposed of in a landfill permitted to accept friable, hazardous, asbestos waste.

Part 23.13 - Subfloor Crawl Space Dirt Removal, Final Cleaning and Lockdown Requirements

General Requirements

Direction to remove loose surface dirt from throughout a subfloor space contaminated with friable asbestos containing material (ACM) or dust from friable ACM shall be performed within a full enclosure. All loose dirt shall be removed to as required such as "hard pack", as defined in other Sections of the Project Documents, or determined by the Owner's Representative in a specific "Scope of Work" to be performed related to this work.

Any full enclosure/containment constructed for removing loose surface dirt, shall include critical barriers at all vents, openings, penetrations, voids, etc., a sufficient number of DOP challenge tested negative air units to attain a level of at least -0.03" of negative air pressure within the subfloor containment space and a minimum of four (4) air changes an hour, a manometer with digital readout capabilities, and at a minimum, a three-stage decontamination unit with an operational shower and water filtration system. The clean room of any three stage decontamination unit must be at least 5' in width, 9' in length, and 8' in height. "Pop up" 3' X 3' style prefabricated units will not be allowed for this work. The filtration system must have at least a 1.0-micron particle size collection capability prior to release of the water into the treated water system. Documentation of this capability shall be provided to Owner's agent/site representative.

Except as amended here and in the "Section 24", all other Sections of this exhibit shall be followed which apply to creation of containments specifically or asbestos related work practices. No removal of dirt suspected of being contaminated with friable ACM or dust from friable ACM shall be performed prior to the Contractor receiving approval from the Owner's agent/site representative.

Contractor Responsibilities

16. Except as amended here and in Section 24, Asbestos Specification/Procedures, all other Sections of this Specification shall be followed.

17. The Contractor shall provide all necessary notifications, equipment, tools, materials, lighting, labor, etc. to perform the work. Notification as appropriate to OSHA, EPA, or the delegated Air Quality Management District is the responsibility of the Contractor.

18. All HEPA equipment to be used on the project must be delivered to the site empty of all debris, clean, free of dust, and in full operating condition. HEPA equipment to be used on the project must be DOP challenge tested at the site. This DOP challenge test and certification process must be verified by Owner's agent/site representative prior to its use.

19. DOP certification testing shall be observed and witnessed by an Owner's agent/site representative. Copies of DOP test results and certification must be submitted to Owner's agent/site representative within 24 hours of the testing being performed.

20. All poly sheeting to be used for the construction of enclosures/containments must be fire retardant. MSDS information reflecting this requirement must be submitted prior to use.

21. All personnel used by the Contractor to conduct removal or handling of asbestos-containing waste materials must possess a current accreditation certificate as a worker or contractor/supervisor as described in 40 CFR Part 763, Appendix C to subpart E, Asbestos Model Accreditation Plan.

22. The Contractor shall be responsible for all clean-up and costs associated with the decontamination of occupied spaces adjacent to any containment where removal of ACM or dirt contaminated with ACM is conducted. The Contractor shall also be responsible for damage to building finishes and costs associated with removal of tape glue, staining of wall finishes, or destruction of wall surface integrity. It is the responsibility of the Contractor to identify with the General Contractor all aspects of the project requirements pertaining to these types of damages.

Owner Responsibilities

1. The Owner shall provide the Contractor with access to the building during scheduled work hours through their representative. This representative is expected to be the General Contractor in charge of the site.

2. The Owner shall also provide the Contractor access to water and electrical hook-ups. However, the Contractor is responsible for all connections, electrical cords, GFCI's, water hoses, and hose bibs necessary for attachment. GFCI's are required to be used by the Contractor on all electrical circuits in use.

General Removal Instructions and Requirements

1. Prior to removal of loose dirt from the subfloor spaces all thermal system insulation TSI materials will be removed utilizing the procedures and work practices outlined in Section 23 of this Exhibit. Removal of loose dirt by any method shall be performed by personnel who are properly trained and accredited to perform Class I Work in public buildings, and are currently approved to conduct work on the project.

2. No personnel are allowed into the subfloor containment area for any reason before or during actual removal work without proper respiratory and personal protective equipment. At a minimum this shall include half-face negative pressure respirators, full body coveralls, rubber boots, and gloves prior to starting dirt removal work, and full face powered air purifying respirators after dirt removal work has begun. **No street clothes or shoes shall be worn under full body coveralls or inside containment once removal of dirt begins regardless of amount of time to be spent in containment.**

3. All openings, doors, hatches, voids, penetrations, etc. into the contained space shall be sealed with poly sheeting. All HVAC ducts which may be present shall be wrapped with one layer of poly sheeting to prevent any dust being pulled into the duct system while work is being performed. **No spray glue may be used on any exterior surface of a building.**

4. Removal of loose dirt over a surface area greater than 25 square feet will require the construction and use of a three stage decontamination unit. This decontamination unit must be directly attached to the entrance to the subfloor space and fully operable with working shower and hot water heater, as well as

properly stocked with towels, soap, and shampoo. The clean room of any three stage decontamination unit must be at least 5' in width, 8' in length, and 6' in height. "Pop up" 3' X 3' style prefabricated units will not be allowed for this work. The filtration system must have at least a 1.0-micron particle size collection capability prior to release of the water into the treated water system.

5. Sufficient negative air units shall be installed which will provide a minimum of 4 air changes per hour and -0.03" air pressure differential. A manometer with an accurate circular, or equivalent recording chart must be installed and operational. The manometer chart(s) shall reflect the location, times, and dates of all measurements recorded. Once these requirements have been met and the negative pressure has been established, the Contractor shall request a pre-start visual inspection from Owner's agent/site representative.

6. When the Contractor has passed the pre-start visual inspection, removal of loose surface dirt may be conducted.

7. Sufficiently wet materials to be removed with amended water prior to and during the removal phase of work, and place into waste containers for disposal.

8. Upon completing removal of all loose surface dirt, the Contractor shall conduct wet wiping of all remaining wall and subfloor ceiling components to remove settled dust from those surfaces.

Industrial Vacuums

It is expected industrial type vacuum systems will be used to perform removal of loose dirt in subfloor spaces. Use of such equipment will require construction of an enclosure around the unit which will at a minimum enclose the hopper and bagging hose. This enclosure will be placed under negative pressure and also monitored with a manometer with digital readout capabilities. Bagging of waste is expected to be in containers appropriate for the amount of work being performed. All waste containers regardless of size or type of construction must be properly labeled.

Final Visual Inspection

1. Upon completion of all activities listed above, the asbestos contractor shall provide their own visual inspection prior to Owner's agent/site representative, and shall be present during the inspection by Owner's agent/site representative to remove any additional dirt and/or clean additional surfaces as needed, prior to encapsulation.

2. The final visual inspection will include an evaluation of all surfaces within the containment area, with emphasis placed on the completeness of materials removed. The Contractor shall thoroughly clean all equipment inside the containment, including all parts of the negative air units exposed to the subfloor. New pre-filters shall be installed into all negative air units.

Final Lockdown-Encapsulation

1. The asbestos contractor shall encapsulate the entire containment area upon completion of the final visual inspection by the Owner's agent/site representative, and acceptance of the work as complete. Lock down of the subfloor will be performed using an acceptable bridging encapsulant. To assure complete coverage of the subfloor interior surfaces to include all ceiling, wall and dirt floors will require the contractor add a color to the encapsulant which will be visibly different in color than the colors generally found within a subfloor space. This color will be used to assure prior to conducting clearance air monitoring within the subfloor that all surfaces have been locked down and no loose dust on building surfaces remain.

Clearance Criteria

a. All clearance air samples will be analyzed by transmission electron microscopy (TEM), and

performed by a NIST/NVLAP accredited laboratory. The clearance criteria for releasing the Contractor is the AHERA Standard, with the average of all air samples less than 70 asbestos structures per square millimeter. Aggressive air sampling will be used, which includes using a leaf blower in conjunction with fans to dislodge any remaining dust within the subfloor containment. Leaf blower and fans will not be directed at remaining dirt surfaces but toward building components.

Disposal Requirements

1. All dirt waste shall be disposed as hazardous asbestos waste, in a landfill permitted to accept friable, hazardous ACM.

2. All waste containers shall have stick-on labels as per OSHA and DOHS requirements. All waste containers shall be labeled in accordance with DOHS regulations that require a "Caution" label and a "Hazardous Waste" label with the generator's name, address, and Manifest Document number.

3. If bulk loading of waste into "burrito wrap" style bags is to be performed contractor is responsible for assuring the waste facility is aware of this type of bagging and will accept the waste upon its arrival. Bulk loading of dirt waste into large "burrito wrap" style containers will result in heavy stresses upon the poly sheeting. Contractor must submit written directions indicating the requirements to be used to create such waste containers. Contractor may not use these container bags until approved by Owner's Representative.

Part 23.14 - Subfloor Enclosure Requirements

Creation of enclosures within a contaminated subfloor space will be necessary in anticipation of other trades performing work in specific areas which will not require impact to the dirt floor of the space. These other trades will need to have access to these enclosures without the need for respirators, full body coveralls, gloves, and asbestos related training. As a result, the enclosure must be sturdy and remain in place until all other trade work has been completed.

It is expected the subfloor enclosure will be accessed from within the building. Contractor will construct the enclosure by also accessing the space to be enclosed from within the building. As a result, the contractor shall be required to construct a two stage decontamination unit in place over any subfloor access hatch. This decontamination unit will be used to protect the building's interior spaces from being contaminated by dust from the subfloor space. Contractor shall also provide a DOP challenge tested, HEPA equipped, pressure differential unit to provide negative air flow into the decontamination unit. The unit shall be attached to the decontamination unit opposite the entrance to assure air is pulled into the decontamination unit. All exhaust from this unit shall be ducted to the building's exterior. The unit shall remain on continuously until final air clearance has been achieved.

General Removal Instructions and Requirements

13. Enclosure walls and floors must be constructed of at least one layer of fire-rated, 10 mils re-enforced poly sheeting. This poly sheeting shall cover the dirt floor surface and extend from the floor surface to the underside of the subfloor ceiling.

14. Enclosure walls shall be installed at a minimum of 5' beyond the edge of any work to be performed to allow for adequate work space by other trades.

15. Poly sheeting shall be secured to the underside of the subfloor ceiling in a manner sufficient to provide maximum strength to reduce possible breaching of the wall systems while regular work is being

16. performed. Contractor may use any appropriate method deemed necessary to accomplish this goal to include fasteners, staples, fur strips, tape, etc. Tape alone will not be acceptable to accomplish this

goal.

17. Poly sheeting shall be secured at corners and along walls at floor level in a manner to keep the containment from being pulled in or collapsing into the work space being provided. Contractor shall fasten the walls and floor of the enclosure at sufficient points to prevent this from occurring.

18. Poly sheeting shall be sealed at all points necessary to make the barrier system air tight regarding the walls and floor to keep the containment from becoming contaminated from air within the remaining subfloor space.

19. Upon completing construction of the enclosure the contractor shall wet wipe and clean all enclosed surfaces to include poly walls, poly floors, ceiling components, and any other surfaces which may remain within the enclosure system. If any thermal system insulation is located within the enclosure contractor must repair any damages, clean all surfaces, and apply appropriate labels to the material to assure it is properly identified as asbestos. If the materials are to be removed they shall be removed by glovebag technique only.

20. Upon completion of wet cleaning of the enclosure interior the Owner's Representative shall perform a final visual inspection for completeness of cleaning.

21. Upon acceptance of the containment as clean the contractor shall encapsulate the enclosure interior surfaces with an acceptable encapsulant.

22. Owner's representative shall perform final clearance air monitoring upon completion of all tasks related to the construction of the enclosure and prior to allowing other trades access to the enclosure. All clearance air samples will be analyzed by transmission electron microscopy (TEM), and performed by a NIST/NVLAP accredited laboratory. The clearance criteria for releasing the Contractor is the AHERA Standard, with the average of all air samples less than 70 asbestos structures per square millimeter. Aggressive air sampling will be used, which includes using a leaf blower in conjunction with fans to dislodge any remaining dust within the subfloor containment. Leaf blower and fans will not be directed at remaining dirt surfaces but toward building components.

Part 23.15 - Subfloor Crawl Space Pony Wall Installation, Dirt Removal, Final Cleaning and Lockdown Requirements

General Requirements

Direction to remove loose surface dirt from throughout a subfloor space contaminated with friable asbestos containing material (ACM) or dust from friable ACM shall be performed within a full enclosure. All loose dirt shall be removed to as required such as "hard pack", as defined in other Sections of the Project Documents, or determined by the Owner's Representative in a specific "Scope of Work" to be performed related to this work.

Any full enclosure/containment constructed for removing loose surface dirt, shall include critical barriers at all vents, openings, penetrations, voids, etc., a sufficient number of DOP challenge tested negative air units to attain a level of at least -0.03" of negative air pressure within the subfloor containment space and a minimum of four (4) air changes an hour, a manometer with digital readout capabilities, and at a minimum, a three-stage decontamination unit with an operational shower and water filtration system. The clean

room of any three stage decontamination unit must be at least 5' in width, 8' in length, and 6' in height. "Pop up" 3' X 3' style prefabricated units will not be allowed for this work. The filtration system must have at least a 1.0-micron particle size collection capability prior to release of the water into the treated water system. Documentation of this capability shall be provided to Owner's agent/site representative.

Except as amended here and in the "Section 24", all other Sections of this exhibit shall be followed which apply to creation of containments specifically or asbestos related work practices. No removal of dirt

suspected of being contaminated with friable ACM or dust from friable ACM shall be performed prior to the Contractor receiving approval from the Owner's agent/site representative.

Contractor Responsibilities

23. Except as amended here and in Section 24, Asbestos Specification/Procedures, all other Sections of this Specification shall be followed.

24. The Contractor shall provide all necessary notifications, equipment, tools, materials, lighting, labor, etc. to perform the work. Notification as appropriate to OSHA, EPA, or the delegated Air Quality Management District is the responsibility of the Contractor.

25. All HEPA equipment to be used on the project must be delivered to the site empty of all debris, clean, free of dust, and in full operating condition. HEPA equipment to be used on the project must be DOP challenge tested at the site. This DOP challenge test and certification process must be verified by Owner's agent/site representative prior to its use.

26. DOP certification testing shall be observed and witnessed by an Owner's agent/site representative. Copies of DOP test results and certification must be submitted to Owner's agent/site representative within 24 hours of the testing being performed.

27. All poly sheeting to be used for the construction of pony walls to create enclosures/containments must be 10 mils thick, re-enforced, and fire retardant. MSDS information reflecting this requirement must be submitted prior to use.

28. All personnel used by the Contractor to conduct removal or handling of asbestos-containing waste materials must possess a current accreditation certificate as a worker or contractor/supervisor as described in 40 CFR Part 763, Appendix C to subpart E, Asbestos Model Accreditation Plan.

29. The Contractor shall be responsible for all clean-up and costs associated with the decontamination of occupied spaces adjacent to any containment where removal of ACM or dirt contaminated with ACM is conducted. The Contractor shall also be responsible for damage to building finishes and costs associated with removal of tape glue, staining of wall finishes, or destruction of wall surface integrity. It is the responsibility of the Contractor to identify with the General Contractor all aspects of the project requirements pertaining to these types of damages.

Owner Responsibilities

1. The Owner shall provide the Contractor with access to the building during scheduled work hours through their representative. This representative is expected to be the General Contractor in charge of the site.

2. The Owner shall also provide the Contractor access to water and electrical hook-ups. However, the Contractor is responsible for all connections, electrical cords, GFCI's, water hoses, and hose bibs necessary for attachment. GFCI's are required to be used by the Contractor on all electrical circuits in use.

General Removal Instructions and Requirements

1.

2. Prior to removal of loose dirt from the subfloor spaces all thermal system insulation TSI materials will be removed utilizing the procedures and work practices outlined in Section 23 of this Exhibit. Removal of loose dirt by any method shall be performed by personnel who are properly trained and accredited to perform Class I Work in public buildings, and are currently approved to conduct work on the project.

3. No personnel are allowed into the subfloor containment area for any reason before or during actual

removal work without proper respiratory and personal protective equipment. At a minimum this shall include half-face negative pressure respirators, full body coveralls, rubber boots, and gloves prior to starting dirt removal work, and full face powered air purifying respirators after dirt removal work has begun. **No street clothes or shoes shall be worn under full body coveralls or inside containment once removal of dirt begins regardless of amount of time to be spent in containment**.

4. All openings, doors, hatches, voids, penetrations, etc. into the contained space shall be sealed with poly sheeting. All HVAC ducts which may be present shall be wrapped with one layer of poly sheeting to prevent any dust being pulled into the duct system while work is being performed. **No spray glue may be used on any exterior surface of a building.**

5. Removal of loose dirt over a surface area greater than 25 square feet will require the construction and use of a three stage decontamination unit. This decontamination unit must be directly attached to the entrance to the subfloor space and fully operable with working shower and hot water heater, as well as properly stocked with towels, soap, and shampoo. The clean room of any three stage decontamination unit must be at least 5' in width, 8' in length, and 8' in height. "Pop up" 3' X 3' style prefabricated units will not be allowed for this work. The filtration system must have at least a 1.0-micron particle size collection capability prior to release of the water into the treated water system. When less than 25 square feet of surface area and less than 25 linear feet of thermal system insulation is to be removed refer to "Subfloor Enclosure Requirements".

6. Sufficient nagative air units shall be installed which will provide a minimum of 4 air changes per hour and -0.03" air pressure differential. A manometer with an accurate circular, or equivalent recording chart must be installed and operational. The manometer chart(s) shall reflect the location, times, and dates of all measurements recorded. Once these requirements have been met and the negative pressure has been established, the Contractor shall request a pre-start visual inspection from Owner's agent/site representative.

7. When the Contractor has passed the pre-start visual inspection, removal of loose surface dirt may be conducted.

8. Sufficiently wet materials to be removed with amended water prior to and during the removal phase of work, and place into waste containers for disposal.

9. Upon completing removal of all loose surface dirt, the Contractor shall conduct wet wiping of all remaining wall and subfloor ceiling components to remove settled dust from those surfaces.

Industrial Vacuums

It is expected industrial type vacuum systems will be used to perform removal of loose dirt in subfloor spaces. Use of such equipment will require construction of an enclosure around the unit which will at a minimum enclose the hopper and bagging hose. This enclosure will be placed under negative pressure and also monitored with a manometer with digital readout capabilities. Bagging of waste is expected to be in containers appropriate for the amount of work being performed. All waste containers regardless of size or type of construction must be properly labeled.

Final Visual Inspection

1. Upon completion of all activities listed above, the asbestos contractor shall provide their own visual inspection prior to Owner's agent/site representative, and shall be present during the inspection by Owner's agent/site representative to remove any additional dirt and/or clean additional surfaces as needed, prior to encapsulation.

2. The final visual inspection will include an evaluation of all surfaces within the containment area, with emphasis placed on the completeness of materials removed. The Contractor shall thoroughly clean all equipment inside the containment, including all parts of the negative air units exposed to the subfloor.

New pre-filters shall be installed into all negative air units.

Final Lockdown-Encapsulation

1. The asbestos contractor shall encapsulate the entire containment area upon completion of the final visual inspection by the Owner's agent/site representative, and acceptance of the work as complete. Lock down of the subfloor will be performed using an acceptable bridging encapsulant. To assure complete coverage of the subfloor interior surfaces to include all ceiling, wall and dirt floors will require the contractor add a color to the encapsulant which will be visibly different in color than the colors generally found within a subfloor space. This color will be used to assure prior to conducting clearance air monitoring within the subfloor that all surfaces have been locked down and no loose dust on building surfaces remain.

Clearance Criteria

a. All clearance air samples will be analyzed by transmission electron microscopy (TEM), and performed by a NIST/NVLAP accredited laboratory. The clearance criteria for releasing the Contractor is the AHERA Standard, with the average of all air samples less than 70 asbestos structures per square millimeter. Aggressive air sampling will be used, which includes using a leaf blower in conjunction with fans to dislodge any remaining dust within the subfloor containment. Leaf blower and fans will not be directed at remaining dirt surfaces but toward building components.

Disposal Requirements

1. All dirt waste shall be disposed as hazardous asbestos waste, in a landfill permitted to accept friable, hazardous ACM.

2. All waste containers shall have stick-on labels as per OSHA and DOHS requirements. All waste containers shall be labeled in accordance with DOHS regulations that require a "Caution" label and a "Hazardous Waste" label with the generator's name, address, and Manifest Document number.

3. If bulk loading of waste into "burrito wrap" style bags is to be performed contractor is responsible for assuring the waste facility is aware of this type of bagging and will accept the waste upon its arrival. Bulk loading of dirt waste into large "burrito wrap" style containers will result in heavy stresses upon the poly sheeting. Contractor must submit written directions indicating the requirements to be used to create such waste containers. Contractor may not use these container bags until approved by Owner's Representative.

<u>Part 23.16 - Installation of "Rat Slab" in Contaminated Subfloor Crawl Space Requirements</u>

General Requirements

No direction relating to actual installation of "Rat Slab" materials is included here. This information is related to additional requirements for the work to be performed within a subfloor space known or assumed to be contaminated with asbestos.

Prior to installation of "Rat Slab" materials within a subfloor contaminated with asbestos the subfloor must be properly sealed and placed under negative pressure. Removal of all remaining thermal system insulation (TSI) or other friable asbestos containing material (ACM) must be performed prior to the installation of the "Rat Slab" materials.

Any full enclosure/containment constructed for the purpose of installing a "Rat Slab" will require installation of critical barriers at all vents, openings, penetrations, voids, etc., a sufficient number of DOP challenge tested negative air units to attain a level of at least -0.03" of negative air pressure within the subfloor containment space and a minimum of four (4) air changes an hour, a manometer with digital readout capabilities, and at a minimum, a three-stage decontamination unit with an operational shower and water

filtration system. The clean room of any three stage decontamination unit must be at least 5' in width, 9' in length, and 6' in height. "Pop up" 3' X 3' style prefabricated units will not be allowed for this work. The filtration system must have at least a 1.0-micron particle size collection capability prior to release of the water into the treated water system. Documentation of this capability shall be provided to Owner's agent/site representative.

Except as amended here and in the "Section 24", all other Sections of this exhibit shall be followed which apply to creation of containments specifically or asbestos related work practices. No removal of TSI, visible TSI debris or associated dirt suspected of being contaminated with friable ACM or dust from friable ACM shall be performed prior to the Contractor receiving approval from the Owner's agent/site representative.

Contractor Responsibilities

1. Except as amended here and in Section 24, Asbestos Specification/Procedures, all other Sections of this Specification shall be followed.

2. The Contractor shall provide all necessary notifications, equipment, tools, materials, lighting, labor, etc. to perform the work. Notification as appropriate to OSHA, EPA, or the delegated Air Quality Management District is the responsibility of the Contractor.

3. All HEPA equipment to be used on the project must be delivered to the site empty of all debris, clean, free of dust, and in full operating condition. HEPA equipment to be used on the project must be

4. DOP challenge tested at the site. This DOP challenge test and certification process must be verified by Owner's agent/site representative prior to its use.

5. DOP certification testing shall be observed and witnessed by an Owner's agent/site representative. Copies of DOP test results and certification must be submitted to Owner's agent/site representative within 24 hours of the testing being performed.

6. All poly sheeting to be used for the construction of pony walls to create enclosures/containments must be 10 mils thick, re-enforced, and fire retardant. MSDS information reflecting this requirement must be submitted prior to use.

7. All personnel used by the Contractor to conduct removal or handling of asbestos-containing waste materials must possess a current accreditation certificate as a worker or contractor/supervisor as described in 40 CFR Part 763, Appendix C to subpart E, Asbestos Model Accreditation Plan.

8. The Contractor shall be responsible for all clean-up and costs associated with the decontamination of occupied spaces adjacent to any containment where removal of ACM or dirt contaminated with ACM is conducted. The Contractor shall also be responsible for damage to building finishes and costs associated with removal of tape glue, staining of wall finishes, or destruction of wall surface integrity. It is the

responsibility of the Contractor to identify with the General Contractor all aspects of the project requirements pertaining to these types of damages.

Owner Responsibilities

1. The Owner shall provide the Contractor with access to the building during scheduled work hours through their representative. This representative is expected to be the General Contractor in charge of the site.

2. The Owner shall also provide the Contractor access to water and electrical hook-ups. However, the Contractor is responsible for all connections, electrical cords, GFCI's, water hoses, and hose bibs

necessary for attachment. GFCI's are required to be used by the Contractor on all electrical circuits in use.

General Removal Instructions and Requirements

1. All TSI materials will be removed utilizing the procedures and work practices outlined in Section 23 of this Exhibit. Removal of TSI or loose dirt contaminated with TSI debris by any method shall be performed by personnel who are properly trained and accredited to perform Class I Work in public buildings, and are currently approved to conduct work on the project.

2. No personnel are allowed into the subfloor containment area for any reason before or during actual removal work without proper respiratory and personal protective equipment. At a minimum this shall include half-face negative pressure respirators, full body coveralls, rubber boots, and gloves prior to starting dirt removal work, and full face powered air purifying respirators after dirt removal work has begun. **No street clothes or shoes shall be worn under full body coveralls or inside containment once removal of dirt begins regardless of amount of time to be spent in containment**.

3. All openings, doors, hatches, voids, penetrations, etc. into the contained space shall be sealed with poly sheeting. All HVAC ducts which may be present shall be wrapped with one layer of poly sheeting to prevent any dust being pulled into the duct system while work is being performed. **No spray glue may be used on any exterior surface of a building.**

4. Removal of TSI in excess of 25 linear feet or TSI contaminated loose dirt over a surface area greater than 25 square feet will require the construction and use of a three stage decontamination unit. This decontamination unit must be directly attached to the entrance to the subfloor space and fully operable with working shower and hot water heater, as well as properly stocked with towels, soap, and shampoo. The clean room of any three stage decontamination unit must be at least 5' in width, 8' in length, and 8' in height. "Pop up" 3' X 3' style prefabricated units will not be allowed for this work. The filtration system must have at least a 1.0-micron particle size collection capability prior to release of the water into the treated water system. When less than 25 square feet of surface area and less than 25 linear feet of thermal system insulation is to be removed refer to "Subfloor Enclosure Requirements".

5. Sufficient negative air units shall be installed which will provide a minimum of 4 air changes per hour and -0.03" air pressure differential. A manometer with an accurate circular, or equivalent recording chart must be installed and operational. The manometer chart(s) shall reflect the location, times, and dates of all measurements recorded. Once these requirements have been met and the negative pressure has been established, the Contractor shall request a pre-start visual inspection from Owner's agent/site representative.

6. When the Contractor has passed the pre-start visual inspection, removal of TSI and TSI contaminated loose surface dirt may be conducted.

7. Sufficiently wet materials to be removed with amended water prior to and during the removal phase of work, and place into waste containers for disposal.

8. Upon completing removal of all TSI and TSI contaminated loose surface dirt the Owner's Representative will conduct a final visual inspection to verify this task has been satisfactorily completed.

Industrial Vacuums

If industrial type vacuum systems will be used to perform removal of loose dirt in subfloor spaces, use of such equipment will require construction of an enclosure around the unit which will at a minimum enclose the hopper and bagging hose. This enclosure will be placed under negative pressure and also monitored with a manometer with digital readout capabilities. Bagging of waste is expected to be in containers appropriate for the amount of work being performed. All waste containers regardless of size or type of construction must be properly labeled.

"Rat Slab" Installation

The following items shall be required during "Rat Slab" installation activities.

1. Contractor will maintain 0.03" of negative pressure at all times during installation of "Rat Slab" materials.

2. Three stage decontamination unit with functional shower and all other requirements shall remain in place and be used by all personnel who must enter the subfloor space during installation of "Rat Slab" materials.

3. All personnel shall wear at a minimum half-face negative pressure respirators while inside the subfloor containment space.

4. All personnel shall at a minimum have Hazard Communication" training relating to asbestos as required by OSHA and in compliance with all OSHA requirements.

5. All personnel shall wear full body coveralls, appropriate work boots and appropriate work gloves while inside the subfloor containment space.

6. All personnel shall enter and egress through the three stage decontamination unit and take a full body shower prior to exiting the containment area.

7. All tools shall be properly cleaned of visible dust and dirt prior to removal from the subfloor containment space.

8. Upon completion of "Rat Slab" installation, contractor shall complete final cleaning of all visible dust from underside of ceiling and other surfaces within the subfloor containment.

Final Visual Inspection

1. Upon completion of all activities listed above, the asbestos contractor shall provide their own visual inspection prior to Owner's agent/site representative, and shall be present during the inspection by Owner's agent/site representative to remove any additional dirt and/or clean additional surfaces as needed, prior to encapsulation.

2. The final visual inspection will include an evaluation of all surfaces within the containment area, with emphasis placed on the completeness of materials removed. The Contractor shall thoroughly clean all equipment inside the containment, including all parts of the negative air units exposed to the subfloor. New pre-filters shall be installed into all negative air units.

Final Lockdown-Encapsulation

1. The asbestos contractor shall encapsulate the entire containment area upon completion of the final visual inspection by the Owner's agent/site representative, and acceptance of the work as complete. Lock down of the subfloor will be performed using an acceptable encapsulant. To assure complete coverage of the subfloor interior surfaces to include all ceiling, wall and "Rat Slab" surfaces will require the contractor add a color to the encapsulant which will be visibly different in color than the colors generally found within a subfloor space and the "Rat Slab". This color will be used to assure prior to conducting clearance air monitoring within the subfloor that all surfaces have been locked down and no loose dust on building surfaces remain.

Clearance Criteria

a. All clearance air samples will be analyzed by transmission electron microscopy (TEM), and performed by a NIST/NVLAP accredited laboratory. The clearance criteria for releasing the Contractor is the AHERA Standard, with the average of all air samples less than 70 asbestos structures per square

millimeter. Aggressive air sampling will be used, which includes using a leaf blower in conjunction with fans to dislodge any remaining dust within the subfloor containment. Leaf blower and fans will not be directed at remaining dirt surfaces but toward building components.

Disposal Requirements

1. All dirt waste shall be disposed as hazardous asbestos waste, in a landfill permitted to accept friable, hazardous ACM.

2. All waste containers shall have stick-on labels as per OSHA and DOHS requirements. All waste containers shall be labeled in accordance with DOHS regulations that require a "Caution" label and a "Hazardous Waste" label with the generator's name, address, and Manifest Document number.

3. If bulk loading of waste into "burrito wrap" style bags is to be performed contractor is responsible for assuring the waste facility is aware of this type of bagging and will accept the waste upon its arrival. Bulk loading of dirt waste into large "burrito wrap" style containers will result in heavy stresses upon the poly sheeting. Contractor must submit written directions indicating the requirements to be used to create such waste containers. Contractor may not use these container bags until approved by Owner's Representative.

Part 23.17 - Stucco/Texture Removal, Final Cleaning and Containment Requirements

General Requirements

Direction to remove major areas of stucco/texture surfacing materials regardless of asbestos content from exterior building components either by hand or by forced air methods shall be performed within a full enclosure. Extent of removal concerning stucco/texture surfacing materials is not included in this Part.

That information shall be provided by others in appropriate project documents.

Any full enclosure/containment constructed for removing stucco/texture surfacing materials either by hand or by forced air methods shall include critical barriers at all vents, openings, penetrations, voids, etc. into the building, a sufficient number of DOP challenge tested negative air units to attain a level of at least -0.03" of negative air pressure within the containment space and a minimum of four (4) air changes an hour, a manometer with digital readout capabilities, and at a minimum, a three-stage decontamination unit with an operational shower and water filtration system. The clean room of any three stage decontamination unit must be at least 5' in width, 8' in length, and 8' in height. "Pop up" 3' X 3' style prefabricated units will not be allowed for this work. The filtration system must have at least a 1.0-micron particle size collection capability prior to release of the water into the treated water system. Documentation of this capability shall

be provided to Owner's agent/site representative.

Except as amended here and in the "Section 24", all other Sections of this Exhibit shall be followed which apply to creation of containments specifically for asbestos related work practices. No removal of stucco/ texture surfacing materials shall be performed prior to the Contractor receiving approval from the Owner's agent/site representative.

Contractor Responsibilities

1. Except as amended here and in Section 24, Asbestos Specification/Procedures, all other Sections of this Exhibit shall be followed.

2. The Contractor shall provide all necessary notifications, equipment, tools, materials, lighting, labor,

etc. to perform the work. Notification as appropriate to OSHA, EPA, or the delegated Air Quality Management District is the responsibility of the Contractor.

3. All HEPA equipment to be used on the project must be delivered to the site empty of all debris, clean, free of dust, and in full operating condition. HEPA equipment to be used on the project must be DOP challenge tested at the site. This DOP challenge test and certification process must be verified by Owner's agent/site representative prior to its use.

4. DOP certification testing shall be observed and witnessed by an Owner's agent/site representative. Copies of DOP test results and certification must be submitted to Owner's agent/site representative within 24 hours of the testing being performed.

5. All poly sheeting to be used for the construction of enclosures/containments must be fire retardant. MSDS information reflecting this requirement must be submitted prior to use.

6. All personnel used by the Contractor to conduct removal or handling of asbestos-containing waste materials must possess a current accreditation certificate as a worker or contractor/supervisor as described in 40 CFR Part 763, Appendix C to subpart E, Asbestos Model Accreditation Plan.

7. The Contractor shall be responsible for all clean-up and costs associated with the decontamination of occupied spaces adjacent to any containment where removal of asbestos containing stucco/texture is conducted. The Contractor shall also be responsible for damage to building finishes and costs associated with removal of tape glue, staining of wall finishes, or destruction of wall surface integrity. It is the responsibility of the Contractor to identify with the General Contractor all aspects of the project requirements pertaining to these types of damages.

Owner Responsibilities

1. The Owner shall provide the Contractor with access to the building during scheduled work hours through their representative.
This representative is expected to be the General Contractor in charge of the site.

2. The Owner shall also provide the Contractor access to water and electrical hook-ups. However, the Contractor is responsible for all
connections, electrical cords, GFCI's, water hoses, and hose bibs necessary for attachment. GFCI's are required to be used by the Contractor on all electrical circuits in use.

General Removal Instructions and Requirements

1. Removal of stucco/texture by any method and regardless of asbestos content shall be performed by personnel who are properly trained and
accredited to perform Class I Work in public buildings, and are currently approved to conduct work on the project.

2. No personnel are allowed into the containment area for any reason during actual removal work without proper respiratory and personal protective equipment. At a minimum this shall include half-face negative pressure respirator if only hand scrapping is being performed. At a minimum this shall include full-face PAPR if air blasting methods are being employed. Regardless of the method used, full body coveralls, rubber boots, and gloves shall always be required while inside the containment. **No street clothes or shoes shall be worn by workers under full body coveralls or inside containment once removal has begun.**

3. All openings, doors, hatches, voids, penetrations, etc. which may lead into the building shall be sealed with poly sheeting. **No spray glue may be used on any exterior surface of a building.**

4. Removal of stucco/texture regardless of asbestos content over a surface area greater than 25 square feet will require the construction and use of a three stage decontamination unit. This decontamination unit must be directly attached to the entrance of the containment and fully operable with working shower and hot water heater, as well as properly stocked with towels, soap, and shampoo. The clean room of any three stage decontamination unit must be at least 5' in width, 8' in length, and 8' in height. "Pop up" 3' X 3' style prefabricated units will not be allowed for this work. The filtration system must have at least a 1.0-micron particle size collection capability prior to release of the water into the treated water system.

5. Sufficient negative air units shall be installed which will provide a minimum of 4 air changes per hour and -0.03" air pressure differential. A manometer with digital readout capability must be installed and operational. Once these requirements have been met and the negative pressure has been established, the Contractor shall request a pre-start visual inspection from Owner's agent/site representative.

6. When the Contractor has passed the pre-start visual inspection, removal of stucco/texture may be conducted.

7. Sufficiently wet materials to be removed with amended water prior to and during the removal phase of work, and place into waste containers for disposal.

8. Upon completing removal of all stucco/texture, the Contractor shall conduct wet wiping of all remaining wall surfaces, poly barriers, scaffolding, etc. to remove settled dust from those surfaces.

Final Visual Inspection

1. Upon completion of all activities listed above, the asbestos contractor shall provide their own visual inspection prior to Owner's agent/site representative, and shall be present during the inspection by Owner's agent/site representative to remove any additional dirt and/or clean additional surfaces as needed, prior to encapsulation.

2. The final visual inspection will include an evaluation of all surfaces within the containment area, with emphasis placed on the completeness of materials removed. The Contractor shall thoroughly clean all equipment inside the containment, including all parts of the negative air units exposed to the work performed. New pre-filters shall be installed into all negative air units.

Final Lockdown-Encapsulation

1. Lock down-encapsulation of the containment shall be performed using one of two methods based on the needs of the project.

A. **Hand Wipe Method:** The needs of the project may require the remaining building component surfaces have no new film materials applied to them. If this is required, the asbestos abatement contractor shall use clean wet cloths/towels to wipe existing surface dust off of remaining building components. These cloths/towels wil be wetted with clean water and no chemicals or treatments will be added. All poly sheeting scaffolding and other components used to create the containment will be hand wiped with wetted cloths/towels which are treated with lock down-encapsulation chemicals to remove possible surface dust and lock down-encapsulate the surfaces of these items. This method can be used prior to the final visual to complete the final cleaning process.

B. **Aerial Dispersal Method:** The asbestos contractor shall lock down-encapsulate the entire containment area upon completion of the final visual inspection by the Owner's agent/site representative, and acceptance of the work as complete.

Clearance Criteria (If Required)

a. All clearance air samples will be analyzed by transmission electron microscopy (TEM), and performed by a NIST/NVLAP accredited laboratory. The clearance criteria for releasing the Contractor is the AHERA Standard, with the average of all air samples less than 70 asbestos structures per square millimeter. Aggressive air sampling will be used, which includes using a leaf blower in conjunction with fans to dislodge any remaining dust within the containment.

Disposal Requirements

1. All waste containing less than 1% asbestos shall be properly disposed as a non-hazardous asbestos containing waste at an appropriate landfill. All waste containing greater than 1% asbestos shall be properly disposed as hazardous asbestos waste, in a landfill permitted to accept friable, hazardous ACM.

2. All waste containers shall have stick-on labels as per OSHA and DOHS requirements. All waste containers shall be labeled in accordance with DOHS regulations that require a "Caution" label and a "Hazardous Waste" label (if required) with the generator's name, address, and Manifest Document number.

3. If bulk loading of waste into "burrito wrap" style bags is to be performed contractor is responsible for assuring the waste facility is aware of this type of bagging and will accept the waste upon its arrival. Bulk loading of waste into large "burrito wrap" style containers will result in heavy stresses upon the poly sheeting. Contractor must submit written directions indicating the requirements to be used to create such waste containers. Contractor may not use these container bags until approved by Owner's Representative.

SECTION 24. ASBESTOS SPECIFICATIONS/PROCEDURES

Part 24.1 - Contacts

Terry Biladeau, MOT Director - Colusa Unified School District (530) 458-7791 ext. 14550
Wally Browe, Program Manager - Capital Property Management (CPM) (916) 553-4400
Blake Howes, Project Manager - Entek Consulting Group, Inc. (916) 632-6800

Part 24.2 - Removal Locations

Refer to architectural drawings for this site identifying the buildings and work included in the project and scope of work outline. The General Contractor and his Sub-contractor are responsible for estimating the amount of asbestos-containing materials to be impacted as revealed on the mandatory bid walk, and provided in the project specifications and architectural drawings. The drawings will also provide the Contractor with locations where work is to be performed to allow computation of the quantities of materials to be impacted or removed.

The abatement contractor shall provide a complete copy of this specification, to their project foreman for reference while conducts work on the project.

Part 24.3 - Materials to be Abated

Refer to architectural drawings, and project specifications for designations and instructions pertaining to what materials are to be abated or impacted during this project. Directions pertaining to materials to be impacted during this project are **NOT** included in this Exhibit.

Areas of roofs, walls, floors, and/or ceilings may require penetrations be made during the project which may involve asbestos containing materials (ACM) depending upon the location of penetrations. Prior to impacting any building materials which are listed as "suspect" for containing asbestos by the US EPA the Contractor should refer to Section 25, Asbestos Results List for information pertaining to specific Asbestos Containing Building Materials (ACBM) or products known to exist on the site. Materials suspected of

containing asbestos but which have not been tested are "assumed" to contain asbestos.

Materials commonly excluded from being suspected for containing asbestos include but are not limited to: unwrapped pink and yellow fiberglass insulating materials or products, foam insulation, bare concrete, wood, metal, plastic, or glass. All other types of building materials or coatings on the materials listed above are commonly listed as "suspect" and must be tested prior to impact by a Contractor.
Attic spaces at this site may already be or may become contaminated with asbestos roofing debris. Prior to any work by any trade in those spaces designated as or suspected to contain asbestos debris, the space shall be accessed and the area where work is to be performed shall be cleaned of visible asbestos related debris by the asbestos contractor. If entry to the space is made by the abatement contractor from the interior of the building a mini-enclosure must be constructed and remain in place during the cleaning process.

Any instruction in the project specifications or architectural drawings designating the removal of VFT shall include the removal of the associated adhesive/mastic as well. Both of these materials must be assumed to contain asbestos unless reported otherwise in Section 25 of this Exhibit. Removal of any asbestos-containing or assumed asbestos-containing VFT and/or associated adhesive/mastic shall be performed only by the approved abatement contractor regardless of amount to be impacted.

Part 24.4 - Containment and Abatement Requirements

The general guidelines in these specifications shall be followed by the asbestos abatement contractor for all work on this project. All requirements of Cal/OSHA Section 1529 and US EPA AHERA regulations apply, and shall be followed, as well as, other applicable regulations.

The Contractor shall follow all requirements set forth in Section 23, Specific Procedures and Requirements when performing roof abatement, VFT and associated adhesive/mastic removal, repair of damaged thermal system insulation (TSI), and removal of TSI, regardless of the method to be used. All wall, ceiling, or floor cuts, which will impact asbestos-containing materials, shall be performed within mini-cube enclosures.

However, if the maximum allowable amounts to be removed within a mini-containment are exceeded full containment and three stage decontamination unit requirements will apply. The clean room of any three stage decontamination unit must be at least 5' in width, 8' in length, and 8' in height. All TSI removal shall be conducted using the glove bag technique within a secondary mini-cube enclosure.

If the Contractor chooses to use the wrap and cut method for removal of whole sections of pipe, and the TSI associated with that pipe, the requirement for enclosure within a secondary containment appropriate for the amount to be removed still applies. Clearance air testing must be completed after removal of more than three linear feet of asbestos-containing insulation regardless of the method used to accomplish that task.

The term "full-containment" shall be construed to mean a containment which is constructed to enclose a work area (as defined in Section 2), and meet all applicable requirements set forth in Sections 2 through 20 of this Specification and all governing regulatory agency requirements. Each full-containment shall be tailored to meet the needs of the "work area" to be enclosed and include all requirements as set forth in the above related sections and government regulations applicable to asbestos related work.

Part 24.5 - Contractor Assist Requirements

The asbestos contractor shall provide "contractor assist" services for electrical, plumbing, mechanical, and other trades as necessary and agreed to with the General Contractor, for work to be conducted in spaces such as attics, wall cavities, and mechanical rooms where asbestos contamination is present, or where ACBM's are to be disturbed in order to perform the work.

Contractor assist work shall require the asbestos contractor to construct a mini-cube enclosure, create access to the contaminated area, and wet wipe or HEPA vacuum all dust and debris from the immediate

work area as needed to create a "clean" environment for the trade workers to work. All procedures specified in Section 23.3 Mini-Cube Enclosure Requirements shall be followed.

Part 24.6 - Additional Requirements for Removal of Nicolite Roofing Felts

Set up of perimeter barriers shall be extended to 30 feet from roof edge at ground level. Contractor shall be required to use barrier tape stamped with, "**DANGER ASBESTOS HAZARD**" in black letters on a solid red background.

Pre-wetting of materials utilizing amended water must attain complete and thorough penetration of the felts prior to their removal, and additional application of amended water shall be performed as necessary throughout the removal and bagging process.

Part 24.7 - Visual Inspection Forms-Interior and Exterior (Roof Removal Shifts Only)

The Owner's agent/site representative shall conduct visual inspections inside each building space prior to each work shift to determine existing conditions, including loose or dislodged acoustical ceiling tiles.

In addition, all interior spaces directly below the area of work shall be visually inspected by the Owner's agent/site representative, **at the end of the work shift**, to inspect for roofing debris and for loose or dislodged ceiling tiles, etc.

The Contractor is responsible for all costs associated with clean-up of any debris which falls in the occupied spaces of the building.

The Contractor is responsible for providing adequate lighting during all phases of work. This includes final visual inspection by the Owner's agent/site representative, of the removal area and adjacent surfaces impacted during the work.

The Contractor shall perform a pre-final visual of the removal area and adjacent surfaces prior to requesting that the Owner's agent/site representative conduct a final visual inspection. The pre-final visual performed by the Contractor shall verify that all materials have been completely removed from the work area as specified, and all poly sheeting or tape placed over any vents or equipment which has been removed. The Contractor will also verify that all perimeter poly sheeting on adjacent surfaces has been picked up, and all debris generated by the roofing work such as gutters, flashing, roofing products, paper, nails, screw, etc. have been placed into the waste container.

Part 24.8 - Protection of Accessible Attic Areas

Any plumber's plenums which may be located below areas where roof removal will take place and the roof deck is not constructed of plywood or solid sheet metal, shall be protected with poly barriers prior to work being performed. Any and all debris which may get into a plumber's plenum will be the responsibility of the Contractor and must be cleaned up by the abatement contractor. A final visual inspection by Owner's agent/site representative will be required prior to allowing the abatement contractor to move to the next designated removal location.

Part 24.9 - Caulking and Poly Barrier Requirements

Roof removal may cause dust and debris to enter attic areas through gaps between roof deck boards. This dust and debris could enter the interior building areas through gaps and penetrations in the ceilings. The Contractor shall caulk all identifiable gaps in the ceilings (excluding areas specified to be protected with poly barriers). Typically, this will require caulking along curtain tracks, lowering lighting trim to caulk around junction boxes, and caulking gaps around the ceiling edges. The Contractor is responsible for all costs of decontamination and clearance sampling of interior areas, other than inaccessible attics and plumbing plenums, if dust and debris fallout occurs.

All caulking work shall be performed using an Owner approved, paintable material which matches the existing color of the surface, and shall be applied to industry standards with a smooth finish. Caulking must be performed at least five days prior to roof removal work to allow Owner's agent/site representative time to inspect the work completed.

Exterior corridor areas shall not require caulking, however, all grooves shall be thoroughly cleaned of debris by HEPA vacuuming immediately following roof removal. When construction of an overhang or covered walkway is such that prolonged fallout of roofing debris can be expected to occur, the Contractor shall install and maintain a poly barrier below the roof substrate until debris fallout has ceased.

Where exposed tongue and groove wood or roofing substrates are visible, which do not provide a solid barrier between the roof deck and the interior of a building exist, the Contractor may choose to install poly barriers in lieu of caulking. These poly barriers must be air tight and secured to the building surfaces. Spray glue shall not be used to attach any materials to any building surfaces. These poly barriers shall remain in place for the duration of the roof removal and roof replacement activities. During the removal of the poly barriers, the Contractor shall carefully process all asbestos debris captured, either by wetting, HEPA vacuuming, or both, to prevent loss of debris and contamination of interior spaces. The Contractor is responsible for any damages to interior surfaces, and shall repair all finishes to the Owner's satisfaction.

Part 24.10 - Worker Protection

At a minimum half-face respirators with HEPA cartridges, disposable coveralls, and hard sole shoes shall be used during the removal and disposal of all asbestos containing material. Workers wearing tennis shoes, sandals, or soft sole type shoes will not be allowed to work on roofs or inside containments regardless of the activity being performed. Worker protection for all other work areas shall be in compliance with Cal/OSHA requirements and shall follow the respirator selection as specified in Title 8 section 5144.

Part 24.11 - Electrical and Water Hook-Ups

The Owner shall provide access for electrical and water hook-ups. The Contractor shall install a temporary electrical spider box to an existing electrical panel using a licensed qualified electrical contractor. The Contractor is responsible for all hook-ups, electrical cords, water hoses, and hose bibs necessary for attachment.

Part 24.12 - Visual and Air Clearance Criteria

The **Contractor** shall perform a pre-final visual of the removal area and adjacent surfaces prior to requesting that Owner's agent/site representative conduct a final visual inspection. The pre-final visual performed by the Contractor shall verify that all materials have been completely removed from the work area, and that the work area meets the requirements specified in Section 17.

Upon completion of the pre-final visual inspection by the Contractor a final visual of the containment area will be performed by Owner's agent/site representative. The Contractor shall not be released to encapsulate the containment until receiving written acceptance by Owner's agent/site representative stating the removal area and the containment have met the criteria of Owner's agent/site representative for completeness of removal and cleanliness of the containment barriers and surfaces.
When required clearance air sampling shall be performed following the requirements specified in Section 18 after encapsulation of the containment has taken place and a sufficient amount of time has passed to allow the encapsulant to dry. The Owner shall determine the method of analysis to be used based on the amount and type of material removed within a containment. If the quantity of Asbestos-Containing Material (ACM) exceeds 160 square feet or 260 linear feet, analysis of air samples must be by transmission electron microscopy (TEM) per US EPA AHERA regulations.

Part 24.13 - Owner Responsibilities

It is assumed that the buildings associated with this project have roof decking which may include any number of construction methods which allow for roofing debris to sift into joist spaces, or attics located beneath areas where roofing may have previously been removed. Therefore, it must be assumed that all inaccessible and accessible attic spaces, joist spaces, and even flutes of metal decks involved with this project will become, or have already been contaminated with asbestos, and shall be noted in the Management Plan.

The Owner acknowledges that the removal of any roofing materials during this project will result in contamination of the attic spaces, and assumes any associated responsibilities.

Part 24.14 - Disposal Requirements

Disposal of all hazardous asbestos-containing waste must be tracked utilizing a current copy of a Uniform Hazardous Waste form. These forms are to be properly filled out by the Contractor and signed by an authorized Owner's representative. No individual or representative other than the Owner's designated representative is permitted to sign Uniform Hazardous Waste forms for the Owner.

It shall be the responsibility of the Contractor to notify Owner's agent/site representative and coordinate having a hazardous waste manifest properly signed by an Owner representative.

Part 24.15 - Work Periods

Work periods shall be scheduled with Owner's agent/site representative at least 48 hours prior to the start of any shift. If weekend work is to be conducted, shift times are to be established and approved by Owner's agent/site representative. All shifts are to consist of 8 hours and will begin at the time specified and agreed to by Owner's agent/site representative and the abatement contractor.

PREPARED BY:

Blake Howes
Project Manager
Entek Consulting Group, Inc.
CAC# 13-5015
June 30, 2015

Part 24.16 - Pre-Construction Submittal List

1. _____ Copy of State of California - Contractor's State License

2. _____ Copy of State of California CSLB Active License

3. _____ Copy of State of California CSLB Asbestos Certification

4. Copy of Department of Industrial Relations; Division of Occupational Safety and Health; Certificate of Registration for Asbestos-related Work

5. _____ Copy of signed statement from company officer listing citations and pending proceedings against the Contractor, or if there have been no citations, a copy of the statement that no actions by regulatory agencies have occurred in the last three years signed by an officer of the company.

6. _____ General Liability Insurance Certificate

a) ____Occurrence
b) ____Asbestos/Lead Activities or Abatement Certificate
c) ____Owner Named as Additional Insured
d) ____Consultant Named as Additional Insured

7. _____ Auto Insurance

8. _____ Workers' Compensation Insurance

9. _____ Statement of Non-use of Sub-contractors or

a) ____Name of Each Sub-contractor
b) ____License Number for Each Sub-contractor
c) ____General Liability Insurance Certificate for Each Sub-contractor

1) ____Minimum Coverage of $1,000,000.00
2) ____Owner Named as Additional Insured
3) ____Consultant Named as Additional Insured

d) ____Auto Insurance Certificate for Each Sub-contractor
e) ____Workers' Compensation Insurance Certificate for Each Sub-contractor

1) ____Owner Named as Additional Insured
2) ____Consultant Named as Additional Insured

10. _____ Written Notification to CAL/OSHA

11. _____ Written Notification to local AQMD, CARB, EPA NESHAP Region IX

12. _____ Copies of City Permits (e.g. Parking or Waste container) or Statement That no Permits are Required

13. _____ Statement That no Equipment Will Be Rented for use with Asbestos or a Statement from Each Rental Company Acknowledging Their Equipment Will Be Exposed to Asbestos

14. _____ Non-Emergency Telephone Numbers

a) ____Local Police Department
b) ____Sheriff Department
c) ____Fire Department
d) ____Emergency Medical Facility and Directions to That Facility from the Site

15. _____ Written Emergency Plans

16. _____ Written Work Plan

17. _____ Written Schedule

18. _____ Worker Documentation (Must Include at Least One Supervisor)

a) ____Training Records for Asbestos - AHERA (Supervisor and Worker) *
b) ____Medical Examination Written Opinion Final Report for Each Employee*
c) ____Respiratory Fit Tests for Each Employee*

19. _____ Equipment list, MSDS for all materials to be used on the project, including but not limited to, spray glue, encapsulants, wetting agents, mastic remover, etc.

20. _____ Name of laboratory/person used for PCM analysis and copy of current NVLAP Certificate of Accreditation (if applicable), and most recent AIHA Proficiency Analytical Testing (PAT) Program results.

21. _____ Written Statement That OSHA Monitoring Will be Performed During the Project

22. _____ Manufacturers documentation of 5.0-micron filter capability required for waste water

23. _____ Name of Transporter

24. _____ Hazardous Waste Transporter Registration (if applicable) **Is required only if work to be conducted involves the removal and disposal of "hazardous" asbestos waste as determined either by definition or designated within the Asbestos Abatement Specifications/Procedures and associated attached Exhibits.**

25. _____ Waste Facility Documentation

a) ____Name and Site Address
b) ____EPA Identification Number (if applicable)
c) ____Copy of Current Permit Authorizing Asbestos Waste Receipt and Disposal

26. _____ Signed Copy of Competent Person Form Acknowledging Reading and Understanding the Specifications (Last Page of Forms Sections of Document)

Note: Items 9, 12, 13, and 21 may be addressed in a single letter as applicable.

* No Contractor's worker will be allowed to conduct asbestos related work, enter a containment, or regulated area prior to verification of AHERA, respirator, and medical documentation. This verification must either be onsite or faxed to Owner's agent/site representative prior to entry.

Part 24.17 - Interim Construction Submittals

Upon request by the Owner or Owner's Representative, the Contractor shall provide copies of documentation identified to be pertinent to the project.

Part 24.18 - Post Construction Submittal List

Contractor shall provide the following post-construction submittals to Owner's Representative within thirty (30) days of the completion of asbestos abatement work.

1. _____ Copies of revised notifications to regulatory agencies.

2. _____ Information on all new workers not covered by the pre-construction submittals and not submitted during the project.

3. _____ A copy of worker exposure monitoring results collected in compliance with DOSH regulations (Title 8 CCR, Section 1529) including daily/representative/full-shift/breathing-zone air samples, and 30-minute excursion samples.

4. _____ A copy of the worker/visitor log showing the following for all persons entering the work area: date, name, social security number, entering and leaving times, company or agency represented, and reason for entry. The Contractor's time records will not be accepted in lieu of a worker/visitor log.

5. _____ Copies of all accident reports submitted during the course of work. **If no accidents occur during the project this should be stated in writing by the Contractor.**

6. _____ Receipts from the landfill operator acknowledging the Contractor's delivery of wastes, including dates, container types and quantities, tare weights or material delivered, and all appropriate signatures.

7. _____ A complete record of the air filtration devices used certifying DOP testing (if performed) and a circular chart recording, indicating continuous operation and documenting differential air pressure.

8. _____ Copies of DOP Testing Performed on HEPA Equipment not Previously Submitted

9. _____ Manometer graphs identifying project name, date, and location.

10. _____ A copy of the asbestos waste record showing dates, times, manifest numbers, quantities of wastes, types of containers removed from the work area, the hauler, and the signature of the recorder.

11. _____ A Land Disposal Restrictions Notification and Certification

12. _____ Completed Uniform Hazardous Waste forms

13. _____ Other Documents as Requested

SECTION 25. ASBESTOS RESULTS LIST

Any material not specified on the following list which the Contractor encounters at this site must be considered as "suspect" and "assumed" to contain asbestos per US EPA. The only items excluded from this statement are; bare wood, glass, and metal.

Suspect Materials Assumed or Known TO Contain >1% Asbestos (RACM)				
Sample ID#'s	**Suspect Material**	**Asbestos Content/Type (%) by PLM**	**Location**	**Total Estimated Quantity**
05A	Hard Pack Pipe Insulation & Elbows	5-10% CHRYSOTILE	Admin Bldg, East & West Mechanical Room	6 Elbows Observed, Undetermined Total
65A	Soft Ceiling Plaster	1-5% CHRYSOTILE	Classroom 12-18 Bldg, All Hallway and Classroom Ceilings - Located Above 2'x4' Panels in Classrooms	8,000 Sq. Ft.
116A	Roofing Felt	90-100% CHRYSOTILE	Portable 21, Roof - Beneath PVC Membrane Roof	900 Sq. Ft.

Suspect Materials Found or Known TO Contain >1% Asbestos (CAT-I)				
Sample ID#'s	**Suspect Material**	**Asbestos Content/Type (%) by PLM**	**Location**	**Total Estimated Quantity**
01A	12" Vinyl Floor Tile (Light Brown) With Black Adhesive	1-2% CHRYSOTILE **(Floor Tile)** 2-7% CHRYSOTILE **(Black Adhesive)**	Admin Bldg, Throughout - Assumed Under All Carpet	4,000 Sq. Ft.
46A, 46C	9" Vinyl Floor Tile (Dark Brown)	5-10% CHRYSOTILE **(Floor Tile)** NONE DETECTED **(Black Adhesive)**	Classrooms 8-11 Bldg, All Classrooms - Assumed to Exist Beneath All Carpet	3,600 Sq. Ft.
47A	9" Vinyl Floor Tile (Light Brown) With Black Adhesive	2-7% CHRYSOTILE **(Floor Tile)** NONE DETECTED **(Black Adhesive)**	Classrooms 9-11 Bldg, Former Spanish Library	300 Sq. Ft.
78A	Black Adhesive Associated with 12" Vinyl Floor Tile (White Mottled)	NONE DETECTED **(Floor Tile)** NONE DETECTED **(Yellow Adhesive)** 1-5% CHRYSOTILE **(Black Adhesive)**	Portable P21	300 Sq. Ft.

Suspect Materials Found or Known TO Contain >1% Asbestos (CAT-I)				
Sample ID#'s	**Suspect Material**	**Asbestos Content/Type (%) by PLM**	**Location**	**Total Estimated Quantity**
109A	Roof Penetration Mastic	1-2% CHRYSOTILE	Classrooms 8-11 Bldg. Roof	10 Sq. Ft.
110A	HVAC Duct Penetration Mastic	1-5% CHRYSOTILE	Classrooms 8-11 Bldg. Roof	50 Sq. Ft.

Suspect Materials Found or Known TO Contain >1% Asbestos (CAT-II)				
Sample ID#'s	**Suspect Material**	**Asbestos Content/Type (%) by PLM/PC**	**Location**	**Total Estimated Quantity**
05A-C	Base Cove Adhesive (Brown)	>1% FIBROUS TREMOLITE *(Initial Analysis of <1% Not Confirmed by Point Count)*	Admin Bldg. Throughout	1,000 Ln. Ft.
06A-C	Drywall & Joint Compound*	NONE DETECTED **(Drywall)** <1-2% CHRYSOTILE **(Joint Compound 1)** <1% CHRYSOTILE **(Joint Compound 2)** <1% CHRYSOTILE **(Composite)***	Admin Bldg. Throughout	5,000 Sq. Ft.
54A	Cementitious Vent Pipe	5-10% CHRYSOTILE 5-10% CROCIDOLITE	Classroom 8-11 Bldg. Large Storage Room	10 Ln. Ft.

*Cal/OSHA and Federal OSHA do not allow composite sampling of drywall & joint compound. The 400-point count analysis performed on drywall samples that were found to contain 1-2% CHRYSOTILE in the joint compound was to remove the material from classification as a RACM. The composite drywall material must be handled and disposed of as a >1% asbestos containing material.

Suspect Materials Found or Known TO Contain <1% Asbestos (ACCM)				
Sample ID#'s	**Suspect Material**	**Asbestos Content/Type (%) by PC**	**Location**	**Total Estimated Quantity**
04A-C	Carpet Adhesive (Yellow/Brown)	<1% FIBROUS TREMOLITE	Admin Bldg. Library & Administration	1,500 Sq. Ft.

Suspect Materials Found or Known TO Contain <1% Asbestos (ACCM)				
Sample ID#'s	**Suspect Material**	**Asbestos Content/Type (%) by PC**	**Location**	**Total Estimated Quantity**
			Area	
51A-C	Drywall & Joint Compound	NONE DETECTED **(Drywall)** <1% CHRYSOTILE **(Joint Compound #1)** 1% CHRYSOTILE **(Joint Compound #1)** <1% CHRYSOTILE **(Composite)**	Classrooms 8-11 Bldg, Visible in Storages & Janitor's Closets	1,000 Sq. Ft. Visible May Exist Behind Wood Paneling
52A-C	Drywall Skim Coat	<1% CHRYSOTILE	Classrooms 8-11 Bldg, Visible in Storages & Janitor's Closets	1,000 Sq. Ft.
58A-D	Window Glazing Putty	<1% CHRYSOTILE	Classrooms 8-11 Bldg, Exterior Windows	200 Sq. Ft.

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Suspect Materials Found NOT TO Contain Asbestos or Considered Non-Suspect				
Sample ID#'s	**Suspect Material**	**EPA AHERA "Suspected" ACBM**	**Asbestos Content**	**Location**
02A	12" Vinyl Floor Tile (White Mottled) & Brown Adhesive	Miscellaneous	NONE DETECTED	Admin Bldg, Copy/Work Room
03A	1" Ceramic Floor Tile (Brown) & Grout	Miscellaneous	NONE DETECTED	Admin Bldg, Restrooms
07A-C	Drywall Skim Coat	Surfacing	NONE DETECTED	Admin Bldg, Throughout
08A-B	Brick & Mortar	Miscellaneous	NONE DETECTED	Admin Bldg, Exterior
09A	4" White Ceramic Wall Tile	Miscellaneous	NONE DETECTED	Admin Bldg, Restrooms
10A-B	2'x4' Ceiling Panels (Fissure)	Miscellaneous	NONE DETECTED	Admin Bldg, Throughout
11A-B	12" Acoustic Ceiling Tile & Brown Mastic	Miscellaneous	NONE DETECTED	Admin Bldg, Cafeteria
12A	2'x4' Ceiling Panels	Miscellaneous	NONE DETECTED	Admin Bldg, Kitchen

Suspect Materials Found NOT TO Contain Asbestos or Considered Non-Suspect				
Sample ID#'s	Suspect Material	EPA AHERA "Suspected" ACBM	Asbestos Content	Location
	(Smooth)			
13A	HVAC Duct Seam Tape	Miscellaneous	NONE DETECTED	Admin Bldg
14A	HVAC Vibration Joint Cloth	Miscellaneous	NONE DETECTED	Admin Bldg, Mechanical Rooms
16A-B	12" Vinyl Floor Tile (Blue Mottled) & Yellow Adhesive	Miscellaneous	NONE DETECTED	Classrooms 1/2/K Bldg, Throughout
17A	Sheet Vinyl Flooring (Blue Pebble) & Yellow Adhesive	Miscellaneous	NONE DETECTED	Classrooms 1/2/K Bldg, Staff Restrooms
18A	2" Gray Ceramic Floor Tile & Grout	Miscellaneous	NONE DETECTED	Classrooms 1/2/K Bldg, Student Restrooms
19A-C	Carpet Adhesive (Yellow)	Miscellaneous	NONE DETECTED	Classrooms 1/2/K Bldg, Throughout
20A-C	Base Cove Adhesive (White)	Miscellaneous	NONE DETECTED	Classrooms 1/2/K Bldg, Throughout
21A-D	Drywall & Joint Compound	Miscellaneous	NONE DETECTED	Classrooms 1/2/K Bldg, Throughout
22A-C	Drywall Skim Coat	Surfacing	NONE DETECTED	Classrooms 1/2/K Bldg, Throughout
23A	4" White Ceramic Wall Tile	Miscellaneous	NONE DETECTED	Classrooms 1/2/K Bldg, Student Restrooms
24A-B	CMU Block & Mortar	Miscellaneous	NONE DETECTED	Classrooms 1/2/K Bldg, Exterior
25A-B	2'x4' Ceiling Panels	Miscellaneous	NONE DETECTED	Classrooms 1/2/K Bldg, Throughout
26A	HVAC Duct Seam Tape	Miscellaneous	NONE DETECTED	Classrooms 1/2/K Bldg, Plenum Spaces
27A	Carpet Adhesive (Yellow)	Miscellaneous	NONE DETECTED	Portable P3
28A	Base Cove Adhesive (White)	Miscellaneous	NONE DETECTED	Portable P3

Suspect Materials Found NOT TO Contain Asbestos or Considered Non-Suspect				
Sample ID#'s	Suspect Material	EPA AHERA "Suspected" ACBM	Asbestos Content	Location
29A	Cementitious Ramp Coating	Miscellaneous	NONE DETECTED	Portable P3
30A	12" Vinyl Floor Tile (Light Blue Mottled) & Yellow Adhesive	Miscellaneous	NONE DETECTED	Portable P4
31A	Carpet Adhesive (Yellow)	Miscellaneous	NONE DETECTED	Portable P4
32A	Base Cove Adhesive (Yellow)	Miscellaneous	NONE DETECTED	Portable P4
33A	Cementitious Ramp Coating	Miscellaneous	NONE DETECTED	Portable P4
34A	12" Vinyl Floor Tile (White Mottled) & Yellow Adhesive	Miscellaneous	NONE DETECTED	Portable P5
35A	Carpet Adhesive (Yellow)	Miscellaneous	NONE DETECTED	Portable P5
36A	Base Cove Adhesive (Tan)	Miscellaneous	NONE DETECTED	Portable P5
37A	Cementitious Ramp Coating	Miscellaneous	NONE DETECTED	Portable P5
38A	12" Vinyl Floor Tile (Light Blue Mottled) & Yellow Adhesive	Miscellaneous	NONE DETECTED	Portable P6
39A	Carpet Adhesive (Yellow)	Miscellaneous	NONE DETECTED	Portable P6
40A	Base Cove Adhesive (White)	Miscellaneous	NONE DETECTED	Portable P6
41A	Cementitious Ramp Coating	Miscellaneous	NONE DETECTED	Portable P6
42A	12" Vinyl Floor Tile (Light Blue Mottled) & Yellow Adhesive	Miscellaneous	NONE DETECTED	Portable P7
43A	Carpet Adhesive (Clear)	Miscellaneous	NONE DETECTED	Portable P7

Suspect Materials Found NOT TO Contain Asbestos or Considered Non-Suspect				
Sample ID#'s	Suspect Material	EPA AHERA "Suspected" ACBM	Asbestos Content	Location
44A	Base Cove Adhesive (White)	Miscellaneous	NONE DETECTED	Portable P7
45A	Cementitious Ramp Coating	Miscellaneous	NONE DETECTED	Portable P7
46A-D	Black Adhesive Associated with 9" Vinyl Floor Tile (Dark Brown) - **Floor Tile Contains Asbestos**	Miscellaneous	5-10% CHRYSOTILE **(Floor Tile)** NONE DETECTED **(Black Adhesive)**	Classrooms 8-11 Bldg, Classrooms
47A	Black Adhesive Associated with 9" Vinyl Floor Tile (Light Brown) - **Floor Tile Contains Asbestos**	Miscellaneous	2-7% CHRYSOTILE **(Floor Tile)** NONE DETECTED **(Black Adhesive)**	Classrooms 8-11 Bldg, Former Spanish Library
48A-D	Carpet Adhesive (White & Clear)	Miscellaneous	NONE DETECTED	Classrooms 8-11 Bldg, Classrooms
49A	6" Red Ceramic Cove Tile & Grout	Miscellaneous	NONE DETECTED	Classrooms 8-11 Bldg, Restrooms
50A-C	Base Cove Adhesive (White)	Miscellaneous	NONE DETECTED	Classrooms 8-11 Bldg, Throughout
53A	12" Acoustic Ceiling Tile (Nailed On)	Miscellaneous	NONE DETECTED	Classrooms 8-11 Bldg, Former Spanish Library
55A-B	Brick & Mortar	Miscellaneous	NONE DETECTED	Classrooms 8-11 Bldg, Exterior
57A-D	12" Vinyl Floor Tile (White with Gray Mottle) & Yellow Adhesive, Brown Linoleum	Miscellaneous	NONE DETECTED	Classrooms 12-18 Bldg, Throughout
58A	12" White Ceramic Floor Tile & Grout	Miscellaneous	NONE DETECTED	Classrooms 12-18 Bldg, Restrooms
59A-D	Carpet Adhesive (Yellow)	Miscellaneous	NONE DETECTED	Classrooms 12-18 Bldg, Throughout
60A-D	Base Cove	Miscellaneous	NONE DETECTED	Classrooms 12-18 Bldg,

Suspect Materials Found NOT TO Contain Asbestos or Considered Non-Suspect				
Sample ID#'s	Suspect Material	EPA AHERA "Suspected" ACBM	Asbestos Content	Location
	Adhesive (White)			Throughout
61A-G	Wall Plaster	Surfacing	NONE DETECTED	Classrooms 12-18 Bldg. Throughout
62A	Drywall & Joint Compound	Miscellaneous	NONE DETECTED	Classrooms 12-18 Bldg. Northeast Room & Room 15
63A-C	Drywall Texture #1	Surfacing	NONE DETECTED	Classrooms 12-18 Bldg. Rooms 15 & 16
64A-C	Drywall Texture #2	Surfacing	NONE DETECTED	Classrooms 12-18 Bldg. Northeast Room
66A-C	2'x4' Ceiling Panels	Miscellaneous	NONE DETECTED	Classrooms 12-18 Bldg. Throughout
67A-B	Brick & Mortar	Miscellaneous	NONE DETECTED	Classrooms 12-18 Bldg. Exterior
68A-C	Stucco	Surfacing	NONE DETECTED	Classrooms 12-18 Bldg. Exterior
69A-B	Window Glazing Putty	Miscellaneous	NONE DETECTED	Classrooms 12-18 Bldg. Exterior Northeast Corner
70A	12" Vinyl Floor Tile (White Mottled) With Yellow Adhesive	Miscellaneous	NONE DETECTED	Portable P19
71A	Carpet Adhesive (Yellow)	Miscellaneous	NONE DETECTED	Portable P19
72A	Base Cove Adhesive (White)	Miscellaneous	NONE DETECTED	Portable P19
73A	Cementitious Ramp Coating	Miscellaneous	NONE DETECTED	Portable P19
74A	12" Vinyl Floor Tile (White Mottled) With Yellow Adhesive	Miscellaneous	NONE DETECTED	Portable P20
75A	Carpet Adhesive (Yellow), Leveler	Miscellaneous	NONE DETECTED	Portable P20
76A	Base Cove Adhesive (White)	Miscellaneous	NONE DETECTED	Portable P20

Suspect Materials Found NOT TO Contain Asbestos or Considered Non-Suspect				
Sample ID#'s	Suspect Material	EPA AHERA "Suspected" ACBM	Asbestos Content	Location
77A	Cementitious Ramp Coating	Miscellaneous	NONE DETECTED	Portable P20
78A	12" Vinyl Floor Tile (White Mottled) With Yellow & Black Adhesive - **Black Adhesive Contains Asbestos**	Miscellaneous	NONE DETECTED **(Floor Tile)** NONE DETECTED **(Yellow Adhesive)** 1-5% CHRYSOTILE **(Black Adhesive)**	Portable P21
79A	Carpet Adhesive (Yellow)	Miscellaneous	NONE DETECTED	Portable P21
80A	Base Cove Adhesive (White), Wall Paper	Miscellaneous	NONE DETECTED	Portable P21
81A	Drywall	Miscellaneous	NONE DETECTED	Portable P21
82A	12" Vinyl Floor Tile (White Mottled) With Yellow Adhesive	Miscellaneous	NONE DETECTED	Portable P22
83A	Carpet Adhesive (Yellow)	Miscellaneous	NONE DETECTED	Portable P22
84A	Base Cove Adhesive (White)	Miscellaneous	NONE DETECTED	Portable P22
85A	Drywall	Miscellaneous	NONE DETECTED	Portable P22
86A	Carpet Adhesive (Yellow)	Miscellaneous	NONE DETECTED	Portable P23
87A	Base Cove Adhesive (White)	Miscellaneous	NONE DETECTED	Portable P23
88A	Wall Material	Miscellaneous	NONE DETECTED	Portable P23
89A	2'x4' Ceiling Panels	Miscellaneous	NONE DETECTED	Portable P23
90A	12" Vinyl Floor Tile (White Mottled) With Yellow Adhesive	Miscellaneous	NONE DETECTED	Portable P24
91A	Carpet Adhesive (Yellow)	Miscellaneous	NONE DETECTED	Portable P24
	Base Cove			

Suspect Materials Found NOT TO Contain Asbestos or Considered Non-Suspect				
Sample ID#'s	Suspect Material	EPA AHERA "Suspected" ACBM	Asbestos Content	Location
92A	Adhesive (White)	Miscellaneous	NONE DETECTED	Portable P24
93A	Drywall	Miscellaneous	NONE DETECTED	Portable P24
94A	2'x4' Ceiling Panels	Miscellaneous	NONE DETECTED	Portable P24
95A	12" Vinyl Floor Tile (White Mottled) With Yellow Adhesive	Miscellaneous	NONE DETECTED	Portable P25
96A	Carpet Adhesive (Yellow)	Miscellaneous	NONE DETECTED	Portable P25
97A	Base Cove Adhesive (White)	Miscellaneous	NONE DETECTED	Portable P25
98A	Drywall	Miscellaneous	NONE DETECTED	Portable P25
99A-B	Composition Asphalt Rolled Roofing	Miscellaneous	NONE DETECTED	Admin Bldg. Roof
100A	Roof Jack Mastic	Miscellaneous	NONE DETECTED	Admin Bldg. Roof
101A-B	Rock Covered Asphalt Roofing	Miscellaneous	NONE DETECTED	Classrooms 1/2/K Bldg. Roof
102A	Roof Mastic	Miscellaneous	NONE DETECTED	Portable Building P3
103A	Roof Mastic	Miscellaneous	NONE DETECTED	Portable Building P4
104A	Roof Mastic	Miscellaneous	NONE DETECTED	Portable Building P5
106A	Roof Mastic	Miscellaneous	NONE DETECTED	Portable Building P6
107A	Roof Mastic	Miscellaneous	NONE DETECTED	Portable Building P7
108A-B	Composition Asphalt Rolled Roofing	Miscellaneous	NONE DETECTED	Classrooms 8-11 Bldg. Roof
111A	Rock Covered Asphalt Roofing	Miscellaneous	NONE DETECTED	Classrooms 12-18 Bldg. West Overhand Roof
112A-B	PVC Membrane Roofing	Miscellaneous	NONE DETECTED	Classrooms 12-18 Bldg. Main Roof
113A	Cap Flashing Mastic	Miscellaneous	NONE DETECTED	Classrooms 12-18 Bldg. Roof Parapet Wall
114A	Roof Mastic	Miscellaneous	NONE DETECTED	Portable P19

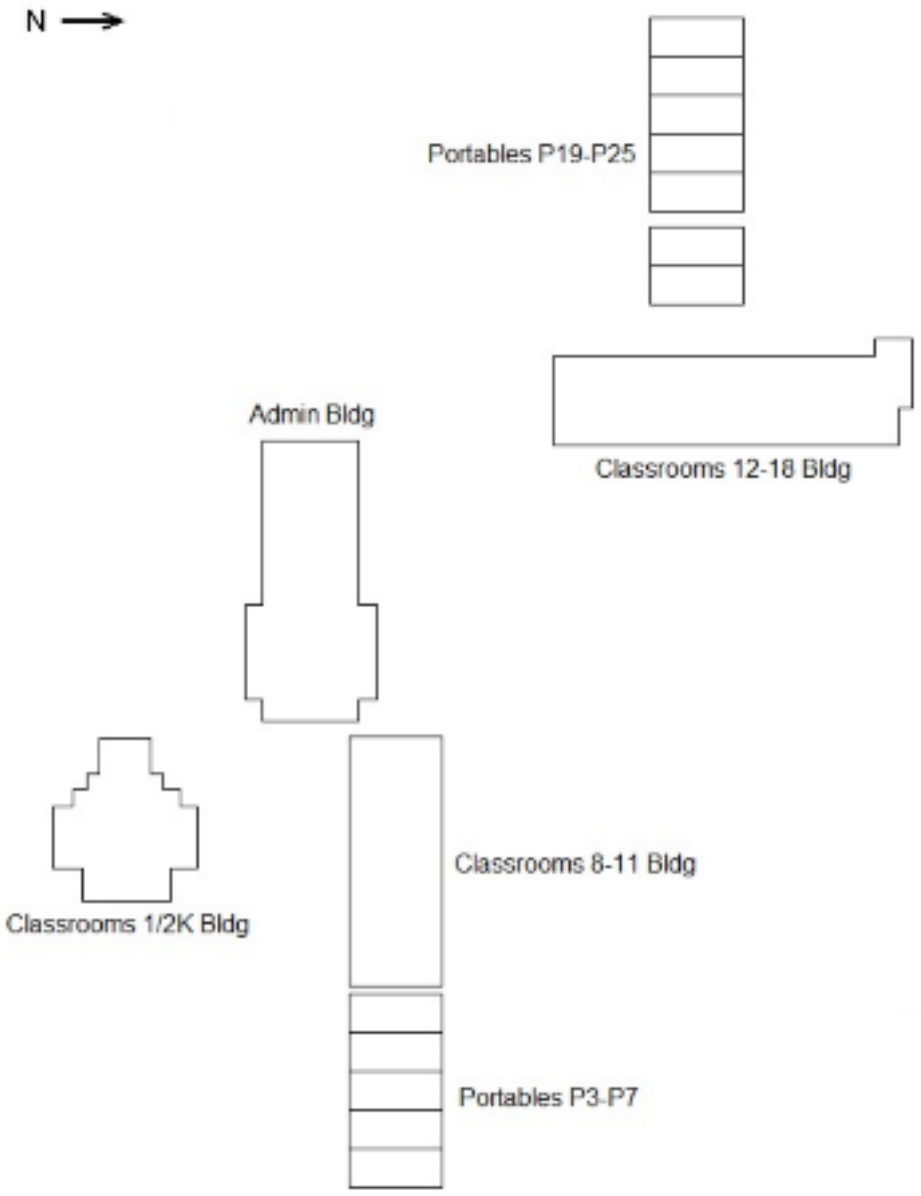
Suspect Materials Found NOT TO Contain Asbestos or Considered Non-Suspect				
Sample ID#'s	Suspect Material	EPA AHERA "Suspected" ACBM	Asbestos Content	Location
115A	Roof Mastic	Miscellaneous	NONE DETECTED	Portable P20
117A	Roof Mastic	Miscellaneous	NONE DETECTED	Portable P21
118A	Roof Mastic	Miscellaneous	NONE DETECTED	Portable P22
119A	Roof Mastic	Miscellaneous	NONE DETECTED	Portable P23
120A	Roof Mastic	Miscellaneous	NONE DETECTED	Portable P24
121A	Roof Mastic	Miscellaneous	NONE DETECTED	Portable P25

Note 1.: **Category I Non-friable ACM** is asbestos-containing packings, gaskets, resilient floor covering, and asphalt roofing products containing more than one percent asbestos by area.

Note 2.: **Category II Non-friable ACM** is any material, excluding Category I non-friable ACM, containing more than one percent asbestos, which is non-friable such as transite and other concrete based products.

Note 3.: **Regulated Asbestos-Containing Material (RACM)** is any friable material, any Category I non-friable ACM which has become friable, any Category I non-friable ACM which will be or has been subjected to sanding, grinding, cutting, or abrading, any Class II non-friable ACM that has a high probability of becoming or has become crumbled, pulverized, or reduced to a powder by the forces expected to act on the material in the course of demolition or renovation operations.

Note 4.: The terms "assume" and "presume" mean the named material is considered positive for containing asbestos and must be treated accordingly, until properly sampled in compliance with 40 CFR, Part 763 Asbestos-Containing Materials in Schools; Final Rule and Notice.


N
Portables P19-P25
Admin Bldg
Classrooms 12-18 Bldg
Classrooms 8-11 Bldg
Classrooms 1/2K Bldg
Portables P3-P7

1

SECTION 25. ASBESTOS RESULTS LIST

Any material not specified on the following list which the Contractor encounters at this site must be considered as "suspect" and "assumed" to contain asbestos per US EPA. The only items excluded from this statement are: bare wood, glass, and metal.

Suspect Materials Assumed or Known TO Contain >1% Asbestos (RACM)				
Sample ID#'s	**Suspect Material**	**Asbestos Content/Type (%) by PLM**	**Location**	**Total Estimated Quantity**
n/a	Boiler Unit Insulation	ASSUMED POSITIVE	Gym Bldg, Mechanical Room	Undetermined Total
58A	Door Insulation	1-5% CHRYSOTILE 5-10% AMOSITE	200 Bldg, Classroom 222 Storage Room Door	30 Sq. Ft.

Suspect Materials Found or Known TO Contain >1% Asbestos (CAT-I)				
Sample ID#'s	**Suspect Material**	**Asbestos Content/Type (%) by PLM**	**Location**	**Total Estimated Quantity**
02A	12" Vinyl Floor Tile (Brown Mottled) With Yellow Adhesive	1-5% CHRYSOTILE **(Floor Tile)** NONE DETECTED **(Yellow Adhesive)**	Admin Bldg, Nurse's Office, Nurse's Office Restroom, and South Office	200 Sq. Ft.
13A-B	Black Adhesive Associated with 12" Vinyl Floor Tile (White Mottled)	1-5% CHRYSOTILE **(Black Adhesive)** NONE DETECTED **(Floor Tile)**	Gym Bldg, Boy's & Girl's Locker Room Coaches Offices	300 Sq. Ft.
14A	12" Vinyl Floor Tile (Light Brown Mottled) With Black Adhesive	1-5% CHRYSOTILE **(Floor Tile)** 1-5% CHRYSOTILE **(Black Mastic)**	Gym Bldg, Cafeteria	2,000 Sq. Ft.
15A	Black Adhesive Associated with 12" Vinyl Floor Tile (Beige Mottled)	1-5% CHRYSOTILE **(Black Adhesive)** NONE DETECTED **(Vinyl Floor Tile)**	Gym Bldg, Kitchen	800 Sq. Ft.
31A	12" Vinyl Floor Tile (Brown Mottled) With Black Adhesive	1-2% CHRYSOTILE **(Floor Tile)** 1-5% CHRYSOTILE **(Black Adhesive)**	100 Bldg, All Work Rooms, Storage Rooms, & Janitor Closets	800 Sq. Ft.
45A	Black Adhesive Associated with 12" Vinyl Floor Tile	1-5% CHRYSOTILE **(Black Adhesive)** NONE DETECTED	200 Bldg, Classroom 220	500 Sq. Ft.

Suspect Materials Found or Known TO Contain >1% Asbestos (CAT-I)				
Sample ID#'s	**Suspect Material**	**Asbestos Content/Type (%) by PLM**	**Location**	**Total Estimated Quantity**
	(Off-White Mottled)	(Floor Tile)		
46A	12" Vinyl Floor Tile (Light Brown Mottled) With Black Adhesive	1-5% CHRYSOTILE (Floor Tile) 1-5% CHRYSOTILE (Black Adhesive)	200 Bldg, Classrooms 210, 214, 222, All Work Rooms, Storage Rooms, & Janitor Closets	2,000 Sq. Ft.
114A	Roof Mastic	1-2% CHRYSOTILE	Portable P1, Roof	10 Sq. Ft.
116A	Roof Mastic	1-2% CHRYSOTILE	Portable P3, Roof	10 Sq. Ft.
121A	Roof Mastic	1-2% CHRYSOTILE	Portable P8, Roof	10 Sq. Ft.
122A	Roof Mastic	1-2% CHRYSOTILE	Portable P9, Roof	10 Sq. Ft.

1

Suspect Materials Found or Known TO Contain >1% Asbestos (CAT-II)				
Sample ID#'s	**Suspect Material**	**Asbestos Content/Type (%) by PLM**	**Location**	**Total Estimated Quantity**
27A	HVAC Duct Seam Tape	1-5% CHRYSOTILE	Gym Bldg, Throughout	50 Sq. Ft.
35A-B	Base Cove Adhesive (Brown)	1-2% CHRYSOTILE	100 Bldg, Throughout	1,800 Ln. Ft.

2

Suspect Materials Found or Known TO Contain <1% Asbestos (ACCM)				
Sample ID#'s	**Suspect Material**	**Asbestos Content/Type (%) by PC**	**Location**	**Total Estimated Quantity**
98A-C	Window Glazing Putty	<1% CHRYSOTILE	Band Bldg, Exterior Windows	100 Sq. Ft.
98A	Vinyl Floor Tile (Beige	<1% CHRYSOTILE	Choir Portable, Throughout Beneath Carpet	900 Sq. Ft.
105A-B	Window Glazing Putty	<1% CHRYSOTILE	Storage Barn #2 (Small Barn), Exterior Windows	20 Sq. Ft.

Suspect Materials Found or Known TO Contain <1% Asbestos (ACCM)				
Sample ID#'s	Suspect Material	Asbestos Content/Type (%) by PC	Location	Total Estimated Quantity
106A-G	Exterior Stucco	<1% CHRYSOTILE	Campus, Walkway Overhangs	20,000 Sq. Ft.

1

Suspect Materials Found NOT TO Contain Asbestos or Considered Non-Suspect				
Sample ID#'s	Suspect Material	EPA AHERA "Suspected" ACBM	Asbestos Content	Location
01A	12" Vinyl Floor Tile (Light Brown Mottled), Yellow Adhesive	Miscellaneous	NONE DETECTED	Admin Bldg, Administration Area, Entry Area
03A	1" Ceramic Floor Tile, Grout	Miscellaneous	NONE DETECTED	Admin Bldg, Restrooms
04A	Carpet Adhesive (Yellow)	Miscellaneous	NONE DETECTED	Admin Bldg, Throughout
05A-B	Base Cove Adhesive (White & Brown)	Miscellaneous	NONE DETECTED	Admin Bldg, Throughout
06A	6" Ceramic Cove Tile, Grout	Miscellaneous	NONE DETECTED	Admin Bldg, Restrooms
07A-B	Drywall & Joint Compound	Miscellaneous	NONE DETECTED	Admin Bldg, Throughout
08A	4" Ceramic Wall Tile (White), Grout	Miscellaneous	NONE DETECTED	Admin Bldg, Restrooms
09A	2'x4' Ceiling Panels	Miscellaneous	NONE DETECTED	Admin Bldg, Throughout
10A	HVAC Duct Seam Tape	Miscellaneous	NONE DETECTED	Admin Bldg, Throughout
11A	Interior CMU Block Mortar	Miscellaneous	NONE DETECTED	Admin Bldg, Throughout
12A	Exterior Brick, Mortar	Miscellaneous	NONE DETECTED	Admin Bldg, Exterior
15A	1" Ceramic Floor Tile (Blue & White), Grout	Miscellaneous	NONE DETECTED	Gym Bldg, Boy's Locker Room

Suspect Materials Found NOT TO Contain Asbestos or Considered Non-Suspect				
Sample ID#'s	Suspect Material	EPA AHERA "Suspected" ACBM	Asbestos Content	Location
17A	1" Ceramic Floor Tile (Brown & Tan), Grout	Miscellaneous	NONE DETECTED	Gym Bldg, Girl's Locker Room
18A	1" Ceramic Floor Tile (Tan & Yellow), Grout	Miscellaneous	NONE DETECTED	Gym Bldg, Cafeteria Restrooms
19A	Red Floor Coating	Miscellaneous	NONE DETECTED	Gym Bldg, Boy's Locker Room
20A	Tan Floor Material	Miscellaneous	NONE DETECTED	Gym Bldg, Gymnasium
21A-C	Base Cove Adhesive (Yellow & Brown)	Miscellaneous	NONE DETECTED	Gym Bldg, Throughout
22A	4" Ceramic Wall Tile (Beige), Grout	Miscellaneous	NONE DETECTED	Gym Bldg, Cafeteria Restrooms
23A	4" Ceramic Wall Tile (White), Grout	Miscellaneous	NONE DETECTED	Gym Bldg, Locker Rooms
24A-D	Drywall & Joint Compound	Miscellaneous	NONE DETECTED	Gym Bldg, Throughout
25A	2'x4' Ceiling Panels (Fissure)	Miscellaneous	NONE DETECTED	Gym Bldg, Cafeteria
26A	2'x4' Ceiling Panels (Smooth)	Miscellaneous	NONE DETECTED	Gym Bldg, Kitchen
28A	CMU Block Mortar	Miscellaneous	NONE DETECTED	Gym Bldg, Throughout
29A	Exterior Brick, Mortar	Miscellaneous	NONE DETECTED	Gym Bldg, Exterior
30A	Hard Pack Pipe Insulation Elbow	TSI	NONE DETECTED	Gym Bldg, Boiler Room
32A	1" Ceramic Floor Tile (Brown & Tan), Grout	Miscellaneous	NONE DETECTED	100 Bldg, Men's & Boy's Restrooms
33A	1" Ceramic Floor Tile (Tan & Gray), Grout	Miscellaneous	NONE DETECTED	100 Bldg, Women's & Girl's Restrooms
34A-C	Carpet Adhesive	Miscellaneous	NONE DETECTED	100 Bldg, Throughout

Suspect Materials Found NOT TO Contain Asbestos or Considered Non-Suspect				
Sample ID#'s	Suspect Material	EPA AHERA "Suspected" ACBM	Asbestos Content	Location
	(Yellow)			
36A-E	Drywall & Joint Compound	Miscellaneous	NONE DETECTED	100 Bldg, Throughout
37A-E	Drywall Skim Coat	Surfacing	NONE DETECTED	100 Bldg, Throughout
38A	4" Ceramic Wall Tile (Beige), Grout	Miscellaneous	NONE DETECTED	100 Bldg, Men's & Boy's Restrooms
39A	4" Ceramic Wall Tile (Yellow), Grout	Miscellaneous	NONE DETECTED	100 Bldg, Women's & Girl's Restrooms
40A-C	2'x4' Ceiling Panels	Miscellaneous	NONE DETECTED	100 Bldg, Throughout
41A-B	12" Acoustic Ceiling Tile, Brown Mastic	Miscellaneous	NONE DETECTED	100 Bldg, Storage and Work Rooms
42A	HVAC Duct Seam Tape	Miscellaneous	NONE DETECTED	100 Bldg, Throughout
43A	CMU Block Mortar	Miscellaneous	NONE DETECTED	100 Bldg, Throughout
44A	Exterior Brick, Mortar	Miscellaneous	NONE DETECTED	100 Bldg, Exterior
47A	1" Ceramic Floor Tile (Brown & Tan), Grout	Miscellaneous	NONE DETECTED	200 Bldg, Men's & Boy's Restrooms
48A	1" Ceramic Floor Tile (Tan & Gray), Grout	Miscellaneous	NONE DETECTED	200 Bldg, Women's & Girl's Restrooms
49A-C	Carpet Adhesive (Yellow & White)	Miscellaneous	NONE DETECTED	200 Bldg, Throughout
50A-C	Base Cove Adhesive (Brown	Miscellaneous	NONE DETECTED	200 Bldg, Throughout
51A-E	Drywall & Joint Compound	Miscellaneous	NONE DETECTED	200 Bldg, Throughout
52A-C	Drywall Texture #1	Surfacing	NONE DETECTED	200 Bldg, Boy's Restroom Ceiling
53A-E	Drywall Skim Coat #2	Surfacing	NONE DETECTED	200 Bldg, Throughout

Suspect Materials Found NOT TO Contain Asbestos or Considered Non-Suspect				
Sample ID#'s	Suspect Material	EPA AHERA "Suspected" ACBM	Asbestos Content	Location
54A	4" Ceramic Wall Tile (Beige), Grout	Miscellaneous	NONE DETECTED	200 Bldg, Men's & Boy's Restrooms
55A	4" Ceramic Wall Tile (Yellow), Grout	Miscellaneous	NONE DETECTED	200 Bldg, Women's & Girl's Restrooms
56A-C	2'x4' Ceiling Panels	Miscellaneous	NONE DETECTED	200 Bldg, Throughout
57A	12" Acoustic Ceiling Tile, Brown Mastic	Miscellaneous	NONE DETECTED	200 Bldg, Storage and Work Rooms
58A-B	Hard Pack Pipe Insulation Elbow	TSI	NONE DETECTED	200 Bldg, Janitor's Closet Near Classroom 205
60A	HVAC Duct Seam Tape	Miscellaneous	NONE DETECTED	200 Bldg, Throughout
61A	CMU Block Mortar	Miscellaneous	NONE DETECTED	200 Bldg, Throughout
62A	Exterior Brick, Mortar	Miscellaneous	NONE DETECTED	200 Bldg, Exterior
63A	12" Vinyl Floor Tile (White Mottled), Black Adhesive, Yellow Adhesive	Miscellaneous	NONE DETECTED	Portable P9
64A	Carpet Adhesive (Black)	Miscellaneous	NONE DETECTED	Portable P9
65A	Base Cove Adhesive (White)	Miscellaneous	NONE DETECTED	Portable P9
66A	Drywall	Miscellaneous	NONE DETECTED	Portable P9
67A	12" Vinyl Floor Tile (White Mottled), Black Adhesive, Yellow Adhesive	Miscellaneous	NONE DETECTED	Portable P8
68A	Carpet Adhesive (Clear)	Miscellaneous	NONE DETECTED	Portable P8
69A	Base Cove Adhesive (White)	Miscellaneous	NONE DETECTED	Portable P8
70A	Drywall	Miscellaneous	NONE DETECTED	Portable P8
71A	12" Vinyl Floor Tile	Miscellaneous	NONE DETECTED	Portable P7

Suspect Materials Found NOT TO Contain Asbestos or Considered Non-Suspect				
Sample ID#'s	Suspect Material	EPA AHERA "Suspected" ACBM	Asbestos Content	Location
	(White Mottled), Yellow Adhesive			
72A	Base Cove Adhesive (White)	Miscellaneous	NONE DETECTED	Portable P7
73A	Drywall	Miscellaneous	NONE DETECTED	Portable P7
74A	12" Vinyl Floor Tile (White Mottled), Yellow Adhesive	Miscellaneous	NONE DETECTED	Portable P6
75A	Carpet Adhesive (Clear)	Miscellaneous	NONE DETECTED	Portable P6
76A	Base Cove Adhesive (White & Brown)	Miscellaneous	NONE DETECTED	Portable P6
77A	12" Vinyl Floor Tile (White Mottled), Yellow Adhesive	Miscellaneous	NONE DETECTED	Portable P5
78A	Carpet Adhesive (Clear)	Miscellaneous	NONE DETECTED	Portable P5
79A	Base Cove Adhesive (White)	Miscellaneous	NONE DETECTED	Portable P5
80A	Sheet Vinyl Flooring (Beige Marble), Yellow Adhesive	Miscellaneous	NONE DETECTED	Portable P4
81A	Carpet Adhesive (Yellow)	Miscellaneous	NONE DETECTED	Portable P4
82A	Base Cove Adhesive (White)	Miscellaneous	NONE DETECTED	Portable P4
83A	Drywall	Miscellaneous	NONE DETECTED	Portable P4
84A	12" Vinyl Floor Tile (White Mottled), Yellow Adhesive	Miscellaneous	NONE DETECTED	Portable P3
85A	Carpet Adhesive (Yellow)	Surfacing	NONE DETECTED	Portable P3
86A	Base Cove	Miscellaneous	NONE DETECTED	Portable P3

Suspect Materials Found NOT TO Contain Asbestos or Considered Non-Suspect				
Sample ID#'s	Suspect Material	EPA AHERA "Suspected" ACBM	Asbestos Content	Location
	Adhesive (White)			
87A	Drywall	Miscellaneous	NONE DETECTED	Portable P3
88A	Carpet Adhesive (Yellow)	Miscellaneous	NONE DETECTED	Portable P2
89A	Base Cove Adhesive (Yellow)	Miscellaneous	NONE DETECTED	Portable P2
90A	Drywall	Miscellaneous	NONE DETECTED	Portable P2
91A	Carpet Adhesive (Yellow)	Miscellaneous	NONE DETECTED	Portable P1
92A	Base Cove Adhesive (White)	Miscellaneous	NONE DETECTED	Portable P1
93A	Drywall	Miscellaneous	NONE DETECTED	Portable P1
94A-C	Drywall Texture	Surfacing	NONE DETECTED	Portable P1
95A	Floor Coating (Blue)	Miscellaneous	NONE DETECTED	Band Bldg. Restroom Areas
96A	12" Acoustic Ceiling Tile (Nailed On)	Miscellaneous	NONE DETECTED	Band Bldg, Main Room
97A-C	Exterior Stucco	Miscellaneous	NONE DETECTED	Band Bldg, Exterior
100A	Yellow Adhesive Associated with Vinyl Floor Tile (Beige)	Miscellaneous	NONE DETECTED	Choir Portable
101A	12" Acoustic Ceiling Tile (Nailed On)	Miscellaneous	NONE DETECTED	Choir Portable
102A-C	Textured Paint	Surfacing	NONE DETECTED	Choir Portable, Exterior
103A-C	Exterior Stucco	Surfacing	NONE DETECTED	Storage Barn #1
104A-C	Exterior Stucco	Surfacing	NONE DETECTED	Storage Barn #2
107A-E	PVC Membrane Roofing	Miscellaneous	NONE DETECTED	Admin, Gym, 100, 200 Bldgs.
108A-D	Composition Asphalt Shingle Roofing	Miscellaneous	NONE DETECTED	Admin, Gym, 100, 200 Bldgs.

Suspect Materials Found NOT TO Contain Asbestos or Considered Non-Suspect				
Sample ID#'s	Suspect Material	EPA AHERA "Suspected" ACBM	Asbestos Content	Location
109A	Flashing Mastic	Miscellaneous	NONE DETECTED	Gym Bldg, Roof
110A	Penetration Mastic	Miscellaneous	NONE DETECTED	100 Bldg, Roof
111A	Cap Flashing Mastic	Miscellaneous	NONE DETECTED	100 Bldg, Roof
112A	Cap Flashing Mastic	Miscellaneous	NONE DETECTED	200 Bldg, Roof
113A	Penetration Mastic	Miscellaneous	NONE DETECTED	200 Bldg, Roof
115A	PVC Membrane Roofing	Miscellaneous	NONE DETECTED	Portable P2
117A	Roof Mastic	Miscellaneous	NONE DETECTED	Portable P4
118A	Roof Mastic	Miscellaneous	NONE DETECTED	Portable P5
119A	Roof Mastic	Miscellaneous	NONE DETECTED	Portable P6
120A	Roof Mastic	Miscellaneous	NONE DETECTED	Portable P7
123A	Composition Asphalt Rolled Roofing	Miscellaneous	NONE DETECTED	Band Bldg, Walkway Overhang
124A	PVC Membrane Roofing	Miscellaneous	NONE DETECTED	Band Bldg, East Side
125A	Composition Asphalt Shingle Roofing	Miscellaneous	NONE DETECTED	Band Bldg, Sloped Roof
126A	Composition Asphalt Rolled Roofing	Miscellaneous	NONE DETECTED	Choir Portable, Doorway Overhang
127A	PVC Membrane Roofing	Miscellaneous	NONE DETECTED	Choir Portable, Roof
128A	Composition Asphalt Shingle Roofing	Miscellaneous	NONE DETECTED	Playground Storage Sheds Near Portable P5
129A	Composition Asphalt Shingle Roofing	Miscellaneous	NONE DETECTED	Storage Barn #1
130A	Composition Asphalt Shingle Roofing	Miscellaneous	NONE DETECTED	Storage Barn #1, Door Overhang
131A	Composition Asphalt Shingle Roofing	Miscellaneous	NONE DETECTED	Storage Barn #2

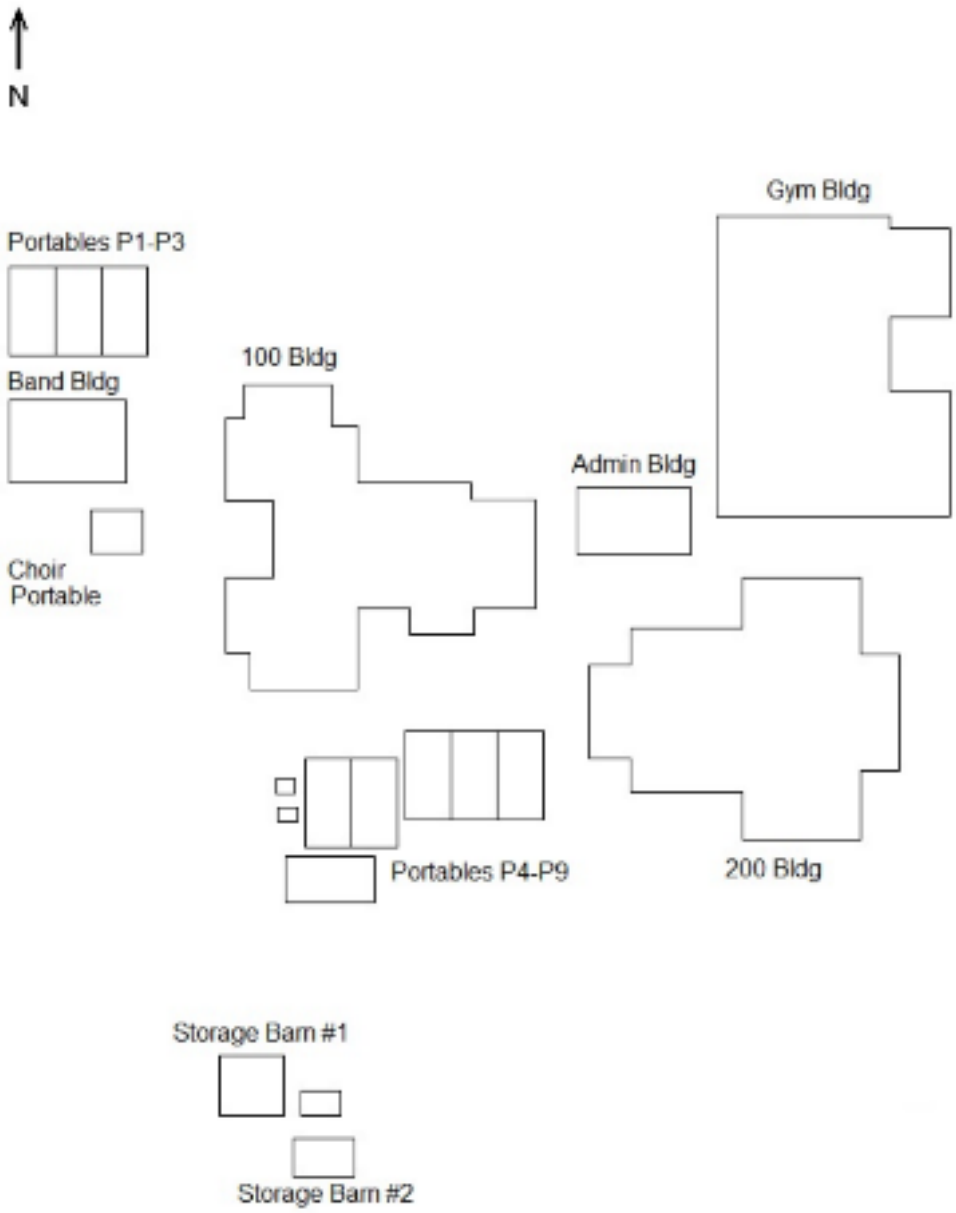
Note 1.: **Category I Non-friable ACM** is asbestos-containing packings, gaskets, resilient floor

covering, and asphalt roofing products containing more than one percent asbestos by area.

Note 2.: **Category II Non-friable ACM** is any material, excluding Category I non-friable ACM, containing more than one percent asbestos, which is non-friable such as transite and other concrete based products.

Note 3.: **Regulated Asbestos-Containing Material (RACM)** is any friable material, any Category I non-friable ACM which has become friable, any Category I non-friable ACM which will be or has been subjected to sanding, grinding, cutting, or abrading, any Class II non-friable ACM that has a high probability of becoming or has become crumbled, pulverized, or reduced to a powder by the forces expected to act on the material in the course of demolition or renovation operations.

Note 4.: The terms "assume" and "presume" mean the named material is considered positive for containing asbestos and must be treated accordingly, until properly sampled in compliance with 40 CFR, Part 763 Asbestos-Containing Materials in Schools; Final Rule and Notice.


N
Gym Bldg
Portables P1-P3
100 Bldg
Band Bldg
Admin Bldg
Choir
Portable
Portables P4-P9
200 Bldg
Storage Barn #1
Storage Barn #2

SECTION 25. ASBESTOS RESULTS LIST

Any material not specified on the following list which the Contractor encounters at this site must be considered as "suspect" and "assumed" to contain asbestos per US EPA. The only items excluded from this statement are: bare wood, glass, and metal.

Suspect Materials Assumed or Known TO Contain >1% Asbestos (RACM)				
Sample ID#'s	**Suspect Material**	**Asbestos Content/Type (%) by PLM**	**Location**	**Total Estimated Quantity**
09A	Hard Pack Pipe Insulation	1-5% CHRYSOTILE 5-10% AMOSITE	Admin Bldg Mechanical Room, Assumed to Exist in Wall Cavities and Beneath Concrete Slab	6 Ln. Ft. Visible Undetermined Total
29A	Hard Pack Pipe Insulation	1-5% CHRYSOTILE 5-10% AMOSITE	Gym Bldg Boy's Locker Storage, Assumed to Exist in Wall Cavities and Beneath Concrete Slab	20 Ln. Ft. Visible Undetermined Total
n/a	Boiler Unit Insulation	ASSUMED POSITIVE	Gym Bldg Mechanical Room	Undetermined Total
48A	Hard Pack Pipe Insulation	1-5% CHRYSOTILE 5-10% AMOSITE	400 Bldg Room 400 at Ceiling Height	250 Ln. Ft.

Suspect Materials Found or Known TO Contain >1% Asbestos (CAT-I)				
Sample ID#'s	**Suspect Material**	**Asbestos Content/Type (%) by PLM**	**Location**	**Total Estimated Quantity**
01A-B	9" Vinyl Floor Tile (Beige with Brown Streaks) With Yellow & Black Mastic	1-5% CHRYSOTILE **(Floor Tile)** 1-5% CHRYSOTILE **(Black Mastic)** NONE DETECTED **(Yellow Mastic)**	Admin Bldg, Throughout	8,000 Sq. Ft.
16A	9" Vinyl Floor Tile (Green with White Streaks) With Yellow Mastic	1-5% CHRYSOTILE **(Floor Tile)** NONE DETECTED **(Yellow Mastic)**	Gym Bldg, Cafeteria	1,250 Sq. Ft.
17A	9" Vinyl Floor Tile (White with Green Streaks) With Yellow & Black Mastic	1-5% CHRYSOTILE **(Floor Tile)** 1-5% CHRYSOTILE **(Black Mastic)**	Gym Bldg, Cafeteria	1,250 Sq. Ft.
18A	9" Vinyl Floor Tile	1-5% CHRYSOTILE	Gym Bldg, Kitchen	2,000 Sq. Ft.

Suspect Materials Found or Known TO Contain >1% Asbestos (CAT-I)				
Sample ID#'s	**Suspect Material**	**Asbestos Content/Type (%) by PLM**	**Location**	**Total Estimated Quantity**
	(Beige Streaked) With Black Mastic	**(Floor Tile)** 1-5% CHRYSOTILE **(Black Mastic)**		
30A	9" Vinyl Floor Tile (Salmon) With Yellow Mastic	1-2% CHRYSOTILE **(Floor Tile)** NONE DETECTED **(Yellow Mastic)**	Gym Bldg, Kitchen	50 Sq. Ft.
35A	9" Vinyl Floor Tile (Beige with Brown Streaks) With Black Mastic	1-5% CHRYSOTILE **(Floor Tile)** 1-5% CHRYSOTILE **(Black Mastic)**	300 Bldg. Throughout	6,500 Sq. Ft.
44A	9" Vinyl Floor Tile (Beige with White Streaks) With Black Mastic	1-5% CHRYSOTILE **(Floor Tile)** 1-5% CHRYSOTILE **(Black Mastic)**	400 Bldg. Rooms 401 & 403	2,000 Sq. Ft.
54A	9" Vinyl Floor Tile (Tan with Brown Streaks) With Black Mastic	1-5% CHRYSOTILE **(Floor Tile)** 1-5% CHRYSOTILE **(Black Mastic)**	500 Bldg. Throughout	12,000 Sq. Ft.
112A	Roof Mastic	1-2% CHRYSOTILE	Portable 701 Roof	10 Sq. Ft.
113A	Roof Mastic	1-2% CHRYSOTILE	Portable 702 Roof	10 Sq. Ft.
119A, 120A, 121A	Roof Curb, Jack, & Penetration Mastic	1-5% CHRYSOTILE	Gym Bldg & 500 Bldg. Roofs	50 Sq. Ft.

1

Suspect Materials Found or Known TO Contain >1% Asbestos (CAT-II)				
Sample ID#'s	**Suspect Material**	**Asbestos Content/Type (%) by PLM/PC**	**Location**	**Total Estimated Quantity**
02A-D	Base Cove Adhesive (Brown)	>1% FIBROUS TREMOLITE *(Initial Analysis of <1% Not Confirmed by Point Count)*	Admin Bldg. Throughout	1,300 Ln. Ft.
06A-B	Drywall & Joint Compound"	NONE DETECTED **(Drywall)** <1-2% CHRYSOTILE **(White Joint Compound 1)** <1% CHRYSOTILE	Admin Bldg. Throughout	6,500 Sq. Ft.

Suspect Materials Found or Known TO Contain >1% Asbestos (CAT-II)				
Sample ID#'s	**Suspect Material**	**Asbestos Content/Type (%) by PLM/PC**	**Location**	**Total Estimated Quantity**
		(White Joint Compound 2) <1% CHRYSOTILE **(Composite)***		
21A-C	Base Cove Adhesive (Brown)	>1% FIBROUS TREMOLITE *(Initial Analysis of <1% Not Confirmed by Point Count)*	Gym Bldg, Throughout	400 Ln. Ft.
24A	Drywall & Joint Compound*	NONE DETECTED **(Drywall)** <1-2% CHRYSOTILE **(White Joint Compound 1)** <1% CHRYSOTILE **(White Joint Compound 2)** <1% CHRYSOTILE **(Composite)***	Gym Bldg, Throughout Where Found (Cafeteria, Storage Rooms, Etc.)	1,000 Sq. Ft.
38A-C	Base Cove Adhesive (Brown)	>1% FIBROUS TREMOLITE *(Initial Analysis of <1% Not Confirmed by Point Count)*	300 Bldg, Throughout	700 Ln. Ft.
37A	Drywall & Joint Compound*	NONE DETECTED **(Drywall)** <1-2% CHRYSOTILE **(White Joint Compound 1)** <1% CHRYSOTILE **(White Joint Compound 2)** <1% CHRYSOTILE **(Composite)***	300 Bldg, Throughout	2,500 Sq. Ft.
39A	Black Counter Top Material	20-30% CHRYSOTILE	300 Bldg, Room 302	400 Sq. Ft.
45A-B	Base Cove Adhesive (Brown & Black)	1-2% CHRYSOTILE >1% FIBROUS TREMOLITE *(Initial Analysis of <1% Not Confirmed by Point Count)*	400 Bldg, Throughout	600 Ln. Ft.
58A-C	Base Cove Adhesive (Brown & Black)	1-5% CHRYSOTILE >1% FIBROUS TREMOLITE *(Initial Analysis of <1% Not Confirmed by Point Count)*	500 Bldg, Throughout	1,000 Ln. Ft.
109A	Metal Roof Coating (Silver)	1-2% CHRYSOTILE	Portable 603, Roof	650 Sq. Ft.

*Cal/OSHA and Federal OSHA do not allow composite sampling of drywall & joint compound. The 400-point count analysis performed on drywall samples that were found to contain 1-2% CHRYSOTILE in

the joint compound was to remove the material from classification as a RACM. The composite drywall material must be handled and disposed of as a >1% asbestos containing material.

Suspect Materials Found or Known TO Contain <1% Asbestos (ACCM)				
Sample ID#'s	**Suspect Material**	**Asbestos Content/Type (%) by PC**	**Location**	**Total Estimated Quantity**
07A-C	Drywall Skim Coat	<1% CHRYSOTILE	Admin Bldg, Throughout	6,500 Sq. Ft.
14A-D	Window Glazing Putty	<1% CHRYSOTILE	Admin Bldg, Exterior Windows	200 Sq. Ft.
23A-E	Interior Stucco	<1% CHRYSOTILE	Gym Bldg, Where Found (Restroom Ceilings, Janitorial Office, Storage Rooms)	3,000 Sq. Ft.
34A	Window Glazing Putty	<1% CHRYSOTILE	Gym Bldg, Exterior Windows	200 Sq. Ft.
38A-E	Drywall Skim Coat	<1% CHRYSOTILE	300 Bldg, Throughout	2,500 Sq. Ft.
43A-C	Window Glazing Putty	<1% CHRYSOTILE	300 Bldg, Exterior Windows	200 Sq. Ft.
48A-C	Drywall & Joint Compound	NONE DETECTED **(Drywall)** <1% CHRYSOTILE **(White Joint Compound)** <1% CHRYSOTILE **(Composite)**	400 Bldg, Throughout	1,500 Sq. Ft.
51A	Window Glazing Putty	<1% CHRYSOTILE	400 Bldg, Exterior Windows	200 Sq. Ft.
53A	4" Ceramic Wall Tile (Salmon) & Grout	<1% CHRYSOTILE	400 Bldg, Exterior Restroom	50 Sq. Ft.
59A-E	Plaster	<1% CHRYSOTILE	500 Bldg, Throughout	30,000 Sq. Ft.
64A-C	Window Glazing Putty	<1% CHRYSOTILE	500 Bldg, Exterior Windows	200 Sq. Ft.

Suspect Materials Found NOT TO Contain Asbestos or Considered Non-Suspect

Sample ID#'s	Suspect Material	EPA AHERA "Suspected" ACBM	Asbestos Content	Location
02A	Base Cove Adhesive (Black)	Miscellaneous	NONE DETECTED	Admin Bldg, Athletic Director's Office
03A-B	Vinyl Wall Covering & Yellow Glue	Miscellaneous	NONE DETECTED	Admin Bldg, Offices & Conference Rooms
04A	Fiber Reinforced Panel Adhesive	Miscellaneous	NONE DETECTED	Admin Bldg, Restrooms
05A	4"x6" Ceramic Tile & Grout	Miscellaneous	NONE DETECTED	Admin Bldg, Restrooms
08A-D	12" Acoustic Ceiling Tile & Brown Mastic	Miscellaneous	NONE DETECTED	Admin Bldg, Throughout
10A	HVAC Duct Seam Tape	Miscellaneous	NONE DETECTED	Admin Bldg, Mechanical Room
11A-C	Plaster	Surfacing	NONE DETECTED	Admin Bldg, Restrooms
12A	1" Ceramic Floor Tile & Grout	Miscellaneous	NONE DETECTED	Admin Bldg, Restrooms
13A-E	Exterior Stucco	Surfacing	NONE DETECTED	Admin Bldg
15A-C	Exterior CMU Block Mortar	Miscellaneous	NONE DETECTED	Admin Bldg
19A	1" Ceramic Floor Tile & Grout	Miscellaneous	NONE DETECTED	Gym Bldg, Restrooms
20A	Blue/Gray Floor Coating	Miscellaneous	NONE DETECTED	Gym Bldg, Locker Rooms
21A	Base Cove Adhesive (White)	Miscellaneous	NONE DETECTED	Gym Bldg, Cafeteria
22A-C	Plaster	Surfacing	NONE DETECTED	Gym Bldg, Restrooms & Kitchen
25A	4" White Ceramic Wall Tile & Grout	Miscellaneous	NONE DETECTED	Gym Bldg, Cafeteria
26A	4" Salmon Ceramic Wall Tile & Grout	Miscellaneous	NONE DETECTED	Gym Bldg, Restrooms
27A-D	12" Acoustic Ceiling Tile & Brown Mastic	Miscellaneous	NONE DETECTED	Gym Bldg, Throughout
28A	HVAC Duct Seam	Miscellaneous	NONE DETECTED	Gym Bldg, Kitchen Plenum

Suspect Materials Found NOT TO Contain Asbestos or Considered Non-Suspect				
Sample ID#'s	Suspect Material	EPA AHERA "Suspected" ACBM	Asbestos Content	Location
	Tape			Space
31A-B	Yellow Spray On Boiler Insulation	TSI	NONE DETECTED	Gym Bldg, Boiler Room
32A-C	Exterior Stucco	Surfacing	NONE DETECTED	Gym Bldg
33A	CMU Block Mortar	Miscellaneous	NONE DETECTED	Gym Bldg
36A	Base Cove Adhesive (Yellow)	Miscellaneous	NONE DETECTED	300 Bldg, Room 305
40A-C	12" Acoustic Ceiling Tile & Brown Mastic	Miscellaneous	NONE DETECTED	300 Bldg, Throughout
41A-C	Exterior Stucco	Surfacing	NONE DETECTED	300 Bldg
42A	CMU Block Mortar	Miscellaneous	NONE DETECTED	300 Bldg
47A-C	Drywall Texture	Surfacing	NONE DETECTED	400 Bldg, Room 403 Office
48A-B	12" Acoustic Ceiling Tile & Brown Mastic	Miscellaneous	NONE DETECTED	400 Bldg
50A-B	CMU Block Mortar	Miscellaneous	NONE DETECTED	400 Bldg
52A-B	Plaster	Surfacing	NONE DETECTED	400 Bldg, Exterior Restroom
55A	1" to 2" Ceramic Floor Tile & Grout	Miscellaneous	NONE DETECTED	500 Bldg, Restrooms
56A	12" Ceramic Floor Tile & Grout	Miscellaneous	NONE DETECTED	500 Bldg, Staff Restrooms
57A	Carpet Adhesive (Yellow)	Miscellaneous	NONE DETECTED	500 Bldg, Offices
60A	4" Ceramic Wall Tile & Grout	Miscellaneous	NONE DETECTED	500 Bldg, Restrooms
61A	8"x12" Ceramic Wall Tile & Grout	Miscellaneous	NONE DETECTED	500 Bldg, Staff Restrooms
62A-G	Spray Applied Acoustical Material	Surfacing	NONE DETECTED	500 Bldg, Throughout
63A-C	Exterior Stucco	Miscellaneous	NONE DETECTED	500 Bldg
	12" Vinyl Floor Tile			

Suspect Materials Found NOT TO Contain Asbestos or Considered Non-Suspect				
Sample ID#'s	Suspect Material	EPA AHERA "Suspected" ACBM	Asbestos Content	Location
65A-B	(Blue Mottled) With Yellow Adhesive	Miscellaneous	NONE DETECTED	600 Portable
66A	12" Vinyl Floor Tile (Beige Streaked) With Yellow Adhesive	Miscellaneous	NONE DETECTED	600 Portable
67A	Carpet Adhesive (Yellow)	Miscellaneous	NONE DETECTED	600 Portable
68A-B	Base Cove Adhesive	Miscellaneous	NONE DETECTED	600 Portable
69A-C	Wall Panel & Joint Compound	Miscellaneous	NONE DETECTED	600 Portable
70A-E	Wall Texture #1	Surfacing	NONE DETECTED	600 Portable
71A-C	Wall Texture #2	Surfacing	NONE DETECTED	600 Portable
72A	2'x4' Ceiling Panel	Miscellaneous	NONE DETECTED	600 Portable
73A	12" Vinyl Floor Tile (Dark Blue/Gray) With Brown Adhesive	Miscellaneous	NONE DETECTED	601/602 Bldg. Room 602
74A	12" Vinyl Floor Tile (White Mottled) With Yellow Adhesive	Miscellaneous	NONE DETECTED	601/602 Bldg. Restrooms
75A	12" Vinyl Floor Tile (Beige with Brown Streaks) With Yellow Adhesive	Miscellaneous	NONE DETECTED	601/602 Bldg. Room 601
76A	Yellow Carpet Adhesive & Gray Leveler	Miscellaneous	NONE DETECTED	601/602 Bldg. Room 602
77A	Blue Floor Coating	Miscellaneous	NONE DETECTED	601/602 Bldg. Weight Room
78A-B	Base Cove Adhesive (White & Brown)	Miscellaneous	NONE DETECTED	601/602 Bldg. Throughout
79A-B	Drywall & Joint	Miscellaneous	NONE DETECTED	601/602 Bldg. Throughout

Suspect Materials Found NOT TO Contain Asbestos or Considered Non-Suspect				
Sample ID#'s	Suspect Material	EPA AHERA "Suspected" ACBM	Asbestos Content	Location
	Compound			
80A	Drywall Texture	Surfacing	NONE DETECTED	601/602 Bldg. Throughout
81A	2'x4' Ceiling Panels	Miscellaneous	NONE DETECTED	601/602 Bldg. Room 602 & Storage
82A	2'x4' Ceiling Panels	Miscellaneous	NONE DETECTED	601/602 Bldg. Room 601
83A	12" Vinyl Floor Tile (White) With Yellow Adhesive	Miscellaneous	NONE DETECTED	Portable 603
84A	Carpet Adhesive (Yellow)	Miscellaneous	NONE DETECTED	Portable 603
85A	Base Cove Adhesive (White)	Miscellaneous	NONE DETECTED	Portable 603
86A	Sheet Vinyl Flooring (Beige Small Pebble) With Yellow Adhesive & Gray Leveler	Miscellaneous	NONE DETECTED	Portable 604
87A	Sheet Vinyl Flooring (White Large Pebble) With Yellow Adhesive	Miscellaneous	NONE DETECTED	Portable 604
88A	Carpet Adhesive (Yellow)	Miscellaneous	NONE DETECTED	Portable 604
89A	Base Cove Adhesive (White)	Miscellaneous	NONE DETECTED	Portable 604
90A	Drywall	Miscellaneous	NONE DETECTED	Portable 604
91A-B	12" Vinyl Floor Tile (White Mottled) With Yellow Adhesive	Miscellaneous	NONE DETECTED	Portable 700 & 702
92A	Carpet Adhesive (Yellow)	Miscellaneous	NONE DETECTED	Portable 701
93A-C	Base Cove Adhesive (White)	Miscellaneous	NONE DETECTED	Portable 700, 701, 702
94A-B	Drywall	Miscellaneous	NONE DETECTED	Portable 701, 702

Suspect Materials Found NOT TO Contain Asbestos or Considered Non-Suspect				
Sample ID#'s	Suspect Material	EPA AHERA "Suspected" ACBM	Asbestos Content	Location
95A	Gray Ramp Coating	Miscellaneous	NONE DETECTED	Portable 700
96A	Sheet Vinyl Flooring (White Pebble) With Yellow Adhesive	Miscellaneous	NONE DETECTED	Restroom Portable 800
97A	2'x4' Ceiling Panels	Miscellaneous	NONE DETECTED	Restroom Portable 800
98A-B	12" Vinyl Floor Tile (White Mottled) With Yellow Adhesive	Miscellaneous	NONE DETECTED	Portable 802, 803
99A-B	Base Cove Adhesive (White)	Miscellaneous	NONE DETECTED	Portable 802, 803
100A-C	Exterior Stucco	Surfacing	NONE DETECTED	Bus Yard Storage Bldg
101A-F	Rock Covered Asphalt Roofing	Miscellaneous	NONE DETECTED	Admin Bldg, Gym Bldg, 300 Bldg Roofs
102A	PVC Membrane Roofing	Miscellaneous	NONE DETECTED	Gym Bldg, North Side Mid-Level Roof
103A-B	Rock Covered Asphalt Roofing	Miscellaneous	NONE DETECTED	400 Bldg Roof
105A-B	Composition Asphalt Rolled Roofing	Miscellaneous	NONE DETECTED	500 Bldg Roof
106A	Composition Asphalt Rolled Roofing	Miscellaneous	NONE DETECTED	Portable 800
107A	Roof Penetration Mastic	Miscellaneous	NONE DETECTED	Portable 800
108A	Composition Asphalt Shingle Roofing & Vapor Barrier	Miscellaneous	NONE DETECTED	Portable 603
110A	PVC Membrane Roofing	Miscellaneous	NONE DETECTED	Portable 604
111A	Roof Mastic	Miscellaneous	NONE DETECTED	Portable 804
114A	Roof Mastic	Miscellaneous	NONE DETECTED	Portable 703
115A	Roof Mastic	Miscellaneous	NONE DETECTED	Portable 802

Suspect Materials Found NOT TO Contain Asbestos or Considered Non-Suspect				
Sample ID#'s	Suspect Material	EPA AHERA "Suspected" ACBM	Asbestos Content	Location
116A	Roof Mastic	Miscellaneous	NONE DETECTED	Portable 803
117A	Roof Mastic	Miscellaneous	NONE DETECTED	Portable 800
118A	Roof Mastic	Miscellaneous	NONE DETECTED	Portable 213 (Old Weight Room)
122A	Composition Asphalt Shingle Roofing & Vapor Barrier	Miscellaneous	NONE DETECTED	Football Field Storage Bldg
123A	Composition Asphalt Shingle Roofing & Vapor Barrier	Miscellaneous	NONE DETECTED	Bus Yard Storage Bldg

Note 1.: **Category I Non-friable ACM** is asbestos-containing packings, gaskets, resilient floor covering, and asphalt roofing products containing more than one percent asbestos by area.

Note 2.: **Category II Non-friable ACM** is any material, excluding Category I non-friable ACM, containing more than one percent asbestos, which is non-friable such as transite and other concrete based products.

Note 3.: **Regulated Asbestos-Containing Material (RACM)** is any friable material, any Category I non-friable ACM which has become friable, any Category I non-friable ACM which will be or has been subjected to sanding, grinding, cutting, or abrading, any Class II non-friable ACM that has a high probability of becoming or has become crumbled, pulverized, or reduced to a powder by the forces expected to act on the material in the course of demolition or renovation operations.

Note 4.: The terms "assume" and "presume" mean the named material is considered positive for containing asbestos and must be treated accordingly, until properly sampled in compliance with 40 CFR, Part 763 Asbestos-Containing Materials in Schools, Final Rule and Notice.

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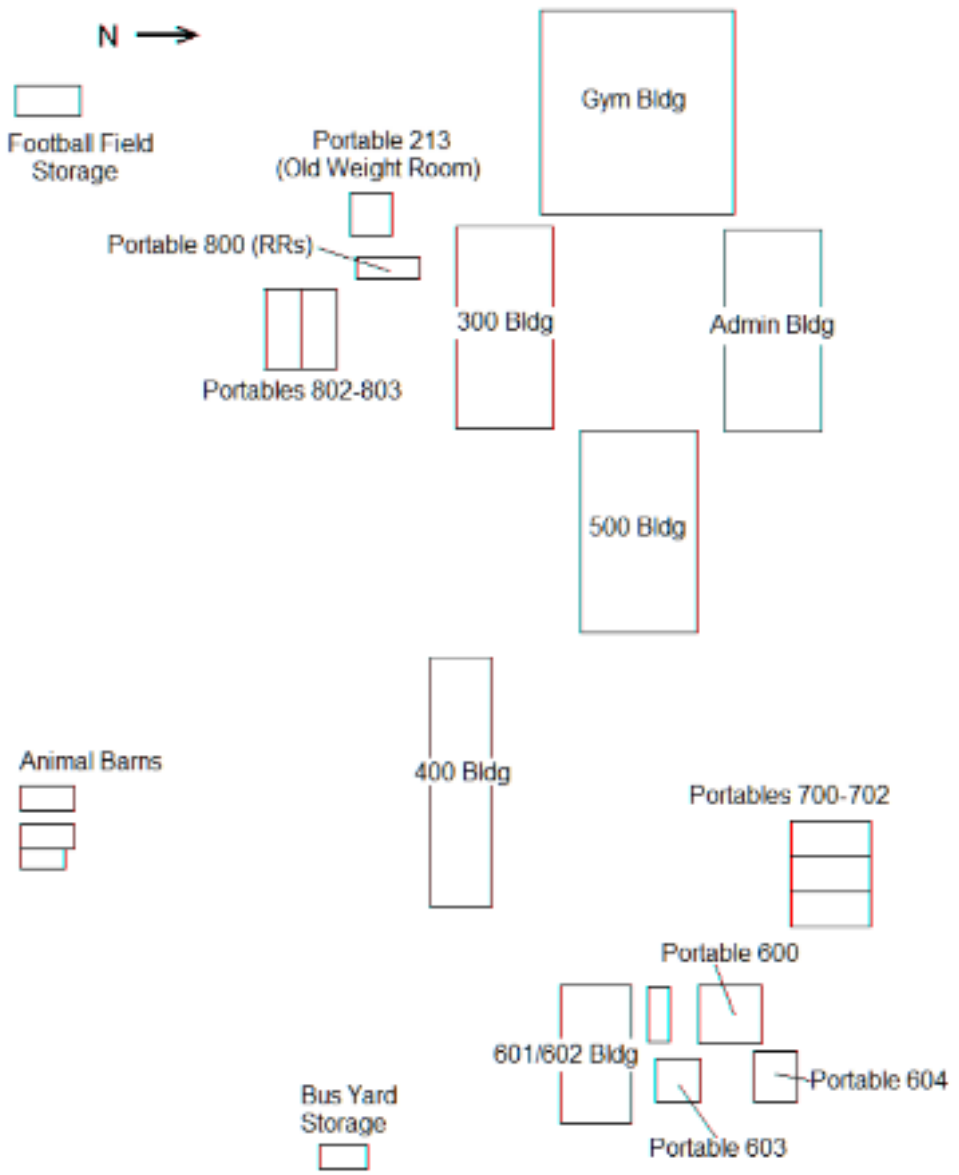
N
Football Field Storage
Portable 213 (Old Weight Room)
Gym Bldg
Portable 800 (RRs)
300 Bldg
Admin Bldg
Portables 802-803
500 Bldg
Animal Barns
400 Bldg
Portables 700-702
Portable 600
601/602 Bldg
Portable 604
Bus Yard Storage
Portable 603

SECTION 27. FORMS

DOCUMENTATION OF PROPER AIR FLOW RATE FOR PAPR'S

PROJECT: _____

JOB FOREMAN: _____ **DATE:** _____

WORKER'S NAME AND PAPR'S MODEL & SERIAL NUMBER	MEETS MANUFACTURERS REQUIREMENTS FOR AIR FLOW MORNING SHIFT MEASURED FLOW PASS / FAIL		MEETS MANUFACTURERS REQUIREMENTS FOR AIR FLOW AFTERNOON SHIFT MEASURED FLOW PASS / FAIL	

The air flow rate of every PAPR must be checked by the Job Foreman each shift, prior to any worker entering containment.

Manufacturers Recommended Air Flow: _____

Respirator Type(s): _____

ASBESTOS ABATEMENT
PRE-START VISUAL INSPECTION REPORT

CLIENT:_____ **PROJECT #:**_____

SITE: _____

CONTRACTOR: _____

REMOVAL LOCATION (Building and Containment): _____

_____

WORK TO BE CONDUCTED: _____

_____

_____

PRE-START VISUAL INSPECTION RESULT

DATE: _____

FINDINGS: _____

COMMENTS: _____

_____

_____

_____

_____
Signature of Owner's Representative

FINAL VISUAL CLEARANCE REPORT

CLIENT:_____ **PROJECT #:**_____

SITE: _____

CONTRACTOR:_____

REMOVAL LOCATION (Building and Containment):_____

WORK CONDUCTED:_____

FINAL VISUAL INSPECTION RESULT

DATE:_____ **FINDINGS:**_____

COMMENTS: _____

_____

Contractor Supervisor Requesting Inspection (Date and Time)

_____

Signature of Owner's Representative

Competent Person Acknowledgment

The CalOSHA standard for asbestos related construction work, found in 8 CCR, 1529, outlines specific duties and qualifications of the "Competent Person." Find below an overview of these qualifications and responsibilities. The competent person must be authorized by their employer to take prompt corrective

measures to eliminate hazards on the job and protect their worker's safety. The competent person must be capable of:

- Identifying existing and predictable hazards in the surroundings or working conditions which are unsanitary, hazardous, or dangerous to employees.

- Identifying existing asbestos hazards in the work place and selecting the appropriate control strategy for asbestos exposure.

The duties of the competent persons include, but are not limited to:

- Frequent and regular inspections of the job site, materials, and equipment.

- Supervise or perform the set-up of the regulated area and/or containment.

- Ensure the integrity of the regulated area and/or containment.

- Set up procedures to control entry to and exit from the regulated area and/or containment.

- Supervise all employee exposure monitoring and assure it is conducted according to regulatory requirements.

- Ensure that employees working within the regulated area(s) wear respirators and protective clothing as required by regulation.

- Ensure that employees working set up, use, and remove engineering controls, use work practices and personal protective equipment in compliance with the regulations.

- Ensure that employees use hygiene facilities and observe the decontamination procedures specified in the regulation.

- Ensure through continuing onsite surveillance that engineering controls are functioning properly and employees are using proper work practices.

- Ensure that notification requirements of the regulation are met.

Additionally, the EPA requires the competent person to be trained in the Federal NESHAP regulations, the means to comply with them, and be on site during all removal operations.

I _____ have the authority to take prompt corrective measures to eliminate hazards on the job and protect worker's safety. Furthermore, I have read and understand my duties as outlined above and under the applicable regulations, and will exercise them to best of my ability.

Date: _____ Employer: _____

Signature of Competent Person _____
Printed Name of Competent Person _____

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REQUIREMENTS FOR THE DISTURBANCE OF LEAD

NOTE: The United States Environmental Protection Agency (US EPA) under the authority of section 402(c)(3) of the Toxic Substance Control Act (TSCA) issued a final rule through the National Archives and Records Administration in the Federal Register, dated Tuesday, April 22, 2008 identified as 40 CFR Part 745 Lead; Renovation, Repair, and Painting Program (RRP). This final rule addresses lead-based paint (LBP) hazards created by renovation, repair, and painting activities that disturb LBP in target housing and child-occupied facilities.

As far as Entek is aware, the proposed modernization work at Burchfield Primary School does not fit the definition of "target housing" or a "child occupied facility". Therefore, the requirements related to the RRP do not apply to this project.

PART 1: GENERAL REQUIREMENTS

1.1 Introduction

These specifications are designed to minimize and control potential lead hazards during the disturbance of materials that contain lead. These procedures and precautions apply to the disturbance of lead that may result from the preparation of surfaces prior to painting or removal of building components containing or coated with lead. The primary focus of these specifications is to address the work practices and procedures that the Contractor and/or other subcontractors must follow when conducting activities that may disturb lead in paint or other coatings.

The Owner has performed testing of various existing painted surfaces, coatings, and tile glazes associated with this project to determine general concentrations of lead on building surfaces or materials. Sample results showed various concentrations of lead above and below 5,000 parts per million in various finish materials throughout the campus. Tables 1-3 represent the lead results in an easy reference format.

Table 1
Paints/Coatings/ Materials Determined to be Lead Based Paint (LBP)

Paint/Coating Color or Material	Lead Content	Component/Location
Beige Paint	2.0 mg/cm²	Admin Bldg, Exterior Metal Window Panels
4" White Ceramic Wall Tile	6.3 mg/cm²	Classrooms 1/2/K Bldg, Student Restrooms
Brown Paint	3.0 mg/cm²	Classrooms 8-11 Bldg, Exterior Metal Support Columns
Brown Paint	1.8 mg/cm²	Classrooms 8-11 Bldg, Exterior Wood Fascia
4" Peach Ceramic Wall Tile	18.0 mg/cm²	Classrooms 12-18 Bldg, Room 13
Beige Paint	4.0 mg/cm²	Classrooms 12-18 Bldg, Restroom Plaster Walls

Table 2 Paints/Coatings/ Materials Determined to be Lead Containing Paint (LCP)		
Paint/Coating Color or Material	Lead Content	Component/Location
Beige Paint	70 ppm	Admin Bldg, Drywall Walls
Brown Paint	3,900 ppm	Admin Bldg, Metal Door Frames
Beige Paint	2,100 ppm	Admin Bldg, Exterior Metal Doors
White Ceramic Cove Tile	570 ppm	Admin Bldg, Restroom Ceramic Cove Tile
Gold Paint	2,000 ppm	Classrooms 9-11 Bldg, Large Storage Room
White Paint	110 ppm	Classrooms 9-11 Bldg, Restroom Metal Wall Panels
Salmon Paint	1,900 ppm	Classrooms 9-11 Bldg, Former Spanish Library Wood Wall Panels
Beige Paint	3,400 ppm	Classrooms 9-11 Bldg, Metal Door Frames
Beige Paint	110 ppm	Classrooms 12-18 Bldg, Lower Plaster Walls
Varnish	1,900 ppm	Classrooms 12-18 Bldg, Wood Trim & Panels
Brown Paint	240 ppm	Classrooms 12-18 Bldg, Exterior Stucco Walls

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Table 3 Paints/Coatings/Materials Determined NOT TO Contain Lead (< Reporting Limit, 50 ppm)	
Paint/Coating Color or Material	Building Component
White Paint	Admin Bldg, Library Drywall Walls
Red/Brown Paint	Admin Bldg, Exterior Wood Siding
Blue Paint	Classrooms 1/2/K Bldg, Drywall Walls
White Paint	Classrooms 1/2/K Bldg, Drywall Walls
Gray Paint	Classrooms 1/2/K Bldg, Metal Door Frames
Beige Paint	Classrooms 1/2/K Bldg, Exterior Metal Window Panels
Brown Paint	Classrooms 1/2/K Bldg, Exterior Wood Fascia
White Paint	Classrooms 12-18 Bldg, Plaster Walls
Brown/Red Paint	Portables, Exterior Wood Siding

Table 3 Paints/Coatings/Materials Determined NOT TO Contain Lead (≤ Reporting Limit, 50 ppm)	
Paint/Coating Color or Material	Building Component
Brown Paint	Portables, Exterior Wood Trim
Brown Paint	Portables, Exterior Metal Hand Rails
Red Paint	Portables, Exterior Metal Hand Rails

Entek anticipates enforcing Cal/OSHA, US EPA and California Department of Public Health (CDPH) regulations regarding the training of workers disturbing lead and the containment and work practices utilized during that disturbance as applicable. The training requirements for workers and supervisors on this project are summarized in Part 1.5. Lead Training Requirements. The Contractor and other subcontractors disturbing lead must be familiar with the CDPH requirements regarding containment of lead dusts and the Cal/OSHA lead in construction standard. Those requirements are summarized below in Part 1.3 Regulatory Compliance.

In summary, the Contractor and subcontractors shall utilize engineering controls to limit the release of lead dust or debris. These engineering controls may include, but are not limited to, using wet methods, using tools with vacuum recovery systems with High Efficiency Air Particulate (HEPA) filtration, using vacuums with HEPA filtration and by the prompt cleanup of any lead-containing debris which the work might produce. Dry scraping, sanding, grinding, or abrading lead-containing materials is not permitted. All work that disturbs lead will require containment. The containment may be as simple as plastic sheeting on the ground when scraping paint on exterior surfaces.

The requirements of this specification apply to all employers who have employees who may reasonably be exposed to lead on this project. This includes the Contractor, who will normally be an environmental contractor such as an asbestos abatement contractor, or a painting contractor utilizing CDPH lead certified workers and supervisors. In addition, this specification applies to all subcontractors conducting work on this project who have employees who may disturb lead by scraping or demolishing building components coated with paints containing lead.

No Contractor shall begin work which will disturb known or suspect lead-containing paints/coatings in a manner that may expose a worker to lead containing dust, create a potential for building contamination, or create possible lead containing waste, until all required pre-construction documentation has been reviewed and written approval has been received from the Owner and/or Project Monitor.

Activities expected to disturb lead-containing materials include, painting preparation work such as scraping or sanding and possibly if warranted removal of painted building components. If the Contractor or subcontractors are observed conducting such activities without having written approval from the Owner and/or Project Monitor, they will be instructed to stop work. Work will not be allowed to resume until the Owner and/or Project Monitor provides approval for the work to begin.

This project involving potential disturbance of lead in the various painted materials is not considered a lead abatement project. The exterior painting project at this site is considered "lead related construction work"; therefore, it is Entek's opinion the contractor is not required to submit a CDPH Form 8551 for this project.

REQUIREMENTS FOR THE DISTURBANCE OF LEAD

NOTE: The United States Environmental Protection Agency (US EPA) under the authority of section 402(c)(3) of the Toxic Substance Control Act (TSCA) issued a final rule through the National Archives and Records Administration in the Federal Register, dated Tuesday, April 22, 2008 identified as 40 CFR Part 745 Lead; Renovation, Repair, and Painting Program (RRP). This final rule addresses lead-based paint (LBP) hazards created by renovation, repair, and painting activities that disturb LBP in target housing and child-occupied facilities.

As far as Entek is aware, the proposed modernization work at Egling Middle School does not fit the definition of "target housing" or a "child occupied facility". Therefore, the requirements related to the RRP do not apply to this project.

PART 1: GENERAL REQUIREMENTS

1.1 Introduction

These specifications are designed to minimize and control potential lead hazards during the disturbance of materials that contain lead. These procedures and precautions apply to the disturbance of lead that may result from the preparation of surfaces prior to painting or removal of building components containing or coated with lead. The primary focus of these specifications is to address the work practices and procedures that the Contractor and/or other subcontractors must follow when conducting activities that may disturb lead in paint or other coatings.

The Owner has performed testing of various existing painted surfaces, coatings, and tile glazes associated with this project to determine general concentrations of lead on building surfaces or materials. Sample results showed various concentrations of lead above and below 5,000 parts per million in various finish materials throughout the campus. Tables 1-3 represent the lead results in an easy reference format.

Table 1
Paints/Coatings/ Materials Determined to be Lead Based Paint (LBP)

Paint/Coating Color or Material	Lead Content	Component/Location
4" Beige Wall Tile	7.5 mg/cm²	Admin Bldg, Men's Restroom Ceramic Wall Tile
6" Beige Cove Tile	7.4 mg/cm²	Admin Bldg, Men's Restroom Ceramic Cove Tile
Red Paint	1.7 mg/cm²	Admin Bldg, Exterior Metal Restroom Doors
4" Beige Wall Tile	7.7 mg/cm²	Admin Bldg, Women's Restroom Ceramic Wall Tile
6" Beige Cove Tile	6.8 mg/cm²	Admin Bldg, Women's Restroom Ceramic Cove Tile
6" White Cove Tile	18.2 mg/cm²	Gym Bldg, Locker Rooms Ceramic Cove Tile
4" White Wall Tile	7.6 mg/cm²	Gym Bldg, Locker Rooms Ceramic Wall Tile
4" Yellow Wall Tile	7.4 mg/cm²	Gym Bldg, Cafeteria Girl's Restroom Ceramic Wall Tile
4" Beige Wall Tile	6.8 mg/cm²	Gym Bldg, Cafeteria Boy's Restroom Ceramic Wall Tile

Table 1 Paints/Coatings/ Materials Determined to be Lead Based Paint (LBP)		
Paint/Coating Color or Material	**Lead Content**	**Component/Location**
4" Beige Wall Tile	9.2 mg/cm²	100 Bldg, Men's & Boy's Restrooms Ceramic Wall Tile
4" Yellow Wall Tile	9.4 mg/cm²	100 Bldg, Women's & Girl's Restrooms Ceramic Wall Tile
4" Beige Wall Tile	10.1 mg/cm²	200 Bldg, Men's & Boy's Restrooms Ceramic Wall Tile
4" Yellow Wall Tile	7.7 mg/cm²	200 Bldg, Women's & Girl's Restrooms Ceramic Wall Tile
Brown Paint	2.9 mg/cm²	Band Bldg, Exterior Metal Window Frames
Brown Paint	4.8 mg/cm²	Band Bldg, Exterior Metal Water Down Spouts
Yellow Paint	6.5 mg/cm²	Parking Lot, Concrete Curbs
Beige Paint	5.5 mg/cm²	Storage Barn #1 (Larger Barn), Wood Soffits
Brown Paint	1.4 mg/cm²	Storage Barn #1 (Larger Barn), Wood Sliding Door Frame
White Paint	210,000 ppm	Storage Barn #1 (Larger Barn), Metal Window Frames
Brown Paint	100,000 ppm	Storage Barn #1 (Larger Barn), Wood Hinge Door Frame
White Paint	3.9 mg/cm²	Storage Barn #2 (Smaller Barn), Metal Window Frames

1

Table 2 Paints/Coatings/ Materials Determined to be Lead Containing Paint (LCP)		
Paint/Coating Color or Material	**Lead Content**	**Component/Location**
Maroon Paint	760 ppm	Admin Bldg, Exterior Metal Doors
Black/Blue Paint	160 ppm	Gym Bldg, Interior Metal Door Frames
Red Paint	100 ppm	Gym Bldg, Interior Metal Doors
Red Paint	370 ppm	200 Bldg, Interior Metal Doors
Beige Paint	220 ppm	200 Bldg, Drywall Walls
Maroon Paint	1,800 ppm	Portable P7, Exterior Metal Door
Off-White Paint	240 ppm	Band Bldg, Wood Restroom Walls
Brown Paint	630 ppm	Band Bldg, Exterior Stucco
Brown Paint	1,800 ppm	Choir Portable, Exterior Wood Siding

Table 2 Paints/Coatings/ Materials Determined to be Lead Containing Paint (LCP)		
Paint/Coating Color or Material	**Lead Content**	**Component/Location**
Tan Paint	180 ppm	Storage Barn #1 (Larger Barn), Exterior Stucco
Varnish	2,900 ppm	Storage Barn #1 (Larger Barn), Interior Wood Finish
Tan Paint	110 ppm	Storage Barn #2 (Smaller Barn), Exterior Stucco

Table 3 Paints/Coatings/Materials Determined NOT TO Contain Lead (≤ Reporting Limit, 50 ppm)	
Paint/Coating Color or Material	**Building Component**
Blue Paint	Admin Bldg, CMU Block & Drywall Walls
Brown Paint	Gym Bldg, Exterior Brick Walls
Maroon Paint	100 Bldg, Exterior Metal Window Frame
Off-White Paint	100 Bldg, Drywall Walls
Maroon Paint	Playground, Free Standing Wood Wall
Black Paint	Campus, Wrought Iron Fence
Blue Paint	Campus, Exterior Walkway Overhangs

Entek anticipates enforcing Cal/OSHA, US EPA and California Department of Public Health (CDPH) regulations regarding the training of workers disturbing lead and the containment and work practices utilized during that disturbance as applicable. The training requirements for workers and supervisors on this project are summarized in Part 1.5, Lead Training Requirements. The Contractor and other subcontractors disturbing lead must be familiar with the CDPH requirements regarding containment of lead debris and the Cal/OSHA lead in construction standard. Those requirements are summarized below in Part 1.3 Regulatory Compliance.

In summary, the Contractor and subcontractors shall utilize engineering controls to limit the release of lead dust or debris. These engineering controls may include, but are not limited to, using wet methods, using tools with vacuum recovery systems with High Efficiency Air Particulate (HEPA) filtration, using vacuums with HEPA filtration and by the prompt clean up of any lead-containing debris which the work might produce. Dry scraping, sanding, grinding, or abrading lead-containing materials is not permitted. All work that disturbs lead will require a containment. The containment may be as simple as plastic sheeting on the ground when scraping paint on exterior surfaces.

The requirements of this specification apply to all employers who have employees who may reasonably be exposed to lead on this project. This includes the Contractor, who will normally be an environmental contractor such as an asbestos abatement contractor, or a painting contractor utilizing CDPH lead certified

workers and supervisors. In addition, this specification applies to all subcontractors conducting work on this project who have employees who may disturb lead by scraping or demolishing building components coated with paints containing lead.

No Contractor shall begin work which will disturb known or suspect lead-containing paints/coatings in a manner that may expose a worker to lead containing dust, create a potential for building contamination, or create possible lead containing waste, until all required pre-construction documentation has been reviewed and written approval has been received from the Owner and/or Project Monitor.

Activities expected to disturb lead-containing materials include, painting preparation work such as scraping or sanding and possibly if warranted removal of painted building components. If the Contractor or subcontractors are observed conducting such activities without having written approval from the Owner and/or Project Monitor, they will be instructed to stop work. Work will not be allowed to resume until the Owner and/or Project Monitor provides approval for the work to begin.

This project involving potential disturbance of lead in the various painted materials is not considered a lead abatement project. The exterior painting project at this site is considered "lead related construction work"; therefore, it is Entek's opinion the contractor is not required to submit a CDPH Form 8551 for this project.

REQUIREMENTS FOR THE DISTURBANCE OF LEAD

NOTE: The United States Environmental Protection Agency (US EPA) under the authority of section 402(c)(3) of the Toxic Substance Control Act (TSCA) issued a final rule through the National Archives and Records Administration in the Federal Register, dated Tuesday, April 22, 2008 identified as 40 CFR Part 745 Lead; Renovation, Repair, and Painting Program (RRP). This final rule addresses lead-based paint (LBP) hazards created by renovation, repair, and painting activities that disturb LBP in target housing and child-occupied facilities.

As far as Entek is aware, the proposed modernization work at Colusa High School does not fit the definition of "target housing" or a "child occupied facility". Therefore, the requirements related to the RRP do not apply to this project.

PART 1: GENERAL REQUIREMENTS

1.1 Introduction

These specifications are designed to minimize and control potential lead hazards during the disturbance of materials that contain lead. These procedures and precautions apply to the disturbance of lead that may result from the preparation of surfaces prior to painting or removal of building components containing or coated with lead. The primary focus of these specifications is to address the work practices and procedures that the Contractor and/or other subcontractors must follow when conducting activities that may disturb lead in paint or other coatings.

The Owner has performed testing of various existing painted surfaces, coatings, and tile glazes associated with this project to determine general concentrations of lead on building surfaces or materials. Sample results showed various concentrations of lead above and below 5,000 parts per million in various finish materials throughout the campus. Tables 1-3 represent the lead results in an easy reference format.

Table 1
Paints/Coatings/ Materials Determined to be Lead Based Paint (LBP)

Paint/Coating Color or Material	Lead Content	Component/Location
8" Beige Cove Tile	8.4 mg/cm²	Admin Bldg, Men's Restroom
8" Pink Cove Tile	7.5 mg/cm²	Admin Bldg, Women's Restroom
Red Paint	59,000 ppm	Admin Bldg, Exterior Metal Doors
Maroon Paint	2.3 mg/cm²	Gym Bldg, Metal Door Frames
4" Tan Ceramic Wall Tile	8.3 mg/cm²	Gym Bldg, Locker Rooms
4" White Ceramic Wall tile	8.4 mg/cm²	Gym Bldg, Cafeteria
Yellow Paint	1.4 mg/cm²	Parking Lot Concrete Curbs

Table 1 Paints/Coatings/ Materials Determined to be Lead Based Paint (LBP)		
Paint/Coating Color or Material	**Lead Content**	**Component/Location**
Red Paint	45,000 ppm	Gym Bldg, Locker Room Lockers
Red Paint	1.3 mg/cm²	300 Bldg, Metal Door Frames
4" Salmon Ceramic Wall Tile	6.8 mg/cm²	400 Bldg, Exterior Restroom
4" Beige Ceramic Wall Tile	8.4 mg/cm²	500 Bldg, Student Restrooms
Red Paint	3.4 mg/cm²	500 Bldg, Metal Door Frames
Red Paint	11,000 ppm	500 Bldg, Metal I-Beams in Center of Classrooms
Beige Paint	5,900 ppm	500 Bldg, Exterior Round Support Columns
Gray Coating	56,000 ppm	Animal Barns, Storage Barn Hemispherical Corrugated Metal Roof

1

Table 2 Paints/Coatings/ Materials Determined to be Lead Containing Paint (LCP)		
Paint/Coating Color or Material	**Lead Content**	**Component/Location**
Dark Brown Paint	120 ppm	Admin Bldg, Exterior CMU Block Walls
Beige Paint	2,100 ppm	Admin Bldg, Exterior Stucco Walls
Off-White Paint	550 ppm	Gym Bldg, Interior Plaster Walls
Blue Coating	4,000 ppm	Gym Bldg, Boy's Locker Room Concrete Floor
Beige Paint	880 ppm	300 Bldg, Drywall Walls
Beige Paint	580 ppm	Portable 800, Exterior Wood Siding
Red Paint	120 ppm	Animal Barns, Storage Barn Exterior Wood Siding
White Paint	1,700 ppm	Interior Stucco Wall, Unit D, Classroom 3 at West Wall

2

Table 3 Paints/Coatings/Materials Determined NOT TO Contain Lead (< Reporting Limit, 50 ppm)	
Paint/Coating Color or Material	**Building Component**

Table 3 Paints/Coatings/Materials Determined NOT TO Contain Lead (≤ Reporting Limit, 50 ppm)	
Paint/Coating Color or Material	**Building Component**
Varnish	Admin Bldg, Wood Doors & Trim
Blue Paint	300 Bldg, Room 300 Drywall Walls
Maroon Paint	500 Bldg, Hallway Wainscoting
Yellow Paint	Bus Yard Storage Bldg, Exterior Stucco Walls
White Paint	Animal Barns, Pig Barn on Wood Siding

Entek anticipates enforcing Cal/OSHA, US EPA and California Department of Public Health (CDPH) regulations regarding the training of workers disturbing lead and the containment and work practices utilized during that disturbance as applicable. The training requirements for workers and supervisors on this project are summarized in Part 1.5. Lead Training Requirements. The Contractor and other subcontractors disturbing lead must be familiar with the CDPH requirements regarding containment of lead debris and the Cal/OSHA lead in construction standard. Those requirements are summarized below in Part 1.3 Regulatory Compliance.

In summary, the Contractor and subcontractors shall utilize engineering controls to limit the release of lead dust or debris. These engineering controls may include, but are not limited to, using wet methods, using tools with vacuum recovery systems with High Efficiency Air Particulate (HEPA) filtration, using vacuums with HEPA filtration and by the prompt cleanup of any lead-containing debris which the work might produce. Dry scraping, sanding, grinding, or abrading lead-containing materials is not permitted. All work that disturbs lead will require containment. The containment may be as simple as plastic sheeting on the ground when scraping paint on exterior surfaces.

The requirements of this specification apply to all employers who have employees who may reasonably be exposed to lead on this project. This includes the Contractor, who will normally be an environmental contractor such as an asbestos abatement contractor, or a painting contractor utilizing CDPH lead certified workers and supervisors. In addition, this specification applies to all subcontractors conducting work on this project who have employees who may disturb lead by scraping or demolishing building components coated with paints containing lead.

No Contractor shall begin work which will disturb known or suspect lead-containing paints/coatings in a manner that may expose a worker to lead containing dust, create a potential for building contamination, or create possible lead containing waste, until all required pre-construction documentation has been reviewed and written approval has been received from the Owner and/or Project Monitor.

Activities expected to disturb lead-containing materials include, painting preparation work such as scraping or sanding and possibly if warranted removal of painted building components. If the Contractor or subcontractors are observed conducting such activities without having written approval from the Owner and/or Project Monitor, they will be instructed to stop work. Work will not be allowed to resume until the Owner and/or Project Monitor provides approval for the work to begin.

This project involving potential disturbance of lead in the various painted materials is not considered a lead abatement project. The exterior painting project at this site is considered "lead related construction work"; therefore, it is Entek's opinion the contractor is not required to submit a CDPH Form 8551 for this project.

1.2 Definitions

Action Level - Airborne exposure to lead at or above 30 $\mu g/m^3$ over an eight-hour-time-weighted average as discussed in 8 CCR 1532.1. Typically, when employees are exposed over the Action Level, the employer must provide blood testing, training in compliance with 8 CCR 1532, and air sampling.

Air Filtration Unit - A portable exhaust system equipped with HEPA filtration and capable of maintaining a constant low velocity air flow into contaminated areas from adjacent uncontaminated areas. At a minimum, the air intake for the air filtration device must have a pre-filter on it which can be changed within the containment area. In most cases, air filtration devices will need to pass challenge testing by DOP before they are allowed to be used on site.

Airlock - A system for permitting ingress and egress with minimum air movement between a contaminated area and an uncontaminated area, typically consisting of two curtained doorways separated by a distance of at least three feet such that one passes through one doorway into the airlock, allowing the doorway sheeting to overlap and close off the opening before proceeding through the second doorway, thereby preventing flow-through contamination.

Air Monitoring - The process of measuring the content of a known volume of air collected during a specific period of time.

Blood Testing - Blood testing for lead and zinc protoporphyrin in compliance with the requirements for medical surveillance as listed in 8 CCR 1532.1.

Cal/OSHA - California Division of Occupational Safety and Health. A California agency that implements and enforces numerous health and safety standards regarding lead.

Certified Lead Supervisor and Worker - Supervisors and workers currently certified by the California Department of Public Health (CDPH).

Challenge Testing - Process used to verify that HEPA-filtered equipment does not leak or exhaust asbestos, lead, or other particulate. This testing must be done by a testing company, not affiliated with the Contractor, and approved by the Owner and Project Monitor. Challenge testing normally uses an oil mist as the challenge agent and measures how much, if any, of the agent is exhausted from the machine being tested.

Clean Room - An uncontaminated area or room which is a part of the worker decontamination enclosure system with provisions for storage of workers' street clothes and clean protective equipment. The term also includes the uncontaminated area or room of a Waste Transfer Airlock.

Containment - Isolation of the work area from the rest of the building to prevent escape of lead in dust, debris or in the air.

Contractor - The Contractor is the person or entity identified as such in the Contract Documents as being responsible for the environmental work as done in response to and in accordance with this document. References to the "Contractor" include the Contractor's authorized representatives. The Contractor may be a sub-contractor to the Primary Contractor. The Contractor normally will be responsible for paint preparation work that disturbs lead. The Contractor will typically need to use CDPH certified lead workers and supervisors to conduct their work that disturbs lead. Those employers disturbing smaller amounts of lead such as through drilling, cutting, or small component removal are typically known as a subcontractor for the purposes of this specification.

Critical Barrier - Critical Barriers are used to restrict water and airflow. Critical Barriers are the barriers placed over openings in the walls and ceilings of a work area in order to ensure that lead dust cannot escape the work area via these openings. Unless otherwise specified in these Specifications, critical barriers shall be constructed of at least one layer of six-mil thick poly.

Curtained Doorway - A device to allow ingress or egress from one room to another while permitting minimal air movement between the rooms. These are typically constructed by placing two overlapping sheets of plastic over an existing or temporarily framed doorway, securing each along the top of the doorway, securing the vertical edge of one sheet along one vertical side of the doorway and securing the vertical edge of the other sheet along the opposite vertical side of the doorway. Other effective designs are permissible as long as they are approved by the Project Monitor.

Decontamination Enclosure System - A series of connected rooms, separated from the work area and from each other by air locks, for the decontamination of workers, containers, and equipment. This unit shall be constructed with at least two layers of six mil poly for the floors, walls, and ceiling. The floor of the dirty room shall consist of two layers of six mil poly plus a third layer of poly, four mil or thicker, to be used as a removable drop layer. Drop layer is to be removed as needed, but at least daily.

CDPH - California Department of Public Health. State agency that regulates the disturbance of lead in public buildings and on all structures in California. This agency and relevant regulations are primarily concerned with preventing childhood lead poisoning.

DOP - Dioctylphthalate particles, a testing agent for the efficiency of HEPA filters.

DOT - Department of Transportation, a Federal agency which has regulations and labeling requirements for the transportation of hazardous waste.

DTSC - Department of Toxic Substances Control, a department within the California Environmental Protection Agency charged with implementing and enforcing hazardous waste regulations.

Dust or Debris - Any visible dust or debris remaining in work area will be considered lead-containing residue.

EPA - U.S. Environmental Protection Agency, a Federal agency that developed and enforces various asbestos and lead regulations.

HVAC - Heating, ventilation and air conditioning system.

HEPA Filter - A high efficiency particulate air filter capable of removing particles 0.3 microns in diameter from an air stream with 99.97% efficiency.

HEPA-Filtered-Vacuum Recovery System - This is a mechanical tool that has a shroud or covering over the area of a surface disturbed by a mechanical system in order to eliminate or significantly reduce the amount of dust released to the ambient air by the mechanical process. The shroud must be attached to a working vacuum with HEPA filtration.

HEPA Vacuum - A vacuum system equipped with HEPA filtration. Typically, these units will need to be challenge tested before being allowed to be used inside of buildings on this project.

Lead Based Paint - Materials meeting the definition of lead-based paint as defined by the California Department of Public Health Services and the United States Environmental Protection Agency. Currently defined as containing lead in concentrations equal to or greater than 1 mg/cm^2, 5000 ppm, or 0.5% by weight.

Lead Containing Paint - Materials that contain measurable, quantifiable amounts of lead. The disturbance of these materials is regulated by Cal/OSHA.

Lead Containing Hazardous Waste - Materials required by the State of California to be packaged, labeled, transported, and disposed of as a lead hazardous waste.

Lead Containing Waste Material - Lead-containing waster material that does not need to be treated as a lead-containing hazardous waste.

Lead Project Management or Monitoring Firm – The firm hired by Owner to provide third-party oversight of the disturbance of lead performed on the Owner's property by the Contractor or subcontractors.

Mil - Equivalent to one thousandth of an inch or 0.0254 millimeters. Generally used when referring to the thickness of plastic (poly) sheeting used to contain the regulated area.

Movable Object - An unattached piece of equipment or furniture in the work area which can be removed from the work area.

Negative Air Machines - See Air Filtration Units.

NIOSH - The National Institute for Occupational Safety and Health. All respirators used on this project must be approved by NIOSH.

Outside Air - The air outside buildings and structures.

Owner - Property owner where the disturbance of lead will take place. For example, this may be a private building owner or manager, a government body such as a city or county agency, a military base, or a school district. This includes the Owner's authorized representatives and employees.

PEL - Permissible Exposure Limit (as used in 8 CCR 1532.1)

Permissible Exposure Limit (PEL) - Airborne exposure to lead above 50 μg^3 over an eight-hour, time-weighted average as discussed in 8 CCR 1532.1. Typically, when employees are exposed over the PEL, the employer must provide blood testing, respirators, protective clothing, shower decontamination, CDPH certification, regulated areas, and air sampling.

Poly - Flame-retardant polyethylene sheeting used to seal critical barriers, create cleaning barriers and drop layers, and to protect surfaces from damage or contamination.

Primary Contractor - The Contractor may not work directly for the Owner but instead subcontract with another contractor such as a general contractor or demolition contractor. The Primary Contractor is the entity responsible for hiring the Contractor if it is not the Owner.

Pre-start Meeting - Meeting held before the beginning of the project in which final details of the project are discussed and Contractor provides project monitor with pre-job submittal packet.

Project Monitor - An individual qualified by virtue of experience and education, designated as the Owner's representative and responsible for overseeing the work that disturbs lead on this project.
Project Monitoring - Activities undertaken by the Project Monitoring Firm for the purpose of monitoring the work done by the Contractor on this project in regards to the disturbance of lead.

Regulated Area - Term used by CalOSHA in 8 CCR 1532.1 to indicate a work area where exposure to airborne lead might exceed the Permissible Exposure Limit or where "Trigger Activities" may be performed. The area must be demarcated with signs and barriers designed to keep unauthorized people out of the area. Additionally, "Regulated Area" means any measure used to restrict access to an area where personnel impacting lead-containing materials are required to wear respiratory protection and/or protective clothing by the project specifications regardless of airborne concentration of lead.

Shower Room - A room between the clean room and the equipment room in the decontamination enclosure with hot and cold or warm running water controllable at the tap and suitably arranged for complete showering

during decontamination. Unless specified elsewhere in these specifications, or determined otherwise by the program monitor, the shower shall be on a metal pan to contain water splashed, leaked or spilled out of the shower unit.

Specifications - These written requirements describing procedures the Contractor must follow for this project.

Subcontractor - Contractors working for the Primary (General) Contractor but who are not primarily responsible for environmental work. For example, they may be responsible for, demolition, electrical, plumbing, general construction, minor painting, or other special trades.

Submittals - Pre-construction, interim construction, and post construction documents submitted by the contractor to the Owner as indicated in General Requirements and Bidding Requirements.

Trigger Task - Term commonly used to describe the tasks described by Cal/OSHA in 8 CCR 1532.1 (d)(2). These are tasks or activities that Cal/OSHA believes are expected to result in airborne exposures over the PEL until air monitoring proves otherwise. In brief, trigger tasks include manual demolition, scraping, sanding, using HEPA-attached equipment, using heat guns to remove lead paint, welding, torch cutting, and using other more aggressive techniques. (This is a summary list and does not list all tasks that are considered trigger tasks.) In addition, trigger tasks include any activity reasonably expected to result in airborne exposures to lead above the Permissible Exposure Limit.

View Ports - Clear windows into the regulated work area that allow authorized persons to view work activities inside the regulated area without entering the area. The view ports must be of sufficient number, constructed of materials of sufficient clarity, and be located in areas determined and/or approved of by the Project Monitor. All regulated work areas including mini-enclosures will require view ports unless specifically determined not to be feasible by the Project Monitor.

Visible Emissions - Any emissions containing particulate material that are visually detectable without the aid of instruments. For example, dust, debris, and water leaks are considered visible emissions.

Waste Load-out/Transfer System - A decontamination system utilized for transferring containerized waste from inside to outside of the work area. A series of connected rooms used for the load-out of lead-containing materials that have been properly containerized.

Waste Bags - Waste bags for lead-containing waste must be a minimum of six-mil thickness. In general, double bagging will be required.

Waste Containers - Waste containers are the containers into which lead-containing waste is placed. They may be bags of at least six-mil thickness, metal or fiber barrels, or other containers such as cardboard boxes approved by the Project Monitor. The Contractor is responsible for assuring that the type of container chosen is acceptable to the waste landfill to which the waste will be transported. Waste containers must be labeled according to the requirements of the California Department of Occupational Safety and Health (Cal/OSHA), Department of Toxic Substances Control (DTSC), Department of Transportation (DOT), and the Environmental Protection Agency (EPA).

Waste Transfer Airlock - A decontamination system utilized for transferring containerized waste from inside to outside of the work area.

Wet Cleaning - The process of eliminating lead contamination from building surfaces and objects by using cloths, mops, or other utensils which have been dampened with water and afterwards thoroughly decontaminated or disposed of as lead-contaminated waste.

Work Area - Designated rooms, spaces, or areas of the project in which the disturbance of lead is to be undertaken or which may become contaminated as a result of such action. A contained work area is a work area which has been sealed off from adjacent areas.

Work Plan - Contractor's written plan describing how the Contractor will perform the work in compliance with these specifications. The work plan shall include information on preparation of the work area, personal protective equipment, employee experience, training and assigned responsibilities during the project. It will also list decontamination procedures for personnel, work area and equipment, removal methods and procedures, required air monitoring program, procedures for handling and disposing of waste materials and procedures for final decontamination and cleanup.

Worker - A person who successfully meets the training requirements for the disturbance of lead as described in these specifications.

8 CCR 1532.1 - Chapter 8 of the Labor Code, California Code of Regulations, Section 1532.1: Lead (Known as the Lead Standard for the Construction Industry)

8 CCR 1544 - Chapter 8 of the Labor Code, California Code of Regulations, Section 1544: Respiratory Protection Standard.

1.3 Regulatory Compliance

Various agencies regulate work that disturbs lead-containing materials. The following is a summary of the most important agencies and regulations that apply during the disturbance of lead during construction work. This list is not to be considered comprehensive. The Contractor is responsible for complying with all applicable federal, state, and local regulations that may apply to the specific work they are conducting.

1.3.1 Environmental Protection Agency (EPA)

Lead: Identification of Dangerous Levels of Lead; Final Rule (40 CFR Part 745 Subpart D)

The EPA defines lead-based paint as paint and coatings that contain lead in concentrations equal to or more than one milligram per square centimeter (1 mg/cm^2), 5000 parts per million (5000 ppm), or one half of one percent (0.5%) by weight. EPA regulations apply to all housing and child-occupied facilities built before 1978. When the term "lead-based paint" is used in the context of these specifications, the term is used only to refer to paint that contains lead in concentrations equal to or greater than that defined by the EPA as lead-based paint. (This is to differentiate lead-based paint from the term "lead-containing paint" as used for compliance with Cal/OSHA.)

1.3.2 Housing and Urban Development (HUD)

Requirements for Notification, Evaluation and Reduction of Lead-Based Paint Hazards in Federally Owned Residential Property and Housing Receiving Federal Assistance (24 CFR Part 35)

The HUD Rule for Federal Housing (shortened name) applies to all residential properties built before 1978 that receive Federal financial assistance. This regulation uses the same definition of lead-based paint as the EPA. The work practices and procedures described in these specifications are designed to comply with occupant and worker protection regulations as mandated by OSHA and Cal/OSHA regulations for work that disturbs lead and are **not** designed to comply with all the requirements of 24 CFR Part 35. Should this project be covered by this regulation, the Owner may require additional practices and procedures in the scope of work for activities conducted in properties covered by the HUD Rule for Federal Housing.

1.3.3 California Department of Public Health (CDPH)

Accreditation, Certification, and Work Practices for Lead-Based Paint and Lead Hazards (Title 17, CCR, Division 1, Chapter 8, Sections 35000-361000)

This regulation primarily applies to residential and public buildings located in California. The definition of a public building is one that is "generally accessible to the public." Some aspects of this regulation, particularly those that pertain to the definition of "presumed lead-based paint" and the containment requirements for disturbing lead-based paint **apply to all structures** in California.

This CDPH regulation definition of lead-based paint is identical to the EPA/HUD definition of 1 mg/cm^2, 5000 ppm, and 0.5% by weight. In addition, this regulation requires all paint on structures in California to be treated as "presumed lead-based paint" unless the paint is on a home built after 1978. **THEREFORE, THE PAINT IN ALL SCHOOLS COVERED BY THIS PROJECT THAT WERE CONSTRUCTED BEFORE 1978 MUST BE TREATED AS LEAD-BASED PAINT UNLESS TESTED AND PROVED OTHERWISE AS DESCRIBED ELSEWHERE IN THESE SPECIFICATIONS.**

The CDPH regulation differentiates between work that disturbs lead as part of renovation or maintenance work and work that disturbs lead as part of "abatement" work as defined in Title 17. The work practices and procedures described in these specifications are designed to comply with occupant and worker protection regulations as mandated by Cal/OSHA regulations for work that disturbs lead as part of renovation, demolition, and maintenance work. These specifications are **not** designed to comply with the requirements for abatement as defined in the CDPH Title 17 regulation. Unless stated specifically otherwise in these specifications, the Owner does not

anticipate any work being done as part of this project that meets the definition of abatement as used in Title 17. **Therefore, unless specifically directed otherwise by this specification or by the direction of the Owner and/or Project Monitor, the Contractor and/or subcontractors shall NOT submit Form 8551, "ABATEMENT OF LEAD HAZARDS," to the CDPH since that form provides inappropriate notice for the work done on this project.** The Contractor may be required to complete and submit this form should the scope of the work or the work practices change.

This regulation has significant penalties associated with the creation of "lead hazards." Lead hazards are defined as: "...disturbing lead based paint or presumed lead-based paint **without containment**, or any other nuisance which may result in persistent and quantifiable lead exposure." The requirements discussed in Part 3.5 Work Site Preparation & Containment Requirements are designed to meet CDPH requirements. Should a Contractor and/or subcontractor conduct work without a containment or release lead-contaminated dust or debris outside of the containment, they are in violation of this regulation. The Project Monitor will stop all work, consider the Contractor and/or subcontractor to be in violation of these specifications and the contract documents. Work will not be allowed to begin again until the Contractor and/or subcontractor takes adequate steps to correct their violation and convinces the Owner and/or Project Monitor that the violation will not occur again.

1.3.4 California Occupational Safety and Health Administration (Cal/OSHA)

Lead Standard for the Construction Industry (8 CCR 1532.1)

This standard regulates work done by employees who may disturb lead as part of demolition, construction, renovation or maintenance work. Painting activities that may disturb lead are covered by this standard. General construction work that disturbs lead is covered, as is the demolition of building components or entire structures.

Cal/OSHA regulates lead whenever lead is determined to exist in a material. When the term "lead-containing paint" is used in the context of these specifications, the term is used to refer to paint that contains lead in an amount equal to or above the reporting limit for the laboratory analysis or that detected by an X-ray Fluorescent Analyzer (XRF).
In addition, Cal/OSHA uses the EPA/HUD/CDPH definition of lead-based paint (1 mg/cm^2, 5000 ppm, or 0.5% by weight) for their pre-job notification requirements discussed in Part 1.4 Lead-Work Pre-Job Notification Requirements.

The following information summarizes the significant requirements in the Cal/OSHA standard. This summary is not meant to substitute for the Contractor reading and being familiar with the Cal/OSHA requirements.

a. The Cal/OSHA lead standard is very complex. Cal/OSHA regulates lead in materials when a laboratory can quantify the amount of lead. This means materials are regulated even when they contain very small amounts of lead. The standard sets an 'Action Level' for airborne lead at or above 30 $\mu g/m^3$ over an eight-hour-time-weighted average. Typically, if employees are expected to be exposed to this airborne lead level, the employer must conduct air sampling, provide blood lead testing, and provide specialized training. The standard sets a "Permissible Exposure Limit" or "PEL" for airborne lead at or above 50 $\mu g/m^3$ over an eight-hour-time-weighted average. The employer must continue the requirements needed at the Action Level but must now provide respirators, protective clothing, a shower decontamination system, and a written compliance program.

b. In 8 CCR 1532.1 (p), employers are required to notify Cal/OSHA before employees conduct a trigger task that will disturb more than 100 square or linear feet of material that contains lead in concentrations equal to or above 1 mg/cm^2, 5000 ppm, or 0.5% by weight. The notification also applies to welding or torch cutting that takes more than one hour in a shift. Trigger tasks are

described in 8 CCR 1532.1 (d)(2). In brief, they include manual demolition, scraping, sanding, using HEPA-attached equipment, using heat guns to remove lead paint, welding, torch cutting, and using other more aggressive techniques. This is a summary list and does not list all task that are considered trigger tasks.

c. As of August 2009, the California standard defines lead-containing paint at the Consumer Product Safety Commission's (CPSC) level of 0.009% by weight or 90 ppm for non-trigger tasks. The lead standard would not apply if the paint contains less than 90 ppm and the employees do not conduct trigger tasks. However, if the employees do conduct trigger tasks, the entire standard applies.

d. Cal/OSHA **requires CDPH lead training and certification** for any supervisors or workers who are "shown to be exposed" to airborne lead levels above the PEL in residential or public buildings. The Owner and Project Monitor will require proof of certified workers and supervisors if no air monitoring is performed to show that workers were not exposed above the PEL.

e. Cal/OSHA requires the supervisor to establish a "regulated area" whenever employees may be exposed to airborne lead over the PEL or if they will perform trigger tasks as defined in 8 CCR 1532.1 (d)(2). The establishment of regulated areas is discussed in Part 3.5 Work Site Preparation & Containment Requirements.

1.4 Lead-Work Pre-Job Notification Requirements

The Contractor is responsible for complying with the Lead-Work Pre-Job Notification as specified in 8 CCR 1532.1 (p). If notification is required for this project, the Contractor must provide the notification to Cal/OSHA and provide a copy of this notification to the Owner and/or Project Monitor as part of the Contractor's pre-work submittal package.

Unless the material is tested as described elsewhere in these specifications, the Contractor and subcontractors must anticipate notifying Cal/OSHA if they plan to manually demolish or perform another type of trigger task (such as paint scraping or sanding) on any painted surface during this project if the amount of material to be disturbed equals or is greater than 100 square feet.

Notification to Cal/OSHA is not required if the paint on the painted surface is primarily intact (not loose and peeling) and the painted material is removed in a manner that does not disturb the paint. For example, door or window frames may be removed without providing the notification if the paint or coating on the frames is intact and the building components can be removed without significantly disturbing the coating.

Unless stated otherwise in these specifications, or directed otherwise by the Project Monitor, the Contractor and/or subcontractors shall NOT submit Form 8551, "ABATEMENT OF LEAD HAZARDS," to the CDPH since that form provides inappropriate notice for the work done on this project since no lead "abatement" as defined by CDPH will be conducted as part of this project.

1.5 Lead Training Requirements

At a minimum, the Contractor and subcontractors must meet the lead training requirements as specified by 8 CCR 1532.1. This will include training all employees who drill, cut, scrape, abrade, remove, clean up debris, or in any other way are exposed to lead from painted surfaces found on the buildings or structures covered by this project. The different types of training are summarized below for the typical types of work that are expected to disturb lead on this project.

1.5.1 Minimal Training Required for All Workers Performing Any Painting Related Work

This training applies to those workers who will wash down walls with low pressure water systems or use hand methods such as soap, water, and rags on building components coated with paints which are not peeling, cracking, or otherwise showing damage or weathering in any way. Those disturbing, impacting, or working with lead coatings in any other manner (regardless of amount) will need to meet the training requirements stated in Part 1.5.2 or 1.5.3.

The minimal training must comply with the training requirements as listed 8 CCR 1532.1(l)(1)(A). In summary, this training must comply with Hazard Communication Training for lead as discussed in 8 CCR 5194. This training is also known as "hazard communication," or "lead awareness" training and is usually done in less than one hour depending on the work the employee will conduct.

The Contractor and subcontractors will need to provide the Owner and/or Project Monitor written proof that this training has been provided before workers will be allowed to conduct work that disturbs lead even in minimal amounts. The Project Monitor/Owner's Representative can provide this training for the Contractor and/or subcontractors or they can obtain this training from any source the employer believes is qualified.

Proof of this training is not required if the employees are trained to the levels listed in Part 1.5.2 and/or 1.5.3.

1.5.2 Required Training for Those Who Conduct Trigger Tasks or Exposed Over the Action Level

This training must be done for all those workers who conduct trigger tasks (regardless of the amount) or are expected to be exposed above the Action Level. Typically, this training will be required for workers who conduct a trigger task such as paint scraping or manual demolition of painted components.

The training must comply with the training requirements as listed 8 CCR 1532.1 (l)(1)(B) and (l)(2) (A-H). In summary, the standard requires the worker to be trained in series of subjects. The length of training depends on the experience and previous training of the worker, the type of work they will conduct, and whether or not they already have been trained and aproved to wear respirators. **Workers receiving this training and conducting this type of work will typically need to wear respirators and protective clothing while they conduct the work.**

An environmental contractor, or a contractor with environmental work experience, previous training, and a written respiratory protection program generally conducts this type of work. The Owner and Project Monitor do not recommend subcontractors attempt this type of work. However, subcontractors will be allowed to conduct this type of work on this project if they can demonstrate proof of training and carry out the work according to these specifications.

The Contractor and subcontractors will need to provide the Owner and/or Project Monitor written proof that this training has been provided to all workers conducting the tasks that require this training. The Owner's Rapresentative can provide this training for the Contractor and/or subcontractors or they can obtain this training from any source the employer deems is qualified.

This training is not required if the employees are trained to the levels listed in Part 1.5.3.

1.5.3 Required Training for Those Who Are Reasonably Expected to Be Exposed Over The PEL and/or Conduct Trigger Tasks On Over 100 Square Feet of Material

Workers and supervisors must be CDPH Certified Lead-Related Construction Workers or Supervisors if they will conduct trigger tasks or other work reasonably expected to exceed the PEL and/or conduct this work on over 100 square feet of material. *(This is a guidance amount and not a Cal/OSHA regulatory requirement. However, this amount of material and type of work is reasonably expected to potentially release airborne exposures over the PEL and thus trigger the CDPH*

certification requirement.) This includes work such as the manual demolition of painted surfaces, paint preparation work (sanding and scraping), and other tasks as described in 8 CCR 1532.1 (d)(2). Proof of training will be a currently valid CDPH certification card. Workers who can show a completed course completion form and a completed application form for certification will be allowed to work pending their being fully certified.

1.6 Required Submittal Documents

While additional documents may be required, at a minimum, the Contractor will provide the Owner and/or Project Monitor with the following documents regarding the Contractor's ability to safely disturb lead-containing materials.

1.6.1 Submittals Prior to the Start of Work

All Contractors and subcontractors who will have employees disturb lead on this project must, at a minimum, provide proof of item number 1.6.1. a.1., lead hazard communication training in compliance with 8 CCR 1532.1 (l)(A)(1). **This is the only submittal that must be provided by these employers as long as they do not disturb or conduct more disturbance of lead than is described in Part 1.5.1.**

The following submittals must be provided by all Contractors and subcontractors who will, at a minimum, have employees who will conduct trigger tasks, will potentially be exposed above the Action Level, or will conduct other activities as determined by the Project Monitor that may result in significant exposure to lead.

a. A written lead compliance plan in compliance with 8 CCR 1532.1 must be provided that includes the following:

   1. A description of equipment and materials, controls, crew size, job responsibilities, and operations and maintenance procedures for each activity in which lead is disturbed and potentially emitted;

   2. A description of specific control methods (wet methods, engineering controls, etc.) that will be used to ensure workers are not exposed above the PEL;

   3. Technology considered in meeting the Cal/OSHA permissible exposure level (PEL);

   4. Air monitoring data documenting sources of lead emissions;

   5. A detailed implementation schedule for the compliance plan, including the schedule for inspections by a competent person;

   6. A description of the lead work practice program which will be used to control worker exposures. This includes the use of protective work clothing, equipment, hygiene facilities and practices, and housekeeping practices;

   7. A description of the steps the Contractor or subcontractor will take to minimize the generation of hazardous waste produced on this project. This includes, but is not necessarily limited to how the contractor will separate waste streams. For example, how will the Contractor or subcontractor keep potentially hazardous waste such as paint chips and dust from being disposed of with other potentially non-hazardous construction materials and debris?

   Note: If a Contractor or subcontractor is found conducting lead-related work not specifically mentioned and described in the compliance plan, the work will be stopped until a compliance

plan including that work is submitted, reviewed, and approved by the Owner and/or Project Monitor.

b. Copy of the Contractor or subcontractor's written respirator program in accordance with the requirements of 8 CCR 1544.

c. Proof that all employees expected to wear respirators on this project have medical approval to wear a respirator.

d. Copies of respiratory fit-tests for all workers expected to wear a respirator on this project. Fit testing must be done as required by and in accordance with 8 CCR 1544.

e. Proof of training required by Part 1.5 for type of work employee will do.

1. Proof of Hazard Communication Training for Lead done within the last calendar year for those exposed to lead or who will perform trigger tasks for less than one hour. *(Proof may be a certificate or written statement stating training was completed and a list of names of those individuals who were trained. Proof of this training is not needed if employee provides proof of training required by items e. 2. or e 3.)*

2. Proof of training in compliance with 8 CCR 1532.1 (l)(2) done within the last calendar year for all employees who will conduct trigger tasks as defined in 8 CCR 1532.1 (d)(2) for more than one hour or who will reasonably be expected to be exposed to lead above the Action Level. *(Proof may be a certificate or written statement stating training was completed and a list of names of those individuals who were trained.)*

3. Proof of CDPH lead certification for those workers who will conduct trigger tasks as defined in 8 CCR 1532.1 (d)(2) or will reasonably be expected to be exposed to airborne levels of lead above the PEL on projects that will disturb more than 100 square feet of lead-containing material. *(Proof of certification will be a currently valid CDPH certification card as a worker or supervisor. Workers who can show proof of a valid course completion form and application being submitted to CDPH, will be allowed to work while awaiting full certification from CDPH.)*

4. Proof of current CDPH certification as a lead supervisor for the on-site competent person for projects involving the conduction of trigger tasks or other activities reasonably expected to exceed the PEL on all projects that will disturb more than 100 square feet of lead-containing material. *(Proof of valid certification will be a currently valid CDPH certification card a worker.)*

5. If exception to requirement for CDPH certified supervisor listed in Part 1.5.3 is requested, then provide proof of CDPH certified supervisor who will verify containment, personal protection and work practices, and will be able to respond to the project within two hours of request by the Project Monitor.

f. Copies of all current MSDS for chemicals used on this project.

g. Manufacturers' certifications that high efficiency particulate air (HEPA) vacuums, pressure differential units and other local exhaust ventilation equipment conform to ANSI Z9.2-79 for all HEPA-filtered equipment that will be used on this project. *(This is proof that the equipment is actually HEPA filtered. This is separate from the challenge testing requirement needed for equipment used in interior spaces.)*

h. Name and contact information of independent testing company who will challenge test all vacuums and air filtration devices used on this project (in interior spaces).

l. Statement regarding compliance with all Cal/OSHA exposure monitoring required for this project.

j. Name and contact information for laboratory who will analyze air samples or waste samples and documentation of their certification to conduct such analysis.

k. Name of Waste Transporter who will transport hazardous waste on this project and documentation that the Transporter is allowed to transport lead hazardous waste.

l. Name of Waste Landfill to which lead hazardous waste will be sent and documentation that such landfill is allowed to accept such waste.

m. Should waste water filtration be required on this project, submit manufactures documentation pertaining to the capability of waste water filters to filter particles of, at a minimum, five micrometers in size.

n. List of all rented equipment to be used within a lead regulated area, or a statement that no rental equipment will be used on this project.

1. If rental equipment is to be used, submit written statements from each rental company indicating the rental company's acknowledgment that the equipment is provided for and may be used in areas where airborne levels of asbestos and/or lead may be present.

o. Submit emergency plans. At a minimum submit the following:

1. Submit non-emergency telephone numbers, other than 911, for the appropriate Police, Sheriff, and Fire Departments.

2. Name, pager or cell phone numbers of the on-site supervisor and his immediate company supervisor.

3. Submit detailed written directions from the project site to the medical facility to be used in case of an emergency. Also include a map which sufficiently shows the route to be taken from the site to the designated medical facility.

4. Submit written emergency procedures pertinent to the work to be performed and which can be implemented by site personnel if the need arises.

p. Local sanitation district Wastewater Discharge Permit for Surface Washers (if required).

The above listed documents must be provided prior to the start of work that will disturb lead. Under no circumstances will workers or supervisors be allowed to work on this project prior to the receipt, review, and acceptance of this documentation by the Owner and/or Project Monitor. In addition, documentation for rental equipment must be provided before the equipment may be used in a lead regulated area. All delays resulting from the failure of the Contractor and/or subcontractors to provide this information in the required time frame is solely the responsibility of the Contractor and/or subcontractor.

The Contractor must use the Pre-Work Submittal Checklist provided at the end of these specifications to provide the Owner and/or Project Monitor these submittals. Failure to use the form will likely lead to the rejection of the submittal package and a delay in the project that will be the sole responsibility of the Contractor and/or subcontractor.

The Contractor is responsible for maintaining current documents and resubmitting copies to the Owner and/or Project Monitor for any worker whose documents expire during the project. Any

worker observed on a job site who either is not approved to conduct work by the Owner and/or Project Monitor or has been approved but documentation pertaining to training, medical evaluation, or respiratory fit testing has expired, will be instructed to stop work until these documents are received by the Owner and/or Project Monitor and the worker is approved to perform work that disturbs lead.

1.6.2 Submittals Provided During the Work or Following Completion of the Work If Applicable

Depending on the document, these documents must be provided the Owner and/or Project Monitor on an ongoing basis during the work, or if appropriate following completion of the physical activities associated with the project. The documents must be received and approved by the Owner and/or Project Monitor before the work is considered complete. (Failure to provide these documents means the work is not complete, even though the physical activities may be completed.)

a. Daily sign-in sheet for each worker entering a lead regulated area.

b. The Contractor must provide the results of exposure sampling done to comply with the requirements of 8 CCR 1532.1 (d) and the requirements of this specification.

c. The Contractor must provide blood sampling and analysis results of lead (BLL) and zinc protoporphyrin (ZPP) levels for all workers who are represented by air monitoring results that exceed the Action Level. Typically the Project Monitor will require blood lead sampling for all workers on a work shift if one or more air sampling results for that shift is above the Action Level.

   The written results of the blood sampling analysis must be provided the Owner and/or Project Monitor within 21 days of the exposure over the Action Level or within 12 days of the completion of the project, whichever comes first.

d. Copies of job progress reports and project documentation. This must include the names of all employees onsite, the hours worked and a brief description of the work completed at the site(s).

e. The Contractor must provide all waste disposal documentation.

1.7 Third-party Oversight

The Owner is utilizing the services of an independent third-party consultant to provide oversight of all work that disturbs lead on this project. The Contractor shall treat this third-party consultant as a designated representative of the Owner. The third-party consultant for this project is known as the Project Monitor. The Project Monitor is expected to perform some or all of the following activities on this project, but may also conduct other activities as needed:

a. Visually monitor the work practices of the Contractor's employees to determine that the work is being done in compliance with these specifications. The Project Monitor may conduct this activity on a continual basis or may make unannounced random visits to the project site to check on the Contractor's performance.

b. Visually inspect for the presence of visible emissions suspected to contain lead.

c. Conduct personal and area air monitoring in accordance with accepted methods.

d. Collect bulk samples of relevant materials to determine the presence or absence of lead.

e. Visually inspect the work area for cleanliness after completion of the work.

1.8 Air Sampling by The Owner and/or Project Monitor

The Owner and/or Project Monitor may determine it appropriate to collect air samples to evaluate the effectiveness of the Contractor's engineering controls and work practices. The Contractor and/or subcontractors shall allow the Project Monitor to attach and collect personal air samples on the workers and shall instruct the workers to comply with the directions for that sampling as given by the Project Monitor.

Air sampling may also be used to verify the effectiveness of the Contractor's containment system. The Project Monitor may choose to collect area air samples within the work area. These samples results may be used to generate an eight-hour, time-weighted average. The result of area samples in a lead work area should normally be far below what the workers are breathing. Therefore, should the Project Monitor collect area air samples within the work area that result in exposures above half the Action Level (15 $\mu g/m^3$), the Project Monitor will require the Contractor and/or subcontractors to re-evaluate their work practices, engineering controls, and containment system.

The Project Monitor may also choose to collect area samples downwind, outside of the regulated work area. These sample results will be compared to background air samples upwind or samples collected prior to the beginning of work. Sample results indicating airborne lead emissions at or above 5 $\mu g/m^3$ above background levels will be interpreted to mean that the Contractor and/or subcontractors containment or engineering controls are inadequate. This may result in the temporary stoppage of work until the Project Monitor is assured that airborne lead levels will significantly diminish by the change in work practices or engineering controls.

1.9 Notification of Employers of Employees in Adjacent Areas

The Contractor and subcontractors who will disturb lead are responsible for ensuring that employers of employees in areas adjacent to the work being conducted have been notified that work disturbing lead will take place.

Typically, this notification is in addition to the posting of lead regulated area signs. In summary, this notice shall be provided to all other contractors and subcontractors in areas adjacent to the work. Those employers must be notified in advance of any upcoming work that will disturb or impact lead in a manner that may generate airborne levels of lead that could present a potential exposure to workers at or above the Permissible Exposure Limit (PEL) as defined in 8 CCR 1532.1(l). This notice shall also provide information on the control measures being implemented and a warning that the employer's employees are to remain outside of the posted regulated areas. The Contractor and/or subcontractors anticipating the need for such notification shall coordinate this notification with the Owner and/or Primary Contractor.

1.10 Suspension of Work

The Owner and/or Project Monitor may suspend all work that disturbs lead if any controls (such as barriers) fail, if debris known or suspected to contain lead is detected outside the containment, or if work is on the exterior of a structure and wind speeds are more than fifteen miles per hour, or if in the judgement of the Project Monitor, other factors exist that determine the work must be stopped because of the potential for the creation of lead hazards. For example, the Project monitor may conduct perimeter monitoring and discover that lead is being released in concentrations above 5 $\mu g/m^3$ above background levels or work area air monitoring that is above half the Action Level. In either case, the Owner and/or Project Monitor may suspend work until more effective containment, work practices, and engineering controls are utilized.

1.11 Pre-Start Meeting

The Project Monitor typically recommends that there be a pre-start meeting with the Contractor or subcontractor's representative and the Project Monitor approximately five days prior to the expected start of work. The Contractor will be expected to provide the majority of pre-work submittals described in Part 1.6.1

at or before that meeting. This meeting is designed to answer questions about the project and address issues of concern of either the Contractor, subcontractor, or Project Monitor. Should this meeting be determined not to be necessary, the submittals must be delivered to the Owner and/or Project Monitor no later than five working days in advance of the work.

1.12 Testing for Lead in Paints, Coatings, And Other Materials

The Owner has already investigated the common paints applied to building exteriors included in this project. Therefore, the Owner does not anticipate paying for additional testing. However, in some cases, it may be in the interest of the contractor and/or subcontractors to determine the exact concentration of lead in the paint or coating since that will affect Cal/OSHA and CDPH compliance issues. For example, should the paint contain less than 600 parts per million lead, the contractor and/or subcontractors could conduct non-trigger tasks on this material without extensive training. Also, the demolition of these surfaces would not trigger prior notification to Cal/OSHA.

Should the contractor and/or subcontractor wish the paint to be tested, they will need to request this of the Project Monitor. This testing must be done by Entek. The Project Monitor will be able to assist the contractor and/or subcontractor in determining if testing the material is likely to be worthwhile for the contractor and/or subcontractor.

PART 2.0 MATERIALS AND EQUIPMENT

2.1 Fire Resistant Plastic Sheeting (Poly)

All plastic sheeting used on this project must be fire resistant whether used inside or outside of buildings.

2.2 Challenge Testing of HEPA Filtration Systems

All HEPA-equipped vacuums and air filtration units to be used on this project during operations that may disturb lead must be challenge tested and meet ANSI requirements using DOP or an equivalent testing agent. This testing must take place within ten calendar days prior to their use and after replacement of any HEPA filter removed from previously tested equipment. They do not need to be retested as long as they remain on site. They will need to be retested if they are moved off site. Copies of all testing certifications must be provided to the Owner and Project Monitor prior to use of the equipment.

2.3 Vacuum-Assisted Tools

When using power tools to disturb lead, the Contractor shall only use tools that have a HEPA-filtered-vacuum recovery system.

2.4 Power Washing

No high pressure or water blasting tools may be used if the spray will contact lead-containing paint.

For the purposes of this specification, power washing is defined as: The use of a low pressure "power washer" to rinse and/or wash stable, painted or coated surfaces to remove dust, dirt, grime, and other foreign matter in preparation for re-painting." **Under no circumstance may power washing be used to remove lead-containing paints or coatings from surfaces.** Before using power washing, all areas of loose, peeling, cracking, or unstable coatings must first be prepared for re-painting using the appropriate methods and personnel protective equipment as specified by Cal/OSHA and CDPH regulations, and these specifications. Typically, this means all loose and peeling paint must be removed by hand scraping and sanding or the use of mechanical tools equipped with HEPA filtration.

Should a Contractor or subcontractor use power washing in a manner that releases paint from the surface, and that paint also not be contained, the Contractor or subcontractor will be responsible for all costs associated with the Owner hiring and environmental contractor to clean up the area. The area to be cleaned will be determined by the Project Monitor and will extend past the point of visually apparent debris.

Prior to performing power wash operations, the Contractor must determine if the local sanitation district requires a Wastewater Discharge Permit for Surface Washers. Should this permit be required, the Contractor is responsible for obtaining it, accurately completing it and adhering to the permit requirements.

2.5 Personal Protective Equipment

The Contractor shall use respirators and personal protective equipment as required by 8 CCR 1532.1 and as appropriate based on personal air monitoring results. All respirators must be approved by NIOSH.

Respirator fit test records and the respiratory protection program shall be retained on site as part of the project documentation if respiratory protection is used on this project. Disposable dust/mist respirators shall not be used.

At a minimum, half-face respirators with P-100 (HEPA) cartridges will be required during surface preparation where there is manual scraping or sanding that will take more than one hour to complete. Dry scraping or sanding, mechanical scraping, abrading, sanding, or similar actions will trigger the need for respirators regardless of the duration of the activity.

Regardless of the duration of the work, all workers scraping lead-containing paint must wear disposable protective clothing over their wear home clothes.

At a minimum, the Contractor and subcontractors must ensure that no lead dust or debris is tracked out of the contained, regulated area. The Contractor and subcontractors must ensure that all those allowed into the regulated area wear adequate foot coverings that ensure that they will not track contaminated material out of the area when the leave.

2.6 Rental Equipment

Any equipment rented for the purpose of disturbing lead or used within a lead regulated area must be accompanied with documentation verifying that the rental agency has been notified, and acknowledges receipt of notification that the equipment being rented will be used for work inside a lead regulated area. This documentation must be submitted to the Project Monitor prior to the equipment being used on the job site.

PART 3.0 EXECUTION

3.1 Summary

Contractors and subcontractors conducting lead related construction work will be evaluated on a performance standard which includes, but is not limited to, cleanliness of work area, work practices as verified by exposure monitoring, containment set up, and ultimately, the cleanup of paint chips, dust, and debris.
Any work practice that creates paint chips, dust or painted debris must be conducted within a regulated area as defined in 8 CCR 1532.1 and within a containment at least as stringent as required by Title 17 and/or described in these specifications.

The containment system shall be designed and constructed to prevent visible dust or debris from escaping the work area as well as the escape of airborne lead emissions at or above 10 $\mu g/m^3$ above background levels. Should dust or debris generated by the work be found outside the containment, or the airborne lead outside the containment exceed background levels, the Project Monitor will determine that the containment

is inadequate, in violation of Title 17 requirements, and work will be stopped until the Contractor and/or subcontractors redesign the containment to be more effective.

3.2 Compliance with Requirements for The PEL and Action Level

Contractors and subcontractors strictly adhering to the requirements listed in these specifications who conduct minimal disturbance of lead such as by the conduction of trigger task work amounting to less than one hour, may begin work assuming the Cal/OSHA Permissible Exposure Limit (PEL) will not be exceeded.

Contractors and subcontractors **not strictly conforming to suggested work practices must start work assuming the PEL will be exceeded.** This means they must comply with all OSHA requirements specified for work that results in exposures over the PEL. This will include, but is not limited to, complying with requirements for training, personal protection, regulated area development, blood testing, personal air monitoring, the development of a written compliance plan, and the notification of employers in adjacent areas.

Contractors and subcontractors must assume the PEL will be exceeded each time they conduct trigger activities that will exceed one hour in duration. This will trigger the need to wear respirators and protective clothing, meet the training requirements specified earlier in these specifications, conduct personal air sampling, develop a written compliance plan and all other actions described as necessary by 8 CCR 1532.1 and these specifications.

3.2.1 Personal Air Sampling

The Contractor and subcontractors are responsible for conducting personal air monitoring during disturbance of lead in compliance with the requirements of 8 CCR 1532.1. At a minimum, Contractors and subcontractors shall conduct representative exposure monitoring on workers on a daily basis whenever those workers will conduct trigger task activities that will take longer than one hour to complete in an eight-hour shift. In addition, air sampling must be done for any work for which the Project Monitor believes has a reasonable potential for generating airborne lead at or above the Action Level. The Project Monitor will not allow work to proceed if the Contractor is not prepared to conduct the necessary air monitoring.

Sample information must include (but is not restricted to) the name of the individuals wearing the samples, the individuals' Social Security Number or Company ID number, the date the samples were collected, identification by unique method of the area where the work is being performed, and identification of the work being performed. EXAMPLE: James Black, ID# 8401, 06/25/08, Vacaville High School, Building C, exterior paint surface preparation work.

Laboratory results shall be provided to the Owner and/or Project Monitor within 5 days of sample collection. Paper copies must be received within 14 days of the Contractor receiving the results from the laboratory. Contractor and/or subcontractor must submit proof that the laboratory has the required licenses and certifications to analyze air samples for lead.

Should they wish to make use of the exceptions to air sampling stated in 8 CCR 1532.1 (d)(3) (C) & (D), the Contractor and/or subcontractors must submit the required information to the Owner and/or Project Monitor and receive written approval from the Owner and/or Project Monitor prior to reducing the personal protection, containment, or engineering controls stated in this specification. In general, air sampling results that are intended for use to reduce personal protection requirements must be collected on this project. Air sampling results from other projects will not be allowed to create a negative exposure assessment for use on this project.

Contractor and/or subcontractors must submit a signed statement that they will conduct personal air sampling according to Cal/OSHA requirements for all work where that sampling is required by these

specifications. Typically sampling will be required whenever the Contractor and/or subcontractor conduct a trigger task for more than one hour in an eight or more-hour shift.

3.3 Work Involving Whole Component Removal

Intact lead-containing paint on construction debris is generally not considered a hazardous waste in California. However, loose and peeling paint on structures may result in all construction debris from that site being considered a hazardous waste.

Therefore prior to the demolition or removal of painted material and the disposal of that material, all loose, peeling or flaking paint must be removed. This includes objects such as fascia, trim or other similar structures.

Any paint debris generated during this work must be separated into appropriate waste streams and handled as a hazardous waste, or as deemed appropriate as discussed in Part 3.11 Lead Waste Management.

The manual demolition or removal of painted components involving over 100 square feet of material does not trigger the Cal/OSHA pre-work notification as stated in 8 CCR 1532.1 (p) **if the paint is intact and will largely remain undisturbed by the removal or demolition process.** For example, if door or window frames with intact paint are removed, and the amount of material is over 100 square feet, the Cal/OSHA notification does not need to be provided if the paint is intact and won't be disturbed by the removal process.

3.4 Prohibited Work Practices

The following work activities are prohibited on the project:

a. Open-flame burning or torching.

b. Machine sanding or grinding of lead materials or surfaces coated with lead unless the machine is equipped with a HEPA-filtered-vacuum recovery system.

c. Un-contained hydro-blasting or high-pressure washing.

d. The use of power washing to remove loose and peeling paint without the use of full containment, water filtration, and sludge recovery systems.

e. Abrasive blasting or sandblasting without a HEPA-filtered-vacuum recovery system or done outside of a negative pressure enclosure.

f. Heat guns operating above 1,100 °F.

g. Dry scraping, except for limited areas where electrical hazards create a higher risk than lead or unless specifically approved by the Project Monitor.

h. Use of methylene chloride based paint strippers.

3.5 Competent Person

The Contractor and/or subcontractors disturbing lead shall have a competent person (as defined by Cal/OSHA for construction activities) onsite at all times to supervise and oversee all activities which may disturb materials containing lead. This person must be a CDPH Certified Lead Supervisor.

3.6 Work Site Preparation & Containment Requirements

The Contractor and/or subcontractor is required to contain the disturbance of lead in a manner that prevents lead-contaminated dust, debris, water, or air from leaving the regulated work area in an uncontrolled fashion. The containment must be developed in compliance with the requirements of Title 17 and these specifications. The presence of lead dust, debris, or air above background levels will indicate that the containment is inadequate. Work will be stopped and the Contractor and/or subcontractor must adjust work practices, engineering controls, or the containment in a manner that convinces the Project Monitor that the material will no longer be able to escape the regulated work area.

3.6.1 Exterior Work Site Preparation & Containment

The Contractor and subcontractors are responsible for ensuring that building occupants and those in adjacent areas are not exposed to lead dust or debris as they enter or exit buildings. The Contractor and subcontractors shall ensure that building occupants and others in the adjacent area do not enter the lead regulated area and have a safe means of access and egress to the building.

For exterior work site preparation, one layer of six-mil poly sheeting shall be placed on the ground extending at least ten feet beyond the perimeter of surfaces included in the work. This poly sheeting must be extended a minimum of twenty feet for a multistory building. Depending on wind conditions, the poly may need to be extended further than the ten and twenty foot minimums. The poly on the ground must be adequate to catch all lead-containing debris and water. For example, if the work involves the scraping of paint, all paint chips, dust, debris and water that is released by the work must be contained on the poly.

The poly must be secured to the side of the building or structure with tape, or other anchoring system, so that there is no gap between the poly and the building or structure. The poly installed to cover ground or landscaping shall be installed in a manner to ensure that it will not blow away or billow from the wind. The use of weights such as wood is acceptable as long as the poly does not billow or blow in a manner that releases lead dust or debris off of it.

The exterior of all windows located within ten feet of any disturbance of lead must be sealed by covering them with at least one layer of six-mil thick poly sheeting. All ventilation machinery within 20 feet of the disturbance should be sealed by at least one layer of six-mil thick poly sheeting. Keep all windows within 20 feet of working surfaces closed, including windows of adjacent structures.

Should the disturbance of paint involve removing paint from the exterior of a window, then the Contractor or subcontractor must seal the inside of the window with two layers of six-mil thick poly. The Project Monitor will typically waive the requirement to seal the inside of the window with two layers of poly if the disturbance of lead involves less than 5% of the painted surface area of an exterior window.

Those in adjacent areas must be kept a sufficient distance from any chance of encountering lead dust and debris. Therefore, the Contractor shall erect barrier tape at a distance sufficient enough from the poly barriers to ensure that those passing by the area are not directly adjacent to the poly containment barriers. In general, the barrier tape should be at least five feet from the edge of the poly placed on ground surfaces if those surfaces are accessible to unauthorized persons. The area off the poly sheeting, but inside of the barrier tape, is still part of the regulated area however and is not allowed to have any lead dust or debris present at any time.

The Contractor and/or subcontractor must post the regulated area sign as described in 8 CCR 1532.1 (m) (WARNING, LEAD WORK AREA, POISON, NO SMOKING OR EATING.) The posting may be done by wording on the barrier tape or by suspending OSHA-approved signs with the wording on the tape barriers or on readily apparent surfaces visible to persons outside the area.

All those entering the regulated area must sign in on a roster that documents their presence in the area. This roster must be provided the Owner and/or Project Monitor on a daily or weekly basis as determined by the Project Monitor.

Work disturbing lead shall not be conducted on exterior surfaces if wind speeds are greater than 15 miles per hour or, in the judgement of the Project Monitor, pose a risk of blowing lead dust or debris out of the regulated area.

In addition, for work done on ladders or man lifts, the Project Monitor is likely to require the workers to scrape loose and peeling paint directly into a container, rather than let the loose debris float down and possibly off the containment barrier. Typically, the Project Monitor will allow the workers to scrape loose and peeling paint into a cardboard box held in one hand while scraping with the other hand.
Work must stop and cleanup occur before rain begins.

The Contractor shall not leave debris or poly sheeting out overnight if work is not completed. The Contractor shall keep all debris in a secured area until final disposal

3.6.2 Interior Site Preparation & Containment

For interior work site preparation, one layer of six-mil poly sheeting must be placed on the entire floor. However, the entire floor area need not be covered by poly for large interior areas where the disturbance of lead is limited to the perimeter of the area. If the entire floor area is not covered with poly, the poly must extend out a minimum of ten feet from those areas where lead will be disturbed. The poly sheeting must be secured to the wall using tape so there is no gap between the floor and the wall. The poly must also be secured to the floor.

If individual rooms are being worked in, seal all doorways with a primitive airlock flap to prevent contamination of other areas of the building. Post the regulated area signs, as required by 8 CCR 1532.1 (m), at the entrance to the regulated area and all other entry points to the area, **and utilize an adequate number of differential pressure units to provide dust control.**

All those entering the regulated area must sign in on a roster that documents their presence in the area. This roster must be provided the Owner and/or Project Monitor on a daily or weekly basis as determined by the Project Monitor.

If feasible, turn off all HVAC systems in the regulated work area. In addition, seal all ventilation systems in the regulated work area with a minimum of one layer of six-mil poly. Any exceptions to this requirement must be approved by the Project Monitor. Typically, the Project Monitor will require all ventilation system ducts and/or registers to be sealed with poly if they are within 20 feet of the disturbance of lead even if they are turned off. Seal all furniture or other equipment that must remain in place with a layer of four or six-mil poly.

3.6.3 Additional Containment Requirements for Demolition of Ceramic Tile and/or Mechanical Disturbance or Blasting of Lead-Containing Materials Without A HEPA-Filtered-Vacuum Recovery System

This part primarily addresses work that will involve the demolition of building surfaces covered by lead-containing ceramic tile. These requirements shall also apply should the Contractor and/or subcontractors disturb lead-containing material, in an interior space, using mechanical or blasting methods without a HEPA-filtered recovery system approved by the Project Monitor.

In addition to the requirements stated in Part 3.6.2, the demolition of ceramic tile that involves the breakage or cutting of the tile must be done inside a negative air pressure containment system.

The negative air pressure must be generated using an air filtration unit that has been challenge tested on site as described in Part 2.2 Challenge Testing of HEPA Filtration Systems.

Seal all critical barriers between the work area and the adjacent areas with a minimum of six-mil thick poly. Critical barriers are any openings in the surface areas of the regulated work area through which air, dust, or water might pass. This includes, but is not necessarily limited to all windows, doors, HVAC vents and units.

All objects or equipment that cannot be removed from the area must be covered and tape sealed with a minimum of six-mil thick poly. Any exceptions to this requirement must be specifically approved by the Project Monitor.

Typical decontamination requirements for paint scraping and most manual demolition are discussed in Part 3.6.4 Decontamination Procedures. However, the decontamination procedures surrounding the demolition of ceramic tile are much more stringent and are described below.

All regulated work areas where ceramic tile will be broken, or other tasks that will, in the opinion of the Project Monitor, generate significant amounts of lead dust, must include a personal decontamination area and the supervisor must ensure that, at a minimum, the following procedures are followed.

a. Work That Disturbs Less Than 100 Square Feet of Lead-Containing Material

Work involving the demolition of less than 100 square feet of lead-containing material, including ceramic tile, is not expected to result in airborne exposures over the PEL. Therefore, the personal decontamination system may, at a minimum, be a one stage decontamination system that separates the work area from the adjacent areas.

1. This must, at a minimum, include an airlock chamber between the work area and the adjacent areas. Each side of the air lock must be covered by poly curtains. At no time, including during the removal of waste containers, may the poly doors be open on both sides of this chamber at the same time. This chamber must be a minimum of three feet by three feet by six feet tall. There must be a clean poly drop cloth measuring at least five feet by five feet immediately outside this air lock onto which workers will step after exiting the air lock. This poly drop cloth must be kept visually clean of dust and debris at all times. This poly drop cloth shall be removed at the end of the work shift and replaced with a new clean poly drop cloth at the start of the next shift.

2. The workers must be able to remove their protective clothing and wash off their respirator before leaving the work area. The supervisor must ensure that they do not track lead containing materials out of the work area on their feet. Footwear worn out of the work area must have been covered by protective booties if worn in the work area. Following removal of the protective covering over the footwear, all footwear worn in the work are must be HEPA vacuumed before allowing it to be worn out of the regulated area. Footwear that can be washed before leaving the work area does not need to be covered by protective booties as long as the exterior of the footwear is thoroughly washed prior to being worn outside of the regulated area.

3. After they leave the decontamination chamber, workers must go directly to a nearby location where they must thoroughly wash their hands and face. Cal/OSHA specifically states that the supervisor must ensure this washing takes place.

4. Special attention must be given that workers do not track lead dust out of the work area on the soles of their feet or shoes.

5. Following the exit of workers from the work area, whether leaving for breaks or at the end of the day, the supervisor must visually inspect the area outside the decontamination system to verify that no dust or debris is being tracked out.

6. The Contractor shall not permit the storage or consumption of food and/or beverages inside the containment or within any of the decontamination chambers. Food or drink consumption within containment may result in the worker(s) dismissal from the site for the duration of the project.

7. Work will be stopped if the Project Monitor determines that the decontamination system is not kept in acceptable condition or used properly.

b. Work That Disturbs More Than 100 Square Feet of Lead-Containing Material

For all work that disturbs more than 100 square feet of wall ceramic tile, the decontamination system must be a full, three-stage decontamination chamber with a shower as described below.

1. The three-stage decontamination unit with shower must be contiguous with the containment unless determined infeasible by the Project Monitor.

2. The worker decontamination enclosure system shall consist of at least a clean room, a shower room, and an equipment room, separated from the work area by airlock chambers. The airlock chambers shall be at least three feet square in size. All fabricated units shall have, at a minimum, two layers of six-mil poly sheeting.

3. Entry and exit from all airlock chambers and the decontamination enclosure system chambers shall be through doorways designed to restrict air movement between chambers when not in use. The dirty side shall have an extra layer of six-mil poly sheeting on the floor as an extra drop cloth and it shall be replaced at least daily.

4. The clean room shall be sized and equipped to adequately accommodate the work crew. Lighting, heat and electricity shall be provided as necessary for comfort. This area must remain clean. If in the judgement of the Project Monitor, equipment storage or other activities taking place in this area affect the cleanliness of the area, the Contractor may be required to move that storage and those activities away from the designated clean area.

5. The shower room shall contain one or more showers as necessary to adequately accommodate workers and shall meet OSHA requirements for temporary shower facilities. The shower enclosure shall be constructed to ensure against leakage of any kind. In addition, the shower shall be a separate unit from the decontamination unit walls. The shower unit cannot be made from poly. Metal or hard plastic is acceptable. An adequate supply of soap, shampoo and towels shall be supplied by the Contractor and available at all times.

6. Shower water shall be drained, collected and filtered through a system with at least a five micrometer particle size collection capability. Filtered waste water shall be disposed of into a sanitary sewage system. Under no circumstances may it be released where it might enter a storm drain.

7. The shower chamber shall be, at a minimum, three feet by three feet wide by a minimum of six feet in height. The shower chamber shall be constructed so that no water from the shower can spray out of the chamber, nor any water run down the sides of the poly and escape the chamber system. The Contractor must have a back-up containment system to control leaks from the shower, connections and hoses. This can be either a secondary metal pan under the shower or a series of poly barriers, separate from the construction of

the chamber, that are solely for the purpose of collecting water that might leak out of the shower system.

8. Each decontamination chamber shall have, at least, a four-inch lip of poly from the floor up the wall to prevent possible transfer of water and debris between chambers. Excess poly at the corners of this floor is to be fitted to the sides of the chamber by folding poly and taping, as opposed to cutting away excess poly and taping seams. For some projects, particularly those where the decontamination chambers are located on surfaces needing special protection from water, the Project Monitor may determine additional precautions are necessary such as requiring the shower chamber to have an overflow pan, in which the shower unit sits, that is capable of holding two inches of water. The filter system and any hose connections transferring contaminated water shall be located in a secondary containment, such as a metal pan. Any leakage shall be double-bagged or re-filtered. Should this requirement for an additional metal pan under the shower be required, it will be identified elsewhere in these specifications and discussed at the bid walk.

9. Unless otherwise specified in these specifications, the minimum size of the decontamination chambers shall be the following:

Clean Change Room	five feet x six feet x six feet high
Shower	three feet x three feet x six feet high
Dirty Change Room	five feet x six feet x six feet high
Air Lock Chambers	three feet x three feet x six feet high

10. The Dirty Change Room may be part of the work area as long as a separate drop cloth is placed down before the entrance to the first airlock chamber and this drop cloth dust not contain significant quantities of debris from the work area.

11. There must be a clean poly drop cloth measuring at least five feet by five feet immediately outside the clean side airlock onto which workers will step after exiting the airlock. This poly drop cloth must be kept visually clean of dust and debris at all times. This poly drop cloth shall be removed at the end of the work shift and replaced with a new clean poly drop cloth at the start of the next shift.

12. Special attention must be given that workers do not track lead dust out of the work area on the soles of their feet or shoes. Footwear worn out of the work area must have been covered by protective booties if worn in the work area. Following removal of the protective covering over the footwear, all footwear worn in the work are must be HEPA vacuumed before allowing it to be worn out of the regulated area. Footwear that can be washed before leaving the work area does not need to be covered by protective booties as long as the exterior of the footwear is thoroughly washed prior to being worn outside of the regulated area.

13. Following the exit of workers from the work area, whether leaving for breaks or at the end of the day, the supervisor must visually inspect the area outside the decontamination system to verify that no dust or debris is being tracked out.

14. The Contractor shall not permit the storage or consumption of food and/or beverages inside the containment or within any of the decontamination chambers. Food or drink consumption within containment may result in the worker(s) dismissal from the site for the duration of the project.

15. Work will be stopped if the Project Monitor determines that the decontamination system is not kept in acceptable condition or used properly.

3.6.4 Decontamination Procedures

Decontamination procedures shall be established by the Contractor and subcontractor depending upon the airborne concentrations of lead as well as the amount of dust and debris created by the work. At a minimum, the decontamination procedures shall be in compliance with 8 CCR 1532.1 (j) (1-5). As stated in 8 1532.1 (j) (1-5), the Contractor shall assure that these decontamination facilities are used by the supervisor and workers.

For work that does not exceed the PEL, and/or does not include the disturbance of more than 100 square feet of material, the Contractor and/or subcontractor must assure that a hand-washing station is available and used by the supervisor and workers. For work that exceeds the PEL, the Contractor must ensure that workers shower, at a minimum at the end of the work shift as required by 8 CCR 1532.1.

3.6.5 Avoiding Contamination of Adjacent Areas by Proper Decontamination

Should the Owner and/or Project Monitor discover that an occupant of the regulated area left the regulated area without properly decontaminating; the Contractor will be required to clean the adjacent areas that in the opinion of Project Monitor may have been exposed to lead dust or debris from this action. Failure to properly decontaminate is demonstrated by wearing protective clothing outside the regulated area that was previously worn in the area or by wearing footwear outside the regulated area that was not properly covered and/or decontaminated. The failure to adequately decontaminate will trigger the following cleaning. In all areas determined necessary by Project Monitor, the Contractor will be required to HEPA vacuum, then wet wash, then HEPA vacuum again all potentially contaminated areas and items to the satisfaction of the Project Monitor. The Project Monitor will not need to demonstrate the need for this cleaning by the presence of visible dust and will not need to collect settled dust samples in order to require the Contractor to implement the cleaning routine.

3.6.6 Prior to Start of Work

The Project Monitor may visually inspect any regulated area for compliance with this specification before the contractor and/or subcontractor begins work that may disturb lead. However, the contractor and/or subcontractors work site supervisor will be responsible for compliance with this specification and all applicable regulatory requirements in preparing all regulated work areas, as well as use of work practices.

Owner reserves the right to periodically inspect regulated work areas, review work practices, and implement changes as necessary to assure protection of workers, owners property, and others not directly involved but impacted by the work being performed.

3.7 Wet Work Practices

Unless determined infeasible by the Project Monitor, all disturbance of lead-containing materials must utilize wet methods for dust suppression.

3.8 Prompt Cleanup of Debris

Removed lead-containing material shall be kept wet and promptly placed in the type of waste containers required by this specification. The Contractor and subcontractors are encouraged to place debris in containers shortly after it has been removed. However, at a minimum, all bulk debris must be containerized before any work stoppages such as for breaks, lunch, or the end of a shift. Bulk debris must be kept adequately wet until it is containerized. The Contractor must plan only to disturb amounts of material that can be cleaned up and containerized before the next work stoppage. Delays and additional costs incurred by the Contractor for failing to adequately calculate the amount of time needed to clean up debris will be the

sole responsibility of the Contractor. For example, if a crew must work overtime to containerize debris before ending the shift, those additional costs are the sole responsibility of the Contractor.

The Contractor and/or subcontractor must not allow excessive amounts of dust and debris to gather on the floor containment barriers. If in the opinion of the Project Monitor, too much debris is being allowed to gather on the floor poly, the Project Monitor will require the Contractor or subcontractor to either assign a worker to conduct continual cleanup, or the workers scraping paint or conducting other work disturbing lead will have to contain the debris before it falls to the ground. Typically, this is done by scraping paint directly into a cardboard box held by the worker as he or she scrapes off the loose and peeling paint.

3.9 Final Cleanup of the Work Area

3.9.1 Exterior Work Areas

The Contractor and/or subcontractor must HEPA vacuum up all visible dust and debris off containment barriers. Then gently roll and/or fold poly barriers in on themselves in order to avoid releasing any remaining dust to adjacent areas during this process.

The final step will be to vacuum up any visible dust or debris in the work area or regulated area that is suspected to contain lead. The area must be visually clean of all lead-related dust and debris, and all poly barriers must be removed before the workers leave the job site. The regulated area barrier tape and/or signs must be taken down. Critical barriers erected on windows and HVAC systems may be left in place if work will take place in those same areas during the next work shift. Otherwise those barriers must also be removed before the workers leave at the end of the shift.

3.9.2 Cleanup of Interior Work Areas

All cleanup of the interior work area shall be performed using a HEPA vacuum and wet washing techniques. All surface areas in the work area that reasonably could have been exposed to airborne lead must be HEPA vacuumed and/or wet washed. Ceilings must also be cleaned if the ceilings are less than five feet above the area where painted surfaces were disturbed.

3.10 Final Inspection of the Work Area

The Project Monitor will inspect work areas for visual signs of dust and debris related to the disturbance of lead. The Project Monitor will not inspect or evaluate the quality of paint preparation work such as paint scraping. The contractor who will be painting the prepared surfaces is responsible for the quality and workmanship of the surface preparation.

The Project Monitor typically will not collect dust wipe samples to verify the cleanliness of an area unless specifically stated otherwise elsewhere in these specifications. However, dust wipes may be collected in under the following circumstance.

a. Failure to Comply with Work Practices, Engineering Controls, Or Decontamination Procedures

   If in the judgement of the Project Monitor, the Contractor and/or subcontractor has not followed the requirements of this specification regarding work practices, engineering controls, and decontamination procedures, the Project Monitor will collect dust wipe samples in areas believed contaminated by the Contractor or subcontractors' actions. The supervisor of the project will be told in advance if such testing will be conducted and given time to clean those areas. For example, Part 3.8.5. describes actions that will lead to additional cleaning by the Contractor.

   Should dust wipe sampling be necessary, the Project Monitor will conduct such testing with the specified intent of verifying whether the containment process and decontamination processes

used by the Contractor and/or subcontractor were adequate in preventing the release of lead dust from the work area. The samples will be collected according to the procedures required in Title 17. The containment will be judged appropriate if the results of the samples do not indicate a dust lead hazard for floors as specified in Title 17.

3.11 Power Washing of Exterior Building Surfaces

For the purposes of this procedure power washing is defined as the use of a low pressure "power washer" to rinse and/or wash stable, painted or coated surfaces to remove dust, dirt, grime, and other foreign matter in preparation for re-painting. In no circumstance is this to be construed as water blasting, and is not intended nor shall be used to remove lead-containing paints or coatings from surfaces. Loose and peeling paint must be removed by the other methods described in this specification before power washing may be conducted. Should power washing begin to release paint from the substrate, the Contractor must stop the power washing process and remove the loose material following the procedures described in these specifications.

3.11.1 Waste Water Discharge Permits

Many local sanitation districts require the completion and submission of a waste discharge permit prior to allowing the use of power washers. Therefore, prior to performing power- wash operations, the Contractor must obtain a Wastewater Discharge Permit for Surface Washers, **if required**, from the local Sanitation District, Water Quality Division, Industrial Waste Section, and adhere to the permit requirements. It is the Contractor s responsibility to obtain and properly fill out a current copy of this permit if it is required.

3.11.2 Required Work Practices for Power Washing

Where power washing of exterior surfaces of buildings coated with lead-containing paint(s) or seal coats is specified, or in those areas where the Contractor opts to use power washing to prepare surfaces, all of the following conditions must be met prior to uncontrolled washing without waste water control/collection measures. The following test is conducted prior to allowing the beginning of full power washing in order to verify that measurable amounts of lead are not being released by the washing process. Once it is determined that the washing process does not release lead, the Contractor will be allowed to proceed with power washing with only minimal additional requirements.

a. The Contractor in coordination with the Project Monitor shall select a minimum of one test area typical of the surfaces to be power washed. This area shall be100 or more square feet in area. On some sites where the building surfaces are different, the Project Monitor may require more than one area to be tested.

   The Contractor shall construct a floor containment for the test areas. The containment must be designed to capture and collect all wash water and any paint chips generated during the assessment. Typically, the Contractor simply needs to use poly on the ground to create a basin like effect which will capture the spray water.

   The Project Monitor will first collect a sample of source water such as from the hose tap. The Contractor will then be asked to power wash the test area in a similar manner as to how the building as a whole will be power washed. Work shall be halted if the washing process causes delamination of paint from the test area surfaces. Modifications to the methods and work practices shall be made prior to resumption of power washing and these modifications must be approved by the Project Monitor prior to their implementation.

   The Project Monitor will collect one or more samples of the water runoff that was captured by the Contractor following power washing the test area. As long as there are no visible paint chips in the water and/or the amount of water is not excessive, the Contractor may release the captured water as long as it is absorbed by landscaping or will evaporate. No waste water resulting from

power washing operations may be allowed to drain into any storm drain as required by the State of California.

b. The Project Monitor will send these samples to a laboratory for lead in water analysis. The sample results for the source water will be compared to the water runoff sample. If similar amounts of lead are present in each, the Project Monitor will reach the conclusion that the power washing process is unlikely to release lead into the water or surrounding area during the power washing process. Typically, the power washing process does not release lead as long as loose and peeling paint was removed prior to the start of power washing.

c. The Owner will pay for the collection of these water samples and their laboratory analysis.

d. The Project Monitor will notify the Contractor as soon as the results of the testing process are known. Typically, the Contractor will be given permission to begin power washing. The Project Monitor and the Contractor will need to discuss alternatives to power washing in the unlikely situation that the water test shows lead contamination in the runoff water.

e. The Contractor shall assume that the testing and water analysis process will take a total of three work days. For example, if the test is done on the morning of the first day, the water samples will arrive at the laboratory on the morning of the second day. The results of the sampling process will be available on the afternoon of the third day. Since no power washing will be allowed until this testing process shows acceptable results, the Contractor must build this testing process into the work schedule. The Contractor may choose to accelerate the testing process but this will mean that the Contractor, rather than the Owner, will pay for the transportation of the samples to the laboratory and for the rush laboratory analysis. Even under "rush" conditions, it is very unlikely that the entire process could be completed in one day. The Contractor may want to schedule the testing process prior to the completion of other paint preparation work in order to have the results by the time the paint preparation work is complete.

f. Upon receiving approval to begin power washing, the Contractor will be allowed to proceed power washing the building. The Contractor must, however, notify the Project Monitor 24 hours in advance of the beginning of power washing in order for the Project Monitor to monitor the process should he or she feel that is appropriate.

g. Employee protective measures such as disposable clothing and respirators will not be required as power washing is not likely to result in airborne exposures of lead above the Action Level.

h. Waste water produced from power washing operations **which does not contain chips of paint** may be allowed to soak into the ground below the area being washed. If the area located below or around the surface to be washed does not allow for absorption into the ground, the water must be directed toward an area on the property that will allow for absorption into the ground or evaporation. The Contractor must take steps to ensure that no waste water enters storm drains. This is State and Federal law. This runoff cannot go into a storm drain regardless of the lead content of the water.

3.12 Lead Waste Management

Proper testing and disposal of all waste material is the responsibility of the Contractor.

The Contractor must plan the work in order to minimize the generation of hazardous waste during the disturbance of lead-containing materials. The Contractor must create separate waste streams as necessary. This particularly includes the separation of any loose paint chips or flakes from other construction debris. All waste streams must be identified by the Contractor before the work begins and separated during the course of the project to minimize costs of disposal.

The Contractor is responsible for all costs associated with the testing, removal, packing, loading, shipping, and disposal of lead containing waste generated during this project. This does not include waste water testing done to determine if power washing is permitted. The cost of that testing will be covered by the Owner.

The Contractor is required to comply with all regulations in Title 8 Section 1532.1 Lead in Construction and Cal/EPA Title 22 for waste classification and disposal.

3.12.1 Lead Waste Testing

The Contractor must conduct appropriate waste stream characterization testing and/or filtering prior to disposal of waste products such as water, sand, paint chips, vacuum debris, and filters generated during surface preparation activities. Once completed, the test analysis results must be submitted to the Owner and/or Project Monitor for review. The Contractor is responsible for all costs associated with waste stream testing. Contractors may choose to avoid some waste testing by presuming that the waste is a lead hazardous waste. Waste must be tested if the Contractor wishes to treat it as a non-hazardous waste.

The Contractor may not remove or dispose of the identified materials from the job site until this review has been completed and the Contractor has been informed by the Owner and/or Project Monitor of their concurrence that the materials have been properly tested and meet the requirements allowing the materials to be classified as non-hazardous.

3.12.2 Hazardous Waste Manifests

For all hazardous waste that requires an EPA manifest, the Contractor must coordinate with the Owner for signature of the manifest. In general, the Contractor must notify the Owner a minimum of 24 hours in advance of the need for a signature. Hazardous waste cannot be transported without an authorized signature so it is the responsibility of the Contractor to coordinate with the Owner the time waste transporters will need the signature. Delays resulting from the failure of the Contractor to obtain an authorized signature from the Owner will be the sole responsibility of the Contractor, unless the Owner was provided 24 hours in advance notice and the transporter arrived on time during the regular work hours of the Owner. **At no time is Contractor authorized to sign any Uniform Hazardous Waste Manifests for the Owner.**

3.12.3 Waste Containers

All debris generated in the regulated work area shall be placed in containers approved by the Project Monitor. The containers shall be leak tight and meet the requirements as stated in these specifications. Bags and other containers shall not be overfilled.

If in the judgement of the Project Monitor, the Contractor's method of containerizing debris is inadequate and either results in the release of dust or debris or is reasonably expected to result in such a release, the Contractor will be forbidden to continue waste containerization or load out until the containers meet the approval of the Project Monitor. This may result in the Contractor being required to change from one type of container to another. It must be understood that the Contractor is responsible for proper containerization of waste and therefore, will be required to provide for adequate and appropriate containers regardless of cost incurred due to failure of one system of containerization being required over another.

When utilizing bags to contain lead hazardous waste, two bags at least six-mil in thickness must be used. The inner bag may be sealed with adequate amounts of tape necessary to secure the opening of the bag. Only the second or final bag must be gooseneck sealed.

Regardless of the wastes characterization or designation as construction debris or hazardous waste, all waste containers shall be stored in designated and secure areas separate from the work area prior to testing and/or disposal.

The Contractor is responsible for proper storage and labeling of all hazardous waste containers while they are being used as storage and before they leave the job site according to the requirements of DTSC and DOT.

Building components such as wood with loose and flaking paint must, at a minimum, be wrapped in one layer of six-mil poly and adequately sealed with tape to secure the containerized material.

Concentrated lead waste such as sludge from paint stripping operations, lead containing paint chips and/or dust, HEPA vacuum contents and filters must be assumed to be hazardous waste until properly tested and must, at a minimum, be placed in poly lined, DOT aproved steel drums.

3.13 Alternative Work Plans

The Contractor and/or subcontractors may submit alternate work plans to the suggested work practices and containment strategies as stated in these specifications. These alternate work plans or containment strategies must be approved by Owner and/or Project Monitor prior to their implementation.

This specification was developed by:

Blake Howes
Project Manager
Entek Consulting Group, Inc.
COPH #23951
June 30, 2015
Phone: (916) 632-6800
Fax: (916) 632-6812

PART 4.0 DOCUMENTATION SUBMITTAL REQUIREMENTS

Pre-Start Submittal Form

This form must be completed, signed, and submitted with the Contractor and/or subcontractors' documents required prior to the start of work. This form and these documents must be submitted to the Owner and/or Project Monitor in the time specified in the project documents prior to the start of work disturbing lead.

Please attach submittals in the order listed below. Please check off each item that is submitted. Write NA in spaces for which you believe the requirement is Not Applicable.

All Contractors and subcontractors who will have employees disturb lead on this project must, at a minimum provide proof of item number 1.8.1. e.1., lead hazard communication training in compliance with 8 CCR 1532.1 (L)(A)(1).

The following submittals must be provided by all Contractors and subcontractors who will, at a minimum, have employees who will conduct trigger tasks for more than one hour per shift, will potentially be exposed above the Action Level, or will conduct other activities as determined by the Project Monitor that may result in significant exposure to lead.

a. _____ A written lead compliance plan in compliance with 8 CCR 1532.1 must be provided that includes the following:

1. _____ A description of equipment and materials, controls, crew size, job responsibilities, and operations and maintenance procedures for each activity in which lead is disturbed and potentially emitted;

2. _____ A description of specific control methods (wet methods, engineering controls, etc.) that will be used to ensure workers are not exposed above the PEL;

3. _____ Technology considered in meeting the Cal/OSHA permissible exposure level (PEL);

4. _____ Air monitoring data documenting sources of lead emissions;

5. _____ A detailed implementation schedule for the compliance plan, including the schedule for inspections by a competent person;

6. _____ A description of the lead work practice program which will be used to control worker exposures. This includes the use of protective work clothing, equipment, hygiene facilities and practices, and housekeeping practices;

7. _____ A description of the steps the Contractor or subcontractor will take to minimize the generation of hazardous waste produced on this project. This includes, but is not necessarily limited to how the contractor will separate waste streams. For example, how will the Contractor or subcontractor will keep potentially hazardous waste such as paint chips and dust from being disposed of with other potentially non-hazardous construction materials and debris.

b. _____ Copy of the Contractor or subcontractor's written respirator program in accordance with the requirements of 8 CCR 1544.

c. _____ Proof that all employees expected to wear respirators on this project have medical approval to wear a respirator.

d. _____ Copies of respiratory fit-tests for all workers expected to wear a respirator on this project. Fit testing must be done as required by and in accordance with 8 CCR 1544.

e. Proof of training required by Part 1.5 for type of work employee will do.

1. _____ Proof of Hazard Communication Training for Lead for those exposed to lead or who will perform trigger tasks for less than one hour. *(Proof may be a certificate or written statement stating training was completed and a list of names of those individuals who were trained. Proof of this training is not needed if employee provides proof of training required by items e. 2, or e. 3.)*

2. _____ Proof of training in compliance with 8 CCR 1532.1 (l)(2) for all employees who will conduct trigger tasks as defined in 8 CCR 1532.1 (d)(2) for more than one hour or who will reasonably be expected to be exposed to lead above the Action Level. *(Proof may be a certificate or written statement stating training was completed and a list of names of those individuals who were trained.) Not required if providing proof of training required in item e.3 and/or item e.4.*

3. _____ Proof of CDPH lead certification for those workers who will conduct trigger tasks as defined in 8 CCR 1532.1 (d)(2) or will reasonably be expected to be exposed to airborne levels of lead above the PEL. This is required for this work on all projects that will disturb more than 100 square feet of lead-containing material. *(Proof of certification will be a currently valid CDPH certification card as a worker or supervisor. Workers who can show proof of a valid course completion form and*

application being submitted to CDPH, will be allowed to work while awaiting full certification from CDPH.)

4. _____ Proof of current CDPH certification as a lead supervisor for the on-site competent person for projects involving the conduction of trigger tasks or other activities reasonably expected to exceed the PEL. This is required for this work on all projects that will disturb more than 100 square feet of lead-containing material. *Proof of valid certification will be a currently valid CDPH certification card a worker.)*

5. _____ If exception to requirement for CDPH certified supervisor listed in Part 1.5.3 is requested, then provide proof of CDPH certified supervisor who will verify containment, personal protection and work practices, and will be able to respond to the project within two hours of request by the Project Monitor. *(Only applicable for paint scraping work done prior to the demolition of buildings or structures.)*

f. _____ Copies of all current MSDS for chemicals used on this project.

g. _____ Manufacturers' certifications that high efficiency particulate air (HEPA) vacuums, pressure differential units and other local exhaust ventilation equipment conform to ANSI Z9.2-79 for all HEPA-filtered equipment that will be used on this project. *(This is proof that the equipment is actually HEPA filtered. This is separate from the challenge testing requirement needed for equipment used in interior spaces.)*

h. _____ Name and contact information of independent testing company who will challenge test all vacuums and air filtration devices used on this project (in interior spaces).

i. _____ Statement regarding compliance with all Cal/OSHA exposure monitoring required for this project.

j. _____ Name and contact information for laboratory who will analyze air samples or waste samples and documentation of their certification to conduct such analysis.

k. _____ Name of Waste Transporter who will transport hazardous waste on this project and documentation that the Transporter is allowed to transport lead hazardous waste.

l. _____ Name of Waste Landfill to which lead hazardous waste will be sent and documentation that such landfill is allowed to accept such waste.

m. _____ Should waste water filtration be required on this project, submit manufactures documentation pertaining to the capability of waste water filters to filter particles of, at a minimum, five micrometers in size.

n. _____ List of all rented equipment to be used within a lead regulated area, or a statement that no rental equipment will be used on this project.

1. _____ If rental equipment is to be used, submit written statements from each rental company indicating the rental company's acknowledgment that the equipment is provided for and may be used in areas where airborne levels of asbestos and/or lead may be present.

o. _____ Submit emergency plans. At a minimum submit the following:

1. _____ Submit non-emergency telephone numbers, other then 911, for the appropriate Police, Sheriff, and Fire Departments.

2. _____ Name, pager or cell phone numbers of the on-site supervisor and his immediate company supervisor.

3. _____ Submit detailed written directions from the project site to the medical facility to be used in case of an emergency. Also include a map which sufficiently shows the route to be taken from the site to the designated medical facility.

4. _____ Submit written emergency procedures pertinent to the work to be performed and which can be implemented by site personnel if the need arises.

p. _____ Local sanitation district Wastewater Discharge Permit for Surface Washers (if required).

The above listed documents must be provided in the time specified in the project documents prior to the start of work that will disturb lead. Under no circumstances will workers or supervisors be allowed to work on this project prior to the receipt of this documentation by the Owner and/or Project Monitor. In addition, documentation regarding rental equipment, but must be provided before the equipment may be used in a lead regulated area. All delays resulting from the failure of the Contractor and/or subcontractors to provide this information in the required time frame is solely the responsibility of the Contractor and/or subcontractor.

Name, Signature, and Contact Information of Contractor's Personnel Completing Pre-Start Submittal Package

NAME: _____
(Print or Type)
SIGNATURE: _____

Telephone: _____

Fax: _____

Mailing Address: _____

The following information is reprinted from earlier in these specifications in order to assist the Contractor and/or subcontractors in providing the necessary submittals during and following the work.

1.6.2 Submittals Provided During the Work (Or Following Completion of the Work If Applicable)

The following documents must be provided the Owner and/or Project Monitor following completion of the physical activities associated with the project. The following documents must be received and approved by the Owner and/or Project Monitor before the work is considered complete. (Failure to provide these documents means the work is not complete, even though the physical activities may be completed.)

a. Daily sign-in sheet for each worker entering a lead regulated area.

b. The Contractor must provide the results of exposure sampling done to comply with the requirements of 8 CCR 1532.1 (d) and the requirements of this specification.

c. The Contractor must provide blood sampling and analysis results of lead (BLL) and zinc protoporphyrin (ZPP) levels for all workers who are represented by air monitoring results that exceed the Action Level. Typically, the Project Monitor will require blood lead sampling for all workers on a work shift if one or more air sampling results for that shift is above the Action Level.

The written results of the blood sampling analysis must be provided the Owner and/or Project Monitor within 21 days of the exposure over the Action Level or within 12 days of the completion of the project, whichever comes first.

d. Copies of job progress reports and project documentation. This must include the names of all employees onsite, the hours worked and a brief description of the work completed at the site(s).

e. The Contractor must provide all waste disposal documentation.

OTHER HAZARDOUS MATERIALS

POLYCHLORINATED BIPHENYLS (PCB's) LIGHT BALLAST HANDLING PROCEDURES

The Contractor may be instructed to remove light fixtures which contain light ballasts during demolition/ renovation activities specified in the contract documents. These light ballasts typically contain PCBs in the oil used as coolant and lubricant. Any ballast containing PCBs is to be considered a "Hazardous Waste", and the Contractor is responsible for ensuring personnel who perform PCB related work (inspection, removal, clean-up) are trained and qualified to do so. All workers must also follow current OSHA regulations including 29 CFR 1910.120 and 8 CCR 5192, as well as other applicable federal, state and local laws and regulations.

PCB Light Ballasts

All light ballasts manufactured through 1979 are magnetic ballasts which contain PCBs. Installation of ballasts manufactured prior to 1978 continued for several more years. As a result, it can be expected that any building constructed before 1980 which has not had a complete lighting retrofit is likely to have PCB containing ballasts. Therefore, unless the ballast is electronic (this type is PCB free), determined by testing not to contain PCBs, or the manufacturers label on the ballast states "No PCBs", it is assumed all light ballasts on this site contain PCB's, and must therefore be handled as a hazardous waste by the Contractor. The Contractor may have other options for disposal of any light ballasts found not to contain

PCB's.

Light Ballast Inspection

Contractor should disconnect all power and de-energize all electrical equipment to be impacted prior to performing inspection of electrical devices scheduled for removal or replacement. This de-energizing should be performed by or under the supervision of a licensed electrician. Contractor shall inspect each ballast prior to its removal to determine if the ballast is leaking, if oily residue is present on the exterior of the ballast or the ballast has been damaged resulting in a leak. Upon discovering and prior to removal of any oil coated, leaking, or damaged ballast Contractor shall contact Owners representative to discuss work procedures, waste requirements, etc.

Handling Work Practices of Undamaged Light Ballasts

Handling of ballasts shall be consistent with existing ballast conditions. While a ballast may not initially indicate any damage or leakage to be present, it may become damaged or begin to leak for any number of reasons during the removal and handling process. Any skin contact will probably constitute overexposure to PCBs since they are easily absorbed through the skin. It is recommended any personnel who will perform PCB related work should at a minimum wear protective clothing, including chemically-resistant gloves, goggles, boots, and disposable coveralls.

Handling Work Practices of Damaged Light Ballasts

Handling of damaged ballasts shall be performed in a manner consistent with existing and current federal, state and local laws and regulations. Clean-up of spills, or contaminated surfaces will require the use of specifically trained and properly protected personnel utilizing state of the art work practices, removal equipment, and materials. The Owners representative must be notified prior to the performance of this type of work

PCB Containing Waste

All PCB containing light ballasts, removed by the Contractor, shall be placed in leak tight approved containers (metal barrels) until they are removed from the site by a waste transporter permitted to haul hazardous materials. Barrels must not be loaded in excess of their approved capacity. For most barrels this is 750 pounds. No other materials except, a sufficient amount of absorbent packing material, shall be included with the light ballasts.

The Contractor should contact their waste hauler prior to the start of work for information pertaining to recommendations or the waste haulers stated requirements for packing PCB containing ballasts. However, at a minimum, the absorbent packing material should be added to the bottom of the waste barrel prior to the first ballast. Absorbent packing material should then be added intermittently as necessary to encase the ballasts as the waste barrel is being filled. When the waste barrel is filled, or no more light ballasts will be added, additional absorbent packing material should be added to completely cover the ballasts and the container then sealed.

Contractor is also responsible for appropriate labeling of waste barrels and securing of lids to meet federal and/or state requirements while being stored on the site.

All leaking or damaged ballasts must be handled in accordance with federal and state disposal requirements and shall be separated from undamaged ballasts in preparation for incineration at an appropriately licensed facility.

The Contractor is responsible for all costs associated with the removal, packing, loading, shipping, and disposal of each barrel of waste generated during this project. The Contractor is also responsible for obtaining and properly completing any Uniform Hazardous Waste Manifests needed for the disposal of PCB

waste. However, the Contractor **SHALL NOT** sign any Uniform Hazardous Waste Manifests for the Owner.

Non-PCB Light Ballasts

Non-PCB light ballasts are considered a hazardous waste in California and the contractor is responsible for collection, packaging, labeling, and holding this waste stream for proper disposal. Non-PCB light ballasts shall be shipped for disposal or recycle by the Contractor.

UNIVERSAL WASTE LAMP HANDLING PROCEDURES

The Contractor may be instructed to remove light fixtures which contain lamps which are designated as "Universal Waste" during demolition/renovation activities specified in the contract documents. If the Contractor is instructed to remove such fixtures the following handling procedures shall be followed.

Universal Wastes

Universal wastes are hazardous wastes that are more common and pose a lower risk to people and the environment than other hazardous wastes. Federal and State regulations identify universal wastes. The regulations, called the "Universal Waste Rule," are in the California Code of Regulations (CCR), title 22, division 4.5, chapter 23.

Universal Waste Lamps

Universal Waste Lamp, also referred to as "lamp" is defined as the bulb or tube portion of an electric lighting device. A lamp is specifically designed to produce radiant energy, most often in the ultraviolet, visible, and infra-red regions of the electromagnetic spectrum. Examples of common universal waste electric lamps include, but are not limited to, fluorescent, high intensity discharge, neon, mercury vapor, high pressure sodium, and metal halide lamps. Any lamp which is not spent and has been designated to be reused is not classified as a waste and does not meet the requirements of a hazardous waste or a universal waste.

Mercury-added lamps

Mercury-added lamps (effective February 9, 2004): Fluorescent tubes and several other types of lamps (not incandescent light bulbs) contain a small amount of mercury that is necessary for their operation. Currently, most fluorescent lamps contain enough mercury to be a hazardous waste.

Universal Waste Lamp Disposal

Spent lamps typically contain concentrations of mercury exceeding the established Total Threshold Limit Concentration and/or the Soluble Threshold Limit Concentration values. Therefore, these lamps must be sent to an authorized recycle facility, or to a universal waste consolidator for shipment to an authorized recycling facility.

At a minimum the lamps must be packaged in boxes/packages/containers which are structurally sound, adequate to prevent breakage, and compatible with the content of the lamps. These packages must remain closed and be free of damage which could cause leakage under reasonably foreseeable conditions.

Each container shall be labeled or marked clearly with one of the following phrases: "Universal Waste–Lamp(s)," or "Waste Lamp(s)." or "Used Lamp(s)".
Documentation in the form of a log, invoice, manifest, bill of lading or other shipping document is required to be submitted to the Owner's Representative for each shipment of waste from the project site. This documentation shall include: name and address of generator and address of site waste is generated on, quantity of lamps to be shipped, date of shipment, name and address of hauler, and name and address of

waste facility receiving the waste.

Hazardous Waste Designation

Any lamp which is not designated for recycling or continued use in a different fixture for which the lamp is manufactured for use in must be handled, managed, and disposed of as a hazardous waste in accordance with Cal'EPA Title 22. Since all spent lamps are required to be recycled the Owner will not approve of the disposal of lamps as hazardous without consultation and review of the specific circumstances which warrant this change in designation.

MERCURY SWITCHES

Thermostat switches that contain mercury are considered a hazardous waste if removed and disposed. Where the contract requires removal of thermostat switches, the contractor shall follow all requirements for packaging and disposal of these mercury containing wastes.

SMOKE DETECTORS WHICH MAY CONTAIN A RADIOACTIVE ELEMENT

The Contractor shall be responsible for the removal of any and all smoke detectors which may contain a radioactive element, which may be present in any building or corridor prior to the demolition of any building included in this project. These types of detectors are easily identified by reviewing the label which is usually found on the back of the detector. Older units may display the international radiation symbol (three bladed propeller) and the radioactive content. Newer units state the radioactive content and their Nuclear Regulatory Agency (NRC) license number.
The Contractor shall be responsible for contacting the manufacturer of any smoke detector with a radioactive element present to determine their return policies. The California Department of Toxic Substance Control (DTSC) has stated that it is a condition of the manufacturers NRC license that they must accept returned units for disposal. The Contractor shall be responsible for all costs associated with removing, packaging, and shipping of the detectors in compliance with the manufacturers policies and procedures.

Contractor shall submit to the Owner a letter from the manufacturer which includes the number of units received, date received, and acceptance of the shipment for disposal by that manufacturer.

Additional Waste Management Requirements

The Contractor is responsible for managing lamps in a manner which prevents release of any universal waste or component of a universal waste to the environment. The Contractor is also responsible for the immediate cleanup of materials (mercury or other hazardous constituents) released by a lamp broken during removal or otherwise damaged while being handled into a container or containers designed to accommodate the resulting waste and its contents.

The Contractor is responsible for training employees in proper handling, packaging, storing and labeling the universal waste, as well as, how to respond to releases (66273.13). This may be accomplished by providing employees written instructions or posting these instructions in the area where the universal waste lamps are being stored.

The Contractor is responsible for all costs associated with the removal, packing, loading, shipping, clean up and disposal of hazardous materials removed during this project, and any waste generated due to breakage during this project. The Contractor is also responsible for obtaining and properly completing any Uniform Hazardous Waste Manifests needed for the disposal of lamp waste. However, the Contractor **SHALL NOT** sign any Uniform Hazardous Waste Manifests for the Owner.

The following information shall be used when completing a Uniform Hazardous Waste Manifest used to dispose of hazardous waste generated at this site during this project.

Burchfield Primary School:

Block #3 (Generator's Name and Address) and Block #4 (Generator's Phone Number)

Colusa Unified School District
745 Tenth Street
Colusa, CA 95932
(530) 458-7791

Block #15 (Special Handling Instructions and Additional Information)

Burchfield Primary School
400 Fremont Street
Colusa, CA 95932

Egling Middle School:

Block #3 (Generator's Name and Address) and Block #4 (Generator's Phone Number)

Colusa Unified School District
745 Tenth Street
Colusa, CA 95932
(530) 458-7791

Block #15 (Special Handling Instructions and Additional Information)

Egling Middle School
813 Webster Street
Colusa, CA 95932

Colusa High School:

Block #3 (Generator's Name and Address) and Block #4 (Generator's Phone Number)

Colusa Unified School District
745 Tenth Street
Colusa, CA 95932
(530) 458-7791

Block #15 (Special Handling Instructions and Additional Information)

Colusa High School
901 Colus Avenue
Colusa, CA 95932

It **SHALL** be the responsibility of the Contractor to contact the Owner in advance of the scheduled pick up time and date so the waste materials can be visually inspected for proper packing, and to have the Uniform Hazardous Waste Manifest properly signed by an Owner representative.

MOLD CONTAMINATED BUILDING MATERIALS

During the course of conducting the construction related project, the contractor may discover water damaged building components which may also have visible or suspect mold on building materials. Mold can be harmful to humans depending upon the amount of exposure and type of exposure; therefore, it is

Incumbent of the contractor to take precautions in the event of the discovery of mold contaminated building materials.

If mold contaminated building materials are discovered on the project, it should be brought to the attention of the project manager. In addition, any structural wood members should also be closely examined for possible dry rot and decay and brought to the attention of the project manager. Precautions should be implemented by the contractor to protect his/her employees from exposures to mold from both skin contact and inhalation exposures. Employees should be trained in accordance with the Cal/OSHA Hazard Communication Standard for mold hazards.

If this project involves asbestos related work, the work practices and worker protection for asbestos is very similar to mold related work. Workers performing asbestos related demolition of building components are required to be protected in accordance with Cal/OSHA Title 8 1529 Asbestos in Construction regulations. Workers performing asbestos related work are required to wear respirators with P-100 (HEPA) filters, and whole body disposable coveralls while removing the building materials within negative pressure HEPA filtered work enclosures. These same asbestos work practices defined in Title 8 1529 and in other specifications for this project shall apply to any mold contaminated building materials.

Any mold contaminated building materials shall be removed from the work environment in sealed bags. If the building materials have been determined to contain asbestos, the default criteria for handing, packaging, labeling, and disposal of the waste material shall be the Cal/OSHA, Federal EPA, and D.O.T. regulations for asbestos waste. If the mold impacted materials have been determined not to contain asbestos, the materials shall be placed in sealed six mil plastic bags and can be disposed as non-hazardous waste. If the mold impacted building components are painted, lead in the paint may be the determinant for disposal. Refer to the Lead in Construction specifications for handling of painted components for lead waste issues.

FREON

All refrigerant systems at the buildings containing Freon and other fluorocarbon products associated with heating, ventilating, and air-conditioning (HVAC) systems, or freezers, refrigerators, etc. if removed in the planned renovation or demolition project, shall be removed from the mechanical systems and recycled in accordance with Cal/EPA requirements.

Prepared by:
Blake Howes, Project Manager
Entek Consulting Group, Inc.
June 30, 2015

ADDITIONAL REQUIREMENTS FOR DSA-REVIEWED PROJECTS

PART 1 GEENRAL

1.01 SUMMARY

A. The following additional requirements apply to this Project, which is being reviewed by the Division of the State Architect (DSA).

1.02 ADDITONAL REQUIREMENTS

A. The Contractor shall maintain full compliance with the requirements specified in Parts 1 thru 5 and Part 9, Title 24, California Code of Regulations (CCR). Unless otherwise indicated or specified, work shall be performed in full conformance with the latest edition of applicable regulatory requirements. All work shall be performed in accordance with the rules and regulations, Title 24, Parts 1-5 and Part 9, California Code of Regulations, and the Office of Regulation Services, Division of the State Architect, and a copy shall be kept of the job at all times during construction. The codes adopted by the City, County, State and Federal agencies shall govern minimum requirements for this Project. The Contractor shall notify the District of any conflicts between the requirements of the Contract Documents and the requirements of this paragraph.

B. In addition to the duties specified in the Contract Documents, the duties of the Contractor shall be in accordance with the requirements specified in Section 4-343 of Part 1, Title 24, California Code of Regulations (CCR).

C. In addition to the duties specified in the Contract Documents, the duties of the Architect and the Architect's consultants shall be in accordance with the requirements specified in Section 4-341 of Part 1, Title 24, CCR.

D. Neither DSA, nor the decisions and instructions rendered by DSA are subject to arbitration proceedings.

E. Architect shall notify DSA at start of construction in accordance with 4-431(e) of Part 1, Title 24, CCR.

F. All Addenda and CCD's shall be signed by the District and approved by the Architect and submitted for DSA approval. Do not begin work under a written order until a CCD has been submitted to and approved by DSA in accordance with Section 4-338 of Part 1, Title 24, CCR.

G. Substitutions are changes to the Contract Documents and shall be considered CCD, and shall be approved by DSA prior to fabrication or use.

H. Contractor shall submit verified reports in accordance with Sections 4-343(c) of Part 1, Title 24, CCR. Architect and Engineers shall submit verified reports in accordance with Sections 4-341(f) of Part 1, Title 24, CCR.

I. DSA may supervise construction, reconstruction, or repair in accordance with Section 4-334 of Part 1, Title 24, CCR.

J. Construction shall be observed by a full-time Project Inspector employed by the District, approved by the Architect, Structural Engineer and DSA in accordance with Sections 4-333(b) and 432 of Part 1, Title 24, CCR.

K. A DSA accepted Testing Laboratory directly employed by the District shall conduct all the required tests and inspection for the Project. Testing requirements of District's Testing Laboratory shall be in accordance with Section 4-335 of Part 1, Title 24, CCR.

L. Special inspection of masonry construction, lumber, wood framing using timber connections, ready-mixed concrete, high strength steel bolt installation, welding, and mechanical and electrical work shall be as required by Section 4-333(c) of Part 1, Title 24, CCR. The costs of special inspection will be paid for by the District.

M. The intent of these drawings and Specifications is that the work of alteration, rehabilitation or reconstruction is to be in accordance with Title 24, California Code of Regulations. Should any existing conditions such as deterioration or non-complying construction be discovered which is not covered by the Contract Documents wherein the finished work will not comply with Title 24, California Code of Regulations, a change order, or separate set of plans and specifications, detailing and specifying the required work shall be submitted to and approved by DSA before proceeding with the work.

EXHIBIT E

ESCROW AGREEMENT FOR SECURITY DEPOSITS IN LIEU OF RETENTION

This Escrow Agreement is made and entered into by and between the Colusa Unified School District, hereinafter called "Owner", and _____ whose address is _____, hereinafter called "Contractor", and whose address is _____, hereinafter called "Escrow Agent".

For the consideration hereinafter set forth, the Owner, Contractor and Escrow Agent agree as follows:

1. Pursuant to section 22300 of the Public Contract Code of the State of California, Contractor has the option to deposit securities with Escrow Agent as a substitute for Retention earnings required to be withheld by Owner pursuant to the Construction Contract entered into between the Owner and Contractor for the _____ Project in the amount of _____, dated _____ (hereinafter referred to as the "Contract"). Alternatively, on written request of the Contractor, the Owner shall make payments of the Retention earnings directly to the escrow agent. When Contractor deposits the securities as a substitute for Contract earnings, the Escrow Agent shall notify the Owner within ten (10) days of deposit. The market value of the securities at the time of the substitution shall be at least equal to the cash amount then required to be withheld as Retention under the terms of the Contract between the Owner and Contractor. Securities shall be held in the name of the Owner, and shall designate the Contractor as beneficial owner.

2. The Owner shall make progress payments to the Contractor for such funds which otherwise would be withheld from progress payments pursuant to the Contract provisions, provided that the Escrow Agent holds securities in the form and amount specified above.

3. When the Owner makes payments of Retention earned directly to the Escrow Agent, the Escrow Agent shall hold them for the benefit of the Contractor until such time as the escrow created under this Contract is terminated. The Contractor may direct the investment of the payments into securities. All terms and conditions of this Agreement and the rights and responsibilities of the parties shall be equally applicable and binding when the Owner pays the Escrow Agent directly.

4 Contractor shall be responsible for paying all fees for the expenses incurred by Escrow Agent in administering the Escrow Account and all expenses of the Owner. These expenses and payment terms shall be determined by the Owner, Contractor, and Escrow Agent.

5. The interest earned on the securities or the money market accounts held in escrow and all interest earned on that interest shall be for the sole account of Contractor and shall be subject to withdrawal by Contractor at any time and from time to time without notice to the Owner.

6. Contractor shall have the right to withdraw all or any part of the principal in the Escrow Account only by written notice to Escrow Agent accompanied by written authorization from the Owner to the Escrow Agent that Owner consents to the withdrawal of the amount sought to be withdrawn by Contractor.

7. The Owner shall have a right to draw upon the securities in the event of default by the Contractor. Upon seven (7) days' written notice to the Escrow Agent from the Owner of the notice of default under Article 2.2, Article 9.6 or Article 14, the Escrow Agent shall immediately convert the securities to cash and shall distribute the cash as instructed by the Owner.

8. Upon receipt of written notification from the Owner certifying that the Contract is final and complete, and that the Contractor has complied with all requirements and procedures applicable to the Contract, Escrow Agent shall release to Contractor all securities and interest on deposit less escrow fees

and charges of the Escrow Account. The escrow shall be closed immediately upon disbursement of all moneys and securities on deposit and payment of fees and charges.

9. Escrow Agent shall rely on the written notifications from the Owner and the Contractor pursuant to Sections (5) to (8), inclusive, of this Agreement and the Owner and Contractor shall hold Escrow Agent harmless from Escrow Agent's release and disbursement of the securities and interest as set forth above.

10. The names of the persons who are authorized to give written notice or to receive written notice on behalf of the Owner and on behalf of Contractor in connection with the foregoing, and exemplars of their respective signatures are as follows:

On behalf of Owner:

_____
Title

_____
Name

_____
Signature

_____
Address

On behalf of Contractor:

_____
Title

_____
Name

_____
Signature

_____
Address

On behalf of Agent:

_____
Title

_____
Name

_____
Signature

_____
Address

At the time the Escrow Account is opened, the Owner and Contractor shall deliver to the Escrow Agent a fully executed counterpart of this Agreement.

IN WITNESS WHEREOF, the parties have executed this Agreement by their proper officers on the date set forth above.

OWNER	CONTRACTOR
_____	_____
Title	Title
_____	_____
Name	Name
_____	_____
Signature	Signature

BASIC ELECTRICAL REQUIREMENTS

PART 1 - GENERAL

1.1 SUMMARY

A. Table of Contents, Division 26 - Electrical:

SECTION NO.	SECTION TITLE
260010	BASIC ELECTRICAL REQUIREMENTS
260090	DEMOLITION
260519	BUILDING WIRE AND CABLE
260526	GROUNDING AND BONDING
260531	CONDUIT
260533	BOXES
260543	UNDERGROUND DUCTS AND STRUCTURES
260553	ELECTRICAL IDENTIFICATION
286113	FIRE ALARM/LIFE SAFETY SYSTEM

B. Work included: This Section includes general administrative and procedural requirements for Division 26. The following administrative and procedural requirements are included in this Section to supplement the requirements specified in Division 01.

1. Quality assurance.
2. Definition of terms.
3. Submittals.
4. Coordination.
5. Record documents.
6. Operation and maintenance manuals.
7. Rough-in.
8. Electrical installation.
9. Cutting, patching, painting and sealing.
10. Field quality control.
11. Cleaning.
12. Project closeout.

C. Related Work: Consult all other Sections, determine the extent and character of related Work and properly coordinate Work specified herein with that specified elsewhere to produce a complete and operable installation.

1. General and supplementary conditions: Drawings and general provisions of Contract and Division 01 of the Specifications, apply to all Division 26 Sections.
2. Earthwork: Include trenching, backfilling, boring and soil compaction as required for the installation of underground conduit, and in-grade pull boxes

3. Selective demolition: Nondestructive removal of materials and equipment for reuse or salvage as indicated. Also dismantling electrical materials and equipment made obsolete by these installations.
4. Concrete Work: Include forming, steel bar reinforcing, cast-in- place concrete, finishing and grouting as required for under ground conduit encasement, light pole foundations, pull box slabs, vaults, housekeeping pads, etc.
5. Miscellaneous metal Work: Include fittings, brackets, backing, supports, rods, welding and pipe as required for support and bracing of raceways, lighting fixtures, panelboards, distribution boards, switchboards, motor control centers, etc.
6. Miscellaneous lumber and framing Work: Include wood grounds, nailers, blocking, fasteners and anchorage for support of electrical materials and equipment.
7. Moisture protection and smoke barrier penetrations: Include membrane clamps, sheet metal flashing, counter flashing, caulking and sealant as required for waterproofing of conduit penetrations and sealing penetrations in or through fire walls, floors, ceiling slabs and foundation walls. All penetrations through vapor barriers at slabs on grade shall be taped and made vaportight.
8. Access panels and doors: Required in walls, ceilings and floors to provide access to electrical devices and equipment.
9. Painting: Include surface preparation, priming and finish coating as required for electrical cabinets, exposed conduit, pull and junction boxes, etc. where indicated as field painted in this Division.
10. Lighting fixture supports: Provide slack fixture support wire for lighting fixtures installed in acoustical tile or lay-in suspended ceilings.

D. Work furnished and installed under another Division requiring connections under this Division includes but is not limited to:

1. Electric motors.
2. Package mechanical equipment: fans, fan coil units, pumps, boilers, compressors, etc.
3. Flow switches and valve monitors for sprinkler system.
4. Elevator controllers.
5. Temperature control panel(s). (Line voltage only)
6. Irrigation controller(s). (Line voltage only)
7. Electric signage.
8. Variable frequency drive units.
9. Projection screens.

E. Items furnished under another Division, but installed and connected under this Division includes but is not limited to:

1. Electric fire sprinkler water flow bells.
2. Speed control switches for ceiling exhaust fans.

1.2 QUALITY ASSURANCE

A. Reference to Codes, Standards, Specifications and recommendations of technical societies, trade organizations and governmental agencies shall mean that latest edition of such publications adopted and published prior to submittal of the bid. Such codes or standards shall be considered a part of this Specification as though fully repeated herein.

B. When codes, standards, regulations, etc. allow Work of lesser quality or extent than is specified under this Division, nothing in said codes shall be construed or inferred authority for reducing the quality, requirements or extent of the Contract Documents. The Contract Documents address the minimum requirements for construction.

C. Work shall be performed in accordance with all applicable requirements of the latest edition of all governing codes, rules and regulations including but not limited to the following minimum standards, whether statutory or not:

1. California Electric Code (CEC)
2. California Building Code (CBC).
3. California Fire Code (CFC).
4. California Mechanical Code (CMC).

D. Standards: Equipment and materials specified under this Division shall conform to the following standards where applicable:

ACI	American Concrete Institute
ANSI	American National Standards Institute
ASTM	American Society for Testing Materials
CBM	Certified Ballast Manufacturers
ETL	Electrical Testing Laboratories
FS	Federal Specification
IEEE	Institute of Electrical and Electronics Engineers, Inc.
IPCEA	Insulated Power Cable Engineer Association
NEMA	National Electrical Manufacturer's Association
UL	Underwriters' Laboratories

E. Independent Testing Agency qualifications:

1. Testing Agency shall be an independent testing organization that will function as an unbiased authority, professionally independent of Manufacturer, Supplier and Contractor, furnishing and installing equipment or system evaluated by Testing Agency.
2. Testing Agency shall be regularly engaged in the testing of electrical equipment, devices, installations and systems.
3. Testing Agency shall meet Federal Occupational Safety and Health Administration (OSHA) requirements for accreditation of independent testing laboratories, Title 9, Part 1907.
4. On-site technical personnel shall be currently certified by the International Electrical Testing Association in electrical power distribution system testing.
5. Testing Agency shall use technicians who are regularly employed by the firm for testing services.

6. Contractor shall submit proof of above Testing Agency qualifications with bid documentation upon request.

F. All base material shall be ASTM and/or ANSI standards.

G. All electrical apparatus furnished under this Section shall conform to NEMA standards and the NEC and bear the UL label where such label is applicable.

H. Certify that each welder performing Work has satisfactorily passed AWS qualification tests for welding processes involved and, if pertinent, has undergone re-certification.

1.3 DEFINITION OF TERMS

A. The following list of terms as used in the Division 26 documents shall be defined as follows:

1. "Provide": Shall mean furnish, install and connect unless otherwise indicated.
2. "Furnish": Shall mean purchase and deliver to Project site.
3. "Install": Shall mean to physically install the items in-place.
4. "Connect": Shall mean make final electrical connections for a complete operating piece of equipment.
5. "As directed": Shall be as directed by the Owner or their authorized Representative.
6. "Utility Companies": Shall mean the company providing electrical, telephone or cable television services to the Project.

1.4 SUBMITTALS

A. Format: Furnish submittal data neatly bound in an 8-1/2" x 11" folder or binder for each Specification Section with a table of contents listing materials by Section and paragraph number.

B. Submittals shall consist of detailed Shop Drawings, Specifications, block wiring diagrams, "catalog cuts" and data sheets containing physical and dimensional information, performance data, electrical characteristics, materials used in fabrication and material finish. Clearly indicate by arrows or brackets precisely what is being submitted on and those optional accessories which are included and those which are excluded. Furnish quantities of each submittal as noted in Division 01.

C. Each submittal shall be labeled with the Specification Section Number and shall be accompanied by a cover letter or shall bear a stamp stating that the submittal has been thoroughly reviewed by the Contractor and is in full compliance with the requirements of the Contract Documents. Cover letters shall list in full the items and data submitted. Failure to comply with this requirement shall constitute grounds for rejection of data.

D. The Contractor shall submit detailed Drawings of all electrical equipment rooms and closets if the proposed installation layout differs from the construction documents. Physical size of electrical equipment indicated on the Drawings shall match those of the electrical equipment that is being submitted for review, i.e.: switchboards, panelboards, transformers, control panels, etc. Minimum scale: 1/4" = 1'- 0". Revised electrical equipment layouts must be approved prior to release of order for equipment and prior to installation.

E. As part of the equipment and fixture submittals, the Contractor shall provide anchorage calculations for floor and wall mounted electrical equipment and fixtures, distribution conduits and raceways, in conformance with the 2013 California Building Code (CBC) and ASCE 7-05.

Use the Occupancy Category, Ground Accelerations, Site Class, Seismic Design Category, and Seismic Importance Factor as noted in the structural drawings. For components required for Life Safety or containing hazardous materials use Ip=1.5. Structural Calculations shall be prepared, stamped and signed by a California Registered Structural Engineer. Specify proof loads for drilled-in anchors, if used.

F. The Manufacturer shall recommend the method of anchoring the equipment to the mounting surface and shall provide the Contractor with the assembly dimensions, weights and approximate centers of gravity.

G. The Manufacturer shall recommend the method of anchoring the equipment to the mounting surface and shall provide the Contractor with the assembly dimensions, weights and approximate centers of gravity.

H. All resubmittals shall include a cover letter that lists the action taken and revisions made to each Drawing and equipment data sheet in response to Submittal Review Comments. Resubmittal packages will not be reviewed unless accompanied by this cover letter. Failure to include this cover letter will constitute rejection of the resubmittal package.

I. Shop Drawings for the following systems must be prepared via a computer aided drafting (CAD) system for submission by the Contractor. The Engineer, in Autocad Release 2012 file format, can provide files of the electrical Contract Documents to the Contractor.

1. Fire alarm/life safety system, Section 266116.

J. Independent Testing Agency report:

1. Testing Agency shall provide 3 copies of the complete testing report.
2. Test report shall include the following:
   a. Summary of Project.
   b. Description of equipment.
   c. Equipment used to conduct the test.
      1) Type.
      2) Manufacturer.
      3) Model number.
      4) Serial number.
      5) Date of last calibration.
      6) Documentation of calibration leading to NIST standards.
   d. Description of test.
   e. Test results, as compared to Manufacturers or industry accepted standards and tolerances.
   f. Conclusion and recommendation.
   g. Signature of responsible test organization authority.
3. Furnish completed test report to Engineer no later than 30 days after completion of testing, unless otherwise directed.

K. Substitutions:

1. All requests for substitutions shall conform to the general requirements and procedure outlined in Division 01.
2. Where items are noted as "or equal," a product of equal design, construction and performance will be considered. Contractor must submit to the Engineer all pertinent test data, catalog cuts and product information required substantiating that the product is in fact equal to that specified. Only one substitution will be considered for each product specified.
3. Manufacturers' names and model numbers used in conjunction with materials, processes or equipment included in the Contract Documents are used to establish standards of quality, utility and appearance. Materials, processes or equipment, which in the opinion of the Engineer is equal in quality, utility and appearance, will be approved as substitutions to that specified.
4. Whenever any material, process or equipment is specified in accordance with a Federal specification, an ASTM standard, an ANSI specification, UL rating or other association standard, the Contractor shall present an affidavit from the Manufacturer certifying that the product complies with the particular standard specification. When requested by the Engineer, support test data to substantiate compliance shall be submitted by the Contractor at no additional cost.
5. Substitutions shall be equal, in the opinion of the Architect/Engineer, to the specified product. The burden of proof of such shall rest with the Contractor. When the Architect/Engineer in writing accepts a substitution, it is with the understanding that the Contractor guaranteed the substituted article or material to be equal to the one specified and dimensioned to fit within the construction. Approved substitutions shall not relieve the Contractor of responsibilities for the proper execution of the Work or from any provisions of the Specifications.
6. The Contractor shall be responsible for all expenses in connection with the substitution materials, processes and equipment, including the effect of the substitution on the Contractor, Subcontractor's or other Contractor's Work. No substitution of material, processes or equipment shall be permitted without written authorization of the Architect/Engineer. Any assumptions on the acceptability of a proposed substitution prior to acceptance by the Engineer are at the sole risk of the Contractor.

1.5 COORDINATION

A. Discrepancies:

1. In the event of discrepancies within the Contract Documents, the Engineer shall be so notified, within sufficient time, as delineated in Division 01, prior to the Bid Opening to allow the issuance of an Addendum.
2. If, in the event that time does not permit notification or clarification of discrepancies prior to the Bid Opening, the following shall apply: The Drawings govern in matters of quantity and the Specifications govern in matters of quality. In the event of conflict within the Drawings involving quantities or within the Specifications involving quantities or within the Specifications involving quality, the greater quantity and higher quality shall apply. Such discrepancies shall be noted and clarified in the Contractor's Bid. No additional allowances

will be made because of errors, ambiguities or omissions that reasonably should have been discovered during the preparation of the Bid.

B. Project conditions:

1. Examination of Project site: The Contractor shall visit the Project site and thoroughly review the locale, working conditions, conflicting utilities and the conditions in which the Electrical Work will take place. Verify all existing conditions in the field. No allowances will be made subsequently for any costs that may be incurred because of any error or omission due to failure to examine the Project site and to notify the Engineer of any discrepancies between Contract Documents and actual Project site conditions.

2. Protection: Keep conduits, junction boxes, outlet boxes and other openings closed to prevent entry of foreign matter. Cover fixtures, equipment, devices and apparatus and protect them against dirt, paint, water, chemical or mechanical damage, before and during construction period. Prior to final acceptance, restore to original condition any fixture, apparatus or equipment damaged including restoration of damaged factory applied painted finishes. Protect bright finished surfaces and similar items until in service. No rust or damage will be permitted.

3. Supervision: Contractor shall personally or through an authorized and competent representative constantly supervise the Work from beginning to completion and, within reason, keep the same foreman and workmen on the Project throughout the Project duration.

C. Preparation:

1. Drawings:

a. Layout: General layout indicated on the Drawings shall be followed except where other Work may conflict with the Drawings.

b. Accuracy: Drawings for the Work under this Section are essentially diagrammatic within the constraints of the symbology applied.

1.6 RECORD DOCUMENTS

A. Provide Project Record Drawings as described herein:

1. Drawings shall fully represent installed conditions including actual locations of outlets, true panelboard connections following phase balancing routines, correct conduit and wire sizing as well as routing, revised fixture schedule listing Manufacturers and products actually installed and revised panel schedules. Contractor shall record all changes in the Work during the course of construction on blue or black line prints. These prints shall be made subject of monthly review by the Owner's Representative to ascertain that they are current. If not current monthly payments may be withheld.

2. Record Drawings shall be the transfer of information on these prints to the construction documents via computer aided drafting (CAD) process. A set of CAD files of the electrical documents will be provided to the Contractor in Autocad Release 2012 file format.

3. Record drawing submissions shall be provided to the Engineer to review upon the completion of the following phases of Work:

a. Final electrical installation.

4. A single set of half size prints of the Record Drawings shall be submitted for review. Upon receipt of the Engineer's review comments, corrections shall be made and the Contractor shall provide the following:
   a. Two sets of full size prints.
   b. Four sets of half size prints.
   c. One set of full size reproducibles.
   d. One flash drive or DVD with electronic copies of the record drawings in PDF and AutoCAD Release 2012 file formats.

B. Panel schedules:

1. Typewritten panel schedules shall be provided for panelboards indicating the loads served and the correct branch circuit number. Schedules shall be prepared on forms provided by the Manufacturer and inserted in the pocket of the inner door of each panelboard. See Section 262416: Panelboards for requirements.

1.7 OPERATION AND MAINTENANCE MANUALS

A. Prior to Project closeout furnish to the Owner, six (6) hard back 3-ring binders containing all bulletins, operation and maintenance instructions, part lists, service telephone numbers and other pertinent information as noted in each Section all equipment furnished under Division 26. Binders shall be indexed into Division Sections and labeled for easy reference. Bulletins containing more information than the equipment concerned shall be properly stripped and assembled.

PART 2 - PRODUCTS (NOT APPLICABLE)

PART 3 - EXECUTION

3.1 ROUGH-IN

A. Contractor shall verify lines, levels and dimensions indicated on the Drawings and shall be responsible for the accuracy of the setting out of Work and for its strict conformance with existing conditions at the Project site.

B. Verify final locations for rough-ins with field measurements and with the requirements for the actual equipment to be connected.

3.2 ELECTRICAL INSTALLATION

A. Preparation, sequencing, handling and installation shall be in accordance with Manufacturer's written instructions and technical data particular to the product specified and/or accepted equal except as otherwise specified. Comply with the following requirements:

1. Shop Drawings prepared by Manufacturer.
2. Verify all dimensions by field measurements.
3. Arrange for chases, slots and openings in other building components during progress of construction, to allow for electrical installations.
4. Coordinate the installation of required supporting devices and sleeves to be set in poured-in-place concrete and other structural components, as they are constructed.

5. Sequence, coordinate and integrate installations of electrical materials and equipment for efficient flow of the Work. Give particular attention to large equipment requiring positioning prior to closing in the building.
6. Where mounting height is not detailed or dimensioned, contact the Architect for direction prior to proceeding with rough-in.
7. Install systems, materials and equipment to conform with approved submittal data, including coordination Drawings, to greatest extent possible. Conform to arrangements indicated by the Contract Documents, recognizing that portions of the Work are indicated only in diagrammatic form. Where coordination requirements conflict with individual system requirements, refer conflict to the Architect.
8. Install systems, materials and equipment level and plumb, parallel and perpendicular to other building systems and components, where installed exposed in finished spaces.
9. Install electrical equipment to facilitate servicing, maintenance and repair or replacement of equipment components. As much as practical, connect equipment for ease of disconnecting, with minimum of interference with other installations.
10. Coordinate electrical systems, equipment and materials installations with other building components.
11. Provide access panel or doors where devices or equipment are concealed behind finished surfaces. Furnish and install access doors per the requirements.
12. Install systems, materials and equipment giving right-of-way priority to other systems that are required to maintain a specified slope.
13. Conform to the National Electrical Contractor's Association "Standard of Installation" for general installation practice.

3.3 CUTTING, PATCHING, PAINTING AND SEALING

A. Structural members shall in no case be drilled, bored or notched in such a manner that will impair their structural value. Cutting of holes, if required, shall be done with core drill and only with the approval of the Architect and Structural Engineer.

B. Protection of Installed Work: During cutting and patching operations, protect adjacent installations.

C. Cut, remove and legally dispose of selected electrical equipment, components and materials as indicated, including but not limited to removal of electrical items indicated to be removed and items made obsolete by the new Work.

D. Protect the structure, furnishings, finishes and adjacent materials not indicated or scheduled to be removed.

E. Provide and maintain temporary partitions or dust barriers adequate to prevent the spread of dust and dirt to adjacent areas.

F. Patch existing surfaces and building components using experienced installers and new materials matching existing materials and the original installation. For installers' qualifications refer to the materials and methods required for the surface and building components being patched.

G. Application of joint sealers:

1. General: Comply with joint sealer Manufacturers' printed application instructions applicable to products and applications indicated, except where more stringent requirements apply.
2. Installation of fire-stopping sealant: Install sealant, including forming, packing and other accessory materials, to fill openings around electrical services penetrating floors and walls, to provide fire-stops and fire-resistance ratings indicated for floor or wall assembly in which penetration occurs. Comply with installation requirements established by testing and inspecting agency.

3.4 FIELD QUALITY CONTROL

A. General testing requirements:

1. The purpose of testing is to ensure that all tested electrical equipment, both Contractor and Owner supplied, is operational and within industry and Manufacturer's tolerances and is installed in accordance with design Specifications.
2. Tests and inspections shall determine suitability for energization.
3. Perform tests in presence of the Owner's Representative and furnish test equipment, facilities and technical personnel required to perform tests.
4. Tests shall be conducted during the construction period and at completion to determine conformity with applicable codes and with these Specifications.

B. Tests: In addition to specific system test described elsewhere, tests shall include:

1. Equipment operations: Test motors for correct operation and rotation.
2. Lighting control circuits: Test lighting circuits for correct operation through their control devices.
3. Alarm and interlock systems: Produce malfunction symptoms in operating systems to test alarm and interlock systems. In addition, all specific tests described in the fire alarm/life safety system shall be performed.
4. Circuit numbering verification: Select on a random basis various circuit breakers in the panelboards and cycle them on and off to verify compliance of the typed panel directories with actual field wiring.
5. Voltage check:
   a. At completion of job, check voltage at several points of utilization on the system that has been installed under this Contract. During test, energize all installed loads.
   b. Adjust taps on transformers to give proper voltage, which is 118 to 122 volts for 120 volt nominal systems and proportionately equivalent for higher voltage systems. If proper voltage cannot be obtained, inform the Owner and the serving Utility Company.

C. Contractor shall provide test power required when testing equipment before service energization and coordinate availability of test power with General Contractor after service energization. The Contractor shall provide any specialized test power as needed or specified herein.

D. Testing safety and precautions:

1. Safety practices shall include the following requirements:
   a. Applicable State and Local safety operating procedures.

b. OSHA.

c. NSC.

d. NFPA 70E.

2. All tests shall be performed with apparatus de-energized and grounded except where otherwise specifically required ungrounded by test procedure.

E. Calibration of test equipment:

1. Testing Agency shall have calibration program that assures test instruments are maintained within rated accuracy.

2. Instruments shall be calibrated in accordance with the following frequency schedule:

a. Field instruments: Analog, 6 month maximum, Digital, 12 months maximum.

b. Laboratory instruments: 12 months.

c. Leased specialty equipment: 12 months where accuracy is guaranteed by lessor.

3. Dated calibration labels shall be visible on test equipment.

4. Records, which show date and results of instruments calibrated or tested, must be kept up-to-date.

5. Up-to-date instrument calibration instructions and procedures shall be maintained for test instrument.

6. Calibration standards shall be of higher accuracy than instrument tested.

7. Equipment used for field testing shall be more accurate than instrument being tested.

F. Coordinate with General Contractor regarding testing schedule and availability of equipment ready for testing.

G. Notify Owner and Engineer one week in advance of any testing.

H. Any products which fail during the tests or are ruled unsatisfactory by the Owner's Representative shall be replaced, repaired or corrected as prescribed by the Owner's Representative at the expense of the Contractor. Tests shall be performed after repairs, replacements or corrections until satisfactory performance is demonstrated.

I. Testing Agency shall maintain written record of tests and shall assemble and certify final test report.

J. Include all test results in the maintenance manuals.

3.5 CLEANING

A. Prior to energizing of electrical equipment, the Contractor shall thoroughly clean the interior of enclosures from construction debris, scrap wire, etc. using Manufacturer's approved methods and materials.

B. Upon completion of Project, prior to final acceptance, the Contractor shall thoroughly clean both the interior and exterior of all electrical equipment per Manufacturers approved methods and materials. Remove paint splatters and other spots, dirt and debris.

C. Touch-up paint any marks, blemishes or other finish damage suffered during installation.

3.6 PROJECT CLOSEOUT

A. Training: At the time of completion, a period of not less than 24 hours shall be allotted by the Contractor for instruction of building operating and maintenance personnel in the use of all systems. This 24 hours training is in addition to any instruction time called out in the Specifications for specific systems, i.e., Fire Alarm, etc. All personnel shall be instructed at one time, the Contractor making all necessary arrangements with Manufacturer's Representative. The equipment Manufacturer shall be requested to provide product literature and application guides for the users' reference. Costs, if any, for the above services shall be paid by the Contractor.

B. Special tools: Provide one of each tool required for proper operation and maintenance of the equipment provided under this Section. All tools shall be delivered to the Owner at the Project completion.

C. Keying: Provide two keys for each lock furnished under this Section and turn over to Owner.

END OF SECTION 26 00 10

ELECTRICAL DEMOLITION

Section 26 00 90

PART 1 - GENERAL

1.1 SUMMARY

A. Work included: Labor and equipment necessary to complete the demolition required for the item specified under this Division, including but not limited to:

1. Fire Alarm demolition

1.2 SYSTEM DESCRIPTION

A. Disconnection, removal and relocation of all Fire Alarm wiring, devices, Fire Alarm Control Panel and distributed power supplies.

B. Purpose is to remove, existing installations to accommodate new fire alarm components.

PART 2 - PRODUCTS

2.1 MATERIALS AND EQUIPMENT

A. Materials and equipment necessary for patching and extending Work, as specified in other Sections.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Contractor shall thoroughly review conditions in the area of demolition prior to commencing Work to ensure complete understanding of existing installation in relationship to demolition Work.

3.2 GENERAL REQUIREMENTS

A. Remove all wiring,devices, conduit and all other types of fire alarm in all buildings.

B. Contractor shall visit the Project site and shall verify conditions as they exist and shall remove, all fire alarm equipment and wiring circuits.

C. All equipment, fixtures, devices, etc., which are removed shall be delivered to the Owner for disposition. All items which are removed and not wanted by the Owner and which are not reused shall become the property of the Contractor and shall be legally removed from the Project site.

D. Cutting and patching necessary for the removal of Fire Alarm Work shall be included.

3.3 DEVICES

A. Disconnect existing horns, strobes, detectors and pull stations and remove devices.

3.4 WIRING

A. Removed abandoned wiring to origination.

3.5 EXISTING SYSTEMS

A. Fire alarm system: Notify Owner and Fire Supervisory Service at least 24 hours before disabling the system.

B. Telephone system: Maintain the existing system in service throughout construction. Disable system only to make temporary connections where necessary to maintain service in areas adjacent to Work area(s). Notify Owner and Telephone Utility at least 24 work week hours before partially or completely disabling the system.

3.6 CLEANING AND REPAIR

A. Clean and repair existing materials and equipment that shall remain.

END OF SECTION 26 00 90

PART 1 - GENERAL

1.1 SUMMARY

A. Work included: Labor, materials and equipment necessary to complete the installation required for the item specified under this Division, including but not limited to:

1. Building wire.
2. Cable.
3. Wiring connections and terminations.

B. Related Work: Consult all other Sections, determine the extent and character of related Work and properly coordinate Work specified herein with that specified elsewhere to produce a complete installation.

1.2 REFERENCES

A. Comply with the latest edition of the following applicable Specifications and standards except as otherwise indicated or specified:

1. Federal Specifications (FS):

FS J-C-30A;	Cable and Wire, Electrical (Power, Fixed Installation).
FS W-S-610C;	Splice Conductor.
FS HH-I-595C;	Insulation Tape, Electrical, Pressure-Sensitive Adhesive, Plastic.

2. Underwriters Laboratories, Inc. (UL):

UL 44;	Thermoset-Insulated Wires and Cables.
UL 62;	Flexible Cord and Fixture Wire.
UL 83;	Thermoplastic-Insulated Wires and Cables.
UL 183;	Manufactured Wiring Systems.
UL 310;	Electrical Quick-Connect Terminals.
UL 486A & B;	Wire Connectors.
UL 486C;	Splicing Wire Connectors.
UL 486D;	Insulated Wire Connector Systems for Underground Use or in Damp or Wet Locations.
UL 493;	Thermoplastic-Insulated Underground Feeder and Branch Circuit Cables.
UL 510;	Polyvinyl Chloride, Polyethylene and Rubber Insulating Tape.
UL 854;	Service-Entrance Cables.
UL 1569;	Metal-Clad Cables.
UL 1581;	Reference Standard for Electrical Wires, Cables and Flexible Cords.

3. National Electrical Manufacturer Association (NEMA):

NEMA WC-5;	Thermoplastic Insulated Wire and Cable for the Transmission and Distribution of Electrical Energy.
NEMA WC-7;	Cross-Linked Thermosetting Polyethylene Insulated Wire and Cable for the Transmission and Distribution of Electrical Energy.

4. Institute of Electrical and Electronic Engineers (IEEE):

IEEE 82;	Test Procedure for Impulse Voltage Tests on Insulated Conductors.

1.3 SUBMITTALS

A. Submit in accordance with the requirements of Section 260010: Basic Electrical Requirements, the following items:

1. Data/catalog cuts for each product and component specified herein, listing all physical and electrical characteristics and ratings indicating compliance with all listed standards.
2. Clearly mark on each data sheet the specific item(s) being submitted and the proposed application.
3. Submit Manufacturer's installation instructions.
4. Final test results.

1.4 QUALITY ASSURANCE

A. All materials, equipment and parts comprising the units specified herein shall be new, unused and currently under production.

B. Only products and applications listed in this Section may be used on the Project unless otherwise submitted.

C. Independent Testing Agency qualifications: Refer to Section 260010: Basic Electrical Requirements.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Products furnished by the following Manufacturers shall be acceptable if in compliance with all features specified herein and indicated on the Drawings.

1. Building wire:
   a. America Insulated Wire Corp.
   b. Rome Cable.
   c. Southwire Company.
2. Metal-CladArmored Cable:
   a. American Cable Systems.
3. Flexible Cords and Cables:
   a. Carol Cable Company.
   b. PWC Corp.

c. ITT Royal Electric.

4. Wiring connectors and terminations:

a. 3M Company.

b. Ideal.

c. Blackburn-Holub.

d. Burndy.

e. Thomas & Betts Corp.

f. Beau Barrier.

B. Substitutions: Under provisions of Section 260010: Basic Electrical Requirements.

2.2 BUILDING WIRE

A. Conductor material:

1. Provide annealed copper for all wire, conductor and cable, unless otherwise indicated.

2. Wire AWG #8 and larger shall be stranded, unless otherwise indicated.

3. Wire AWG #10 and smaller may be solid or stranded as best suited for the installation.

B. Insulation material:

1. All insulated wire, conductor and cable shall be 600 volt rated unless otherwise noted on the Drawings.

2. Thermoplastic-insulated building wire: NEMA WC 5.

3. Rubber-insulated building wire: NEMA WC 3.

4. Feeders and branch circuits larger than 6 AWG: Type THW, XHHW or dual rated THHN/THWN.

5. Feeders and branch circuits 6 AWG and smaller: Type TW, THW, XHHW or dual rated THHN/THWN.

6. Feeders and branch circuits for direct-current (DC) in wet locations: Type XHHW-2

7. Service Entrance: Type RHW or THWN.

8. Control Circuits: Type THW or dual rated THHN/THWN.

9. Identify system conductors as to voltage and phase connections by means of color-impregnated insulation.

2.3 METAL-CLAD CABLE (MC)

A. MC cable shall be an armored assembly of two or more dual rated THHN/THWN conductors. A full sized green insulated ground wire.

B. MC cable sheath shall be fabricated in continuous lengths from galvanized steel strip, spirally wound and formed to provide an interlocking design.

C. Conductors shall be color-coded for the correct phase and voltage as specified herein.

D. Fittings: Connectors shall be of the single screw clamp variety with steel or cast malleable iron bodies and threaded male hubs with insulated throats. Fittings shall be UL listed for use with MC cable type specified.

2.4 FLEXIBLE CORDS AND CABLES (TYPE'S')

A. Provide flexible cords and cables of size, type and arrangement as indicated on the Drawings.

B. Type 'S' flexible cords and cables shall be manufactured in accordance with NEC Article 400 and composed of two or more conductors and a full size green insulated ground wire with an outer jacket of rubber or neoprene as noted.

C. Flexible cords and cables shall be fitted with wire mesh strain relief grips either as a integral component of the connector or as an independently supported unit.

D. Suspended flexible cords and cables shall incorporate safety spring(s) unless otherwise noted.

2.5 WIRING CONNECTIONS AND TERMINATIONS

A. Bolted pressure connectors: Provide wide range-taking connectors with cast bronze compression bolts, designed for parallel taps, tees, crosses or end-to-end connections.

B. Electrical spring wire connectors:

1. Provide multi-part construction incorporating a non-restricted, zinc coated square cross-section steel spring enclosed in a steel sheet with an outer jacket of plastic and insulating skirt.

2. Self-striping pigtail and tap U-contact connectors shall not be used.

C. Push-in wire connectors:

1. Multi-port push-in wire connectors for a maximum of 8-wires, as required for specific application. Connectors are manufactured to accommodate a wide range of sizes with either solid or stranded conductors, up to a maximum wire size of #10 AWG. Low insertion force required for ease of installation.

2. Housing shall be 105 degrees C and transparent for visual connection verification.

3. 600 volt maximum rating with copper contacts.

4. UL Listed to 486C and UL 467 Listed for grounding and bonding applications.

D. Compression type terminating lugs:

1. Provide tin-plated copper high-compression type lugs for installation with hand or hydraulically operated circumference-crimping tools and dies as stipulated by the lug Manufacturer or as indicated on Drawings. Notch or single point type crimping is NOT acceptable.

2. Two hole, long barrel lugs shall be provided for size (4/0) and larger wire where terminated to bus bars. Use minimum of three crimps per lug, on sizes where possible.

E. Splicing and insulating tape: Provide black, ultraviolet proof, self-extinguishing, 7 mil thick vinyl general purpose electrical tape with a dielectric strength of 10,000 volts suitable for temperatures from minus 18 degrees C to 105 degrees C. Federal Spec. HH-I-595, Scotch 33+ or equal minimum.

F. Insulating putty:

1. Provide pads or rolls of non-corrosive, self-fusing, one-eighth inch thick rubber putty with PVC backing sheet. Scotch vinyl mastic pads and roll or equal.

2. Use putty suitable for temperatures from minus 17.8 degrees C to 37.8 degrees C with a dielectric strength of 570-volts/mil minimum.

G. Insulating resin:

1. Provide two-part liquid epoxy resin with resin and catalyst in pre-measured, sealed mixing pouch. Scotchcast 4 or equal for wet or underground vaults, boxes, etc. splices or terminations.

2. Use resin with a set up time of approximately 30 minutes at 21.1 degrees C and with thermal and dielectric properties equal to the insulating properties of the cables immersed in the resin.

H. Terminal strips:

1. Provide box type terminal strips in the required quantity plus 25% spare. Install in continuous rows in terminal cabinets.

2. Use the box type terminal strips with barrier open backs and with ampere ratings as required.

3. Identify all terminals with numbering sequence being used for a particular system.

I. Crimp type connectors:

1. Provide insulated fork or ring crimp terminals with tinned electrolytic copper-brazed barrel with funnel wire entry and insulation support

2. Fasten crimp type connectors or terminals using a crimping tool recommended by the connector Manufacturer.

3. Provide insulated overlap splices with tinned seamless electrolytic copper barrel with funnel wire entry and insulation support.

4. Provide insulated butt splices with tinned seamless electrolytic copper barrel with center stop, funnel wire entry and insulation support.

J. Cable ties: Provide harnessing and point-to-point wire bundling with nylon cable ties. All cable ties shall be installed using tool supplied by Manufacturer of ties.

K. Wire lubricating compound:

1. UL listed for the wire insulation and conduit type and shall not harden or become adhesive.

2. Shall not be used on wire for isolated type electrical power systems.

L. Bolt termination hardware:

1. Bolts shall be plated, medium carbon steel heat-treated, quenched and tempered equal to ASTM A-325 or SAE grade 5; or silicon bronze alloy ASTM B-9954 Type B.

2. Nuts shall be heavy semi-finished hexagon, conforming to ANSI B18.2.2, threads to be unified coarse series (UNC), class 2B steel or silicon bronze alloy.

3. Flat washers shall be steel or silicon bronze, Type A plain standard wide series, confirming to ANSI B27.2. SAE or narrow series shall not be used.

4. Belleville conical spring washers shall be hardened steel, cadmium plated or silicon bronze.

5. Each bolt connecting lug(s) to a terminal or bus shall not carry current exceeding the following values:
    a. 1/4" bolt - 125 amps
    b. 5/16" bolt - 175 amps
    c. 3/8" bolt - 225 amps
    d. 1/2" bolt - 300 amps
    e. 5/8" bolt - 375 amps
    f. 3/4" bolt - 450 amps

PART 3 - EXECUTION

3.1 EXAMINATION

A. Contractor shall thoroughly examine Project site conditions for acceptance of wire and cable installation to verify conformance with Manufacturer and Specification tolerances. Do not commence with installation until all conditions are made satisfactory.

3.2 APPLICATION

A. All wire, conductor and cable with their respective connectors, fittings and supports shall be UL listed for the installed application and ambient condition.

B. Feeders and branch circuits in wet locations shall be rated 75 degree C.

C. Feeders and branch circuits in dry locations shall be rated 90 degree C.

D. Minimum conductor size:
    1. Provide minimum AWG #12 for all power and lighting branch circuits.
    2. Provide minimum AWG #14 for all line voltage signal and control wiring unless otherwise indicated.

E. Color coding:
    1. For 120/208 volt, 3 phase, 4 wire systems:
        a. Phase A - Black
        b. Phase B - Red
        c. Phase C - Blue
        d. Neutral - White
        e. Ground - Green
    2. For 277/480 volt, 3 phase, 4 wire systems:
        a. Phase A - Brown
        b. Phase B - Orange
        c. Phase C - Yellow
        d. Neutral - Gray

e. Ground - Green

3. Switch leg individually installed shall be the same color as the branch circuit to which they are connected, unless otherwise noted.

4. Travelers for 3-way and 4-way switches shall be a distinct color and pulled with the circuit switch leg or neutral.

3.3 WIRING METHODS

A. Install wires and cables in accordance with Manufacturer's written instructions, as indicated on Drawings and as specified herein.

B. Install all single conductors in raceway system, unless otherwise noted.

C. Parallel circuit conductors and terminations shall be equal in length and identical in all ways.

D. Provide adequate length of conductors within electrical enclosures and train the conductors to terminal points with no excess. Bundle multiple conductors, with conductors larger than #10 AWG cabled in individual circuits. Make terminations so there is no bare conductor at the terminal.

E. 20 amp power and lighting branch circuit containing no more than four (4) current carrying conductors (phases and neutrals). Use #10 AWG conductor for 120/208 volt circuits located outside a 75 foot radius of panel source and for 277 volt branch circuits located outside a 200 foot radius of panel source, unless otherwise noted.

F. 20 amp power and lighting branch circuits containing no more than eight (8) current carrying conductors (phases and neutrals). Use #10 AWG conductors for 120/208 volt circuits located outside a 65 foot radius of panel source and for 277/480 volt circuits located outside a 150 foot radius of panel source.

G. Provide #10 AWG pig tails on all 20A and 30A wiring devices served by #8 AWG conductors and larger.

H. Splice cables and wires only in outlet boxes, junction boxes, pull boxes, manholes or handholes. Group and bundle with tie wrap each neutral with it's associated phase conductor where more then one neutral is present in a conduit.

I. Install cable supports for all vertical feeders in accordance with the NEC Article 300. Provide split wedge type fittings, which firmly clamp each individual cable and tighten due to cable weight.

J. Neatly form, train and tie the cables in individual circuits. For panelboards, cabinets, wireways, switches and equipment assemblies.

K. Seal cable or wire, entering a building from underground, between the wire or cable and conduit, where it exits the conduit, with a non-hardening approved compound, i.e. duct seal or equal.

L. Provide UL-listed factory-fabricated, solderless metal connectors of size, ampacity rating, material, type and class for applications and for services indicated. Use connectors with temperature ratings equal to or greater than the wires that are being terminated.

M. Stranded wire shall be terminated using fitting, lugs or devices listed for the application. However, in no case shall stranded wire be terminated solely by wrapping it around a screw or bolt.

N. Flexible cords and cables supplied, as part of a pre-manufacturer fixture or unit assembly shall be installed according to Manufacturers published installation instructions.

3.4 WIRING INSTALLATION IN RACEWAYS

A. Install wire in raceway after interior of building has been physically protected from the weather and all mechanical Work likely to injure conductors has been completed. Pull all conductors into a raceway at the same time. Exercise care in pulling conductors so that insulation is not damaged. Use UL listed, non-petroleum base and insulating type pulling compound as needed.

B. Completely mandrel all underground or concrete encased conduits prior to installing conductors.

C. Completely and thoroughly swab raceway system before installing conductors.

D. Do not use block and tackle, power driven winch or other mechanical means for pulling conductors of size smaller than AWG #1.

E. Wire pulling:

1. Provide installation equipment that will prevent the cutting or abrasion of insulation during pulling of cables.
2. Use rope made of nonmetallic material for pulling feeders.
3. Attach pulling lines for feeders by means of either woven basket grips or pulling eyes attached directly to the conductors.
4. Pull in together multiple conductors or cables in a single conduit.

F. Install and test all cables in accordance with Manufacturer's instructions and warranty.

3.5 MC CABLE INSTALLATION

A. The Drawings indicate above suspended ceiling power distribution junction boxes for conversion from hardwire to MC cable wiring system. Install these boxes such that they are accessible from below. MC cable shall be run to each device as described in documents. MC cable runs have not been indicated. Refer to Shop Drawings for installation.

B. Install MC cable in accordance with Manufacturers instructions and in strict accordance with NEC Article 334. Follow Manufacturer's explicit instructions when connecting the cable to fittings and boxes. Connectors shall be firmly secured to the cable, but not over-tightened. Connector shall be firmly attached to the metal boxes.

C. Support cables every 6 feet and within 12 inches of boxes, per NEC Article 334, using separate spring metal clip or metal cable ties (not steel tie wire) for each cable. Cables shall not be bundled together.

D. Suspended ceiling drop wire may be used to directly support a maximum of two separate MC cables.

E. Provide separate drop wire above accessible ceiling, to support more than (2) two MC cables.

F. Do not rest cables on ceiling tiles or allow contact with mechanical piping systems.

G. Bend the cable per NEC Article 334.

H. Provide separate sleeves and/or fire barriers where cable penetrated firewalls, unless cable is UL listed for the application.

3.6 WIRE SPLICES, JOINTS AND TERMINATION

A. Join and terminate wire, conductors and cables in accordance with UL 486A, C, NEC and Manufacturer's instructions.

B. Thoroughly clean wires before installing lugs and connectors.

C. Make splices, taps and terminations to carry full ampacity of conductors without perceptible temperature rise.

D. Splices and terminations shall be made mechanically and electrically secure.

E. Where it's determined that unsatisfactory splice or terminations have been installed, remove the devices and install approved devices at no addition cost.

F. Terminate wires in Terminal Cabinets, relay and contactor panels, etc. using terminal strip connectors.

G. Insulate spare conductors with electrical tape and leave sufficient length to terminate anywhere in the panel or cabinet.

H. Install cable ties and maintain harnessing.

I. Encapsulate splices in exterior outlets, pullboxes and junction boxes using specified insulating resin kits. Make all splices watertight for exterior equipment and equipment in pump rooms.

J. Make up all splices and taps in accessible junction or outlet boxes with connectors as specified herein. Pigtails and taps shall be the same color as the feed conductor. Form conductor prior to cutting and provide at least six (6) inches of tail and neatly packed in box after splice is made up.

K. Branch circuits (#10 AWG and smaller):

1. Connectors: Solderless, screw-on, reusable spring pressure cable type, 600 volt, 105-degree C. with integral insulation, approved for copper conductors.

2. The integral insulator shall have a skirt to completely cover the stripped wires.

3. The number, size and combination of conductors as listed on the Manufacturers packaging shall be strictly complied with.

L. Feeder circuits: (#6 to 750 MCM)

1. Join or tap conductors from #6 AWG to 750 MCM using bolted pressure connectors or insulate mechanical compression (hi-press) taps with pre-molded, snap-on insulating boots or specified conformable insulating pad and over wrapped with two half-lapped layers of vinyl insulating tape starting and ending at the middle of the joint.

2. Terminate conductors from size #6 AWG to 750 MCM copper using bolted pressure or mechanical compression lugs in accordance with Manufacturer recommendation or as specified elsewhere.

3. Field installed compression connectors for cable sizes 250 MCM and larger shall have not less than two clamping elements or compression indents per wire.

4. Insulate splices and joints with materials approved for the particular use, location, voltage and temperature. Insulate with not less than that of the conductor level that is being joined.

M. Termination hardware assemblies:

1. AL/CU lugs connected to aluminum plated or copper buss, shall be secured using a steel bolt, flat washer (two per bolt), Belleville washer and nut.
2. Copper lugs connected to copper bus, shall be secured using silicon bronze alloy bolt, flat washer (two per bolt), Belleville washer and nut.
3. The crown of Belleville washers shall be under the nut.
4. Bolt assemblies shall be torque to Manufacturer recommendation. Where manufacture recommendation are not obtainable, the following values shall be used:
   a. 1/4" - 20 bolt at 80-inch pounds torque.
   b. 5/16" - 18 bolt at 180-inch pounds torque.
   c. 3/8" - 16 bolt at 20-foot pounds torque.
   d. 1/2" - 13 bolt at 40-foot pounds torque.
   e. 5/8" - 11 bolt at 55-foot pounds torque.
   f. 3/4" - 10 bolt at 158-foot pounds torque.

3.7 IDENTIFICATION

A. Refer to Section 260553: Electrical Identification for additional requirements.

B. Securely tag all branch circuits. Mark conductors with specified vinyl wrap-around markers. Where more than two conductors run through a single outlet, mark each conductor with the corresponding circuit number.

C. Color code conductors size #8 and larger using specified phase color markers and identification tags.

D. Provide all terminal strips with each individual terminal identified using specified vinyl markers.

E. In manholes, pullboxes and handholes, provide tags of the embossed brass type and also show the cable type and voltage rating. Attach the tags to the cables with slip-free plastic cable lacing units.

3.8 FIELD QUALITY CONTROL

A. Independent testing: Contractor shall arrange and pay for the services of an independent Testing Agency to perform all quality control electrical testing required herein. Independent Testing Agency shall meet the requirements as outlined in Section 260010: Basic Electrical Requirements.

B. Prefunctional testing:

1. Visual and mechanical inspection:
   a. Compare cable data with Contract Documents.
   b. Inspect exposed sections of wires and cables for physical damage and proper connections.
   c. Verify tightness of accessible bolted connections with calibrated torque wrench in accordance with Manufacturer's published data.
   d. Inspect compression applied connectors for correct cable match and indention.

e. Verify visible cable bend meet or exceed ICEA and Manufacturer's minimum allowable bending radius.

f. If cables are terminated through window type current transformers, make an inspection to verify neutral and ground conductors are correctly placed for operation of protective devices.

g. Ensure wire and cable identification has been installed as specified herein.

2. Electrical testing:

a. Contractor shall perform feeder and branch circuit insulation test after installation and prior to connection to utilization devices such as fixtures, motors or appliances. Testing shall be as follows:

1) 100% of all feeders 100 amp rated and above.

2) 50% of all feeders smaller than 100 amps.

3) 10% of all branch circuits at each individual panelboard.

b. Perform insulation-resistance test using megohm meter with applied potential of 1000V DC for a continuous duration of 60 seconds. Test conductors phase-to-phase and phase-to-ground. Conductors shall test free from short-circuit and ground faults.

c. Perform continuity test of all feeder and branch circuits to ensure correct cable connections. Test all neutrals for improper grounds.

d. Contractor shall furnish instruments, materials and labor for these tests.

3. Test values: Investigate resistance values less than 50 megohms.

4. Furnish test results in typewritten report form for review and inclusion in the operation and maintenance manuals.

END OF SECTION 26 05 19

PART 1 - GENERAL

1.1 SUMMARY

A. Work included: Labor, materials and equipment necessary to complete the installation required for the item specified under this Division, including but not limited to:

1. Power system grounding.
2. Site lighting grounding.
3. Telecommunication system grounding.
4. Electrical equipment and raceway grounding and bonding.
5. Safety ground grid and/or mat.

B. Related Work: Consult all other Sections, determine the extent and character of related Work and properly coordinate Work specified herein with that specified elsewhere to produce a complete installation.

1. Division 05: Building Steel.
2. Division 22: Cold Water Piping.

1.2 REFERENCES

A. Comply with the latest edition of the following applicable Specifications and standards except as otherwise indicated or specified:

1. Underwriters Laboratories, Inc. (UL):

UL 467;	Grounding and Bonding Equipment.

2. Institute of Electrical and Electronics Engineers, Inc. (IEEE):

IEEE No. 142;	Recommended Practice for Grounding of industrial and Commercial Power Systems.
IEEE No. 81	Guide for Measuring Earth Resistivity, Ground Impedance, and Earth Surface Potentials of a Ground System.

1.3 SYSTEM DESCRIPTION

A. Ground the electrical service system neutral at service entrance equipment as described herein and indicated on Drawings.

B. Ground each separately derived system neutral as described herein and indicated on Drawings.

C. Provide telecommunications system grounding conductor as described herein and indicate on Drawings.

D. Provide a safety ground grid and/or mat beneath all electrical switchgear operating at 1000 volts and above, and at emergency generator. Grid/mat shall be poured in the concrete floor slab and constructed as specified herein.

E. Except as otherwise indicated, the complete electrical installation including the neutral conductor, metallic conduits and raceways, boxes, cabinets and equipment shall be completely

and effectively grounded in accordance with all code requirements, whether or not such connections are specifically indicated or specified.

F. Resistance:

1. Resistance from the main switchboard ground bus through the ground electrode to earth shall not exceed 5 OHMS unless otherwise noted.
2. Resistance from the farthest panelboard, switchboard, etc. ground bus through the ground electrode to earth shall not exceed 20 OHMS

1.4 SUBMITTALS

A. Submit in accordance with the requirements of Section 260010: Basic Electrical Requirements, the following items:

1. Data/catalog cuts for each product and component specified herein, listing all physical and electrical characteristics and ratings indicating compliance with all listed standards.
2. Clearly mark on each data sheet the specific item(s) being submitted and the proposed application.
3. Submit Manufacturer's installation instructions.

1.5 QUALITY ASSURANCE

A. All materials, equipment and parts comprising the units specified herein shall be new, unused and currently under production.

B. Only products and applications listed in this Section may be used on the Project unless otherwise submitted.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Products furnished by the following Manufacturers shall be acceptable if in compliance with all features specified herein and indicated on the Drawings.

1. Ground Rods:
   a. Weaver.
   b. Erico "Cadweld" Products, Inc.
2. Ground Wells:
   a. Christy Concrete Products, Inc.
   b. Forni Corp.
3. Ground Bushings, Connectors, Jumpers and Bus:
   a. O-Z/Gedney.
   b. Thomas & Betts Corp.

B. Substitutions: Under provisions of Section 260010: Basic Electrical Requirements.

2.2 GROUND CONDUCTORS

A. Refer to Specification Section 260519: Building Wire and Cable for conductor specifications.

B. General purpose insulated:

1. UL approved and code sized copper conductor, with dual rated THHN/THWN insulation, color identified green.

2. Where continuous color-coded conductors are not commercially available, provide a minimum 4" long color band with green, non-aging, plastic tape in accordance with NEC/CEC.

C. Bare conductors in direct contact with earth or encased in concrete: #2/0 AWG copper minimum, U.O.N.

D. Bonding pigtails: Insulated copper conductor, identified green, sized per code and provide with termination screw or lug. Provide solid conductors for #10 AWG or smaller and stranded conductors for #8 AWG or larger.

2.3 DRIVEN (GROUND) RODS

A. Copper clad steel, minimum 3/4-inch diameter by 8 feet long, unless otherwise noted.

2.4 GROUND WELL BOXES FOR GROUND RODS

A. Precast concrete box nominal 9" throat diameter x 14" deep with light duty concrete cover for non-traffic areas or steel plate for traffic areas. Cover shall be embossed or engraved with "GROUND ROD".

2.5 INSULATED GROUNDING BUSHINGS

A. Plated malleable iron or steel body with 150 degree Centigrade molded plastic insulating throat and lay-in grounding lug.

2.6 CONNECTIONS TO PIPE

A. For cable to pipe: UL and NEC/CEC approved bolted connection.

2.7 CONNECTIONS TO STRUCTURAL STEEL, GROUND RODS OR SPLICES

A. Where required by the Drawings, grounding conductors shall be spliced together, connected to ground rods or connected to structural steel using exothermic welds or high pressure compression type connectors.

1. Exothermic welds shall be used for cable-to-cable and cable-to-ground rod and for cable to structural steel surfaces. Exothermic weld kits shall be as manufactured by Cadweld or equal. Each particular type of weld shall use a kit unique to that type of weld.

2. High-pressure compression type connectors shall be used for cable-to-cable and cable-to-ground rod connections.

2.8 EXTRA FLEXIBLE, FLAT BONDING JUMPERS

A. Where required by Code, indicated on the Drawing, and specified herein.

2.9 BUILDING GROUND BUS REQUIREMENTS

A. Main building power system ground bus:

1. Provide one 24" wide x 4" high x 1/4" thick copper bus bar as a minimum. Mount on wall in main electrical room utilizing insulating stand-offs at 18" above finished floor.

2. Furnish complete with cast copper alloy body lugs for connecting grounding system conductors. Attach lugs to bus with appropriate size cadmium bronze bolt, flat washer and Belleville washer. Torque all lug connections.
3. All holes shall be drilled and tapped for single-hole lugs. Provide 6 spare lugs and lug spaces.

B. Building power system reference ground bus:

1. The reference ground bus is furnished as part of the main electrical switchboard for the building, along with neutral disconnect and bus, and is in addition to the main building power system ground bus outlined above. The building grounding electrode shall make a direct connection to the building referenced ground bus in the main switchboard.
2. Provide a #2/0 AWG copper ground conductor connection between the building reference ground bus in switchboard and the main building ground bus wall mounted in main electrical room.

C. Telecommunication system ground bus requirements:

1. Main telecommunication system ground bus: Provide one 18" wide x 4" high x 1/4" thick copper bus bar as a minimum. Mount on wall in MDF room utilizing insulating stand-offs at 18" above finished floor.
2. Telecommunication system ground bus: Provide one 12" wide x 4" high x 1/4" thick copper bus bar as a minimum. Mount on wall in each IDF room and in the MPOE room utilizing insulating stand-offs at 18" above finished floor.
3. Furnish complete with cast copper alloy body lugs for connecting grounding system conductors. Attach lugs to bus with appropriate size cadmium bronze bolt, flat washer and Belleville washer. Torque all lug connections.
4. All holes shall be drilled and tapped for single-hole lugs. Provide 3 spare lugs and lug spaces.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Contractor shall thoroughly examine Project site conditions for acceptance of grounding system installation to verify conformance with Manufacturer and Specification tolerances. Do not commence with installation until all conditions are made satisfactory.

3.2 INSTALLATION

A. Grounding electrodes:

1. Metal underground water pipe: Cold water metal piping system: Where the underground cold water service line is metal, indirect contact with the earth for 10 feet or more, the Contractor shall install a grounding electrode conductor from the main incoming cold water line ahead of the meter and extend to the main building reference ground bus in the main electrical room. The electrode shall be sized per NEC/CEC Article 250. Electrode connection should be accessible.
2. Concrete encased grounding electrode (UFER ground): Provide a #2/0 AWG minimum bare copper conductor encased along the bottom of concrete foundation or footings which are in direct contact with the earth and where there is no impervious water-proofing membrane

between the footing and the soil. The electrode shall extend through a horizontal length of 30 feet minimum and shall be encased in not less than 2 or more than 5 inches of concrete separating it from surrounding soils. The electrode shall emerge from the concrete slab through a protective non-metallic sleeve and shall be extended to the main building reference ground bus.

3. Supplementary grounding electrode (ground ring, grid and driven rods): Provide, as indicated on the Drawings, driven ground rod(s) installed in listed ground well box(s) and filled with gravel after connection is made. Interconnect ground rod with structural steel and adjacent rods with minimum #4 AWG bare copper conductor. Ground rod shall not be less than 10 foot from any other electrode of another electrical system or from adjacent ground rod(s).

B. Grounding electrode conductor: Provide grounding electrode conductor as indicated on the Drawings or sized per NEC/CEC Article 250, whichever is greater.

C. Power system grounding:

1. Provide, unless otherwise indicated, a main building power system ground bus mounted on the wall in the main electrical room. Connect the following items using NEC/CEC sized copper grounding conductors to lugs on the main building ground bus:

   a. Grounding conductor from building reference ground bus in main service switchboard.

   b. Bonding conductor to metallic cold water piping system.

   c. Bonding conductor to building structural steel.

   d. Separately derived system grounding conductors in same room.

2. At the building power system reference ground bus in the main service switchboard, connect the grounding electrode conductor from concrete encased UFER ground or other grounding electrode systems as indicated on the Drawing or herein.

D. Separately derived electrical system grounding:

1. Ground each separately derived system per requirements in NEC/CEC Article 250 as a minimum, unless greater requirements are required elsewhere in the Contract Documents.

2. Transformers: Provide a dual rated four or six-barrel grounding lug with a 5/8"-11 threaded hole. Drill enclosure with 11/16" bit and attach lug to enclosure utilizing a torque bolt and a dragon tooth transition washer or equal. Connect the following when present:

   a. Grounding electrode conductor from supplemental ground rods.

   b. Building steel.

   c. Cold water pipe.

   d. Primary feeder ground.

   e. Secondary feeder ground.

   f. Main bond jumper.

   g. Isolated ground conductor.

E. Equipment bonding/grounding:

1. Provide a NEC/CEC sized insulated copper ground conductor in all 120VAC through 600 VAC feeder and branch circuit distribution conduits and cables.

2. Provide a separate grounding bus at panelboards, switchboards. Connect all metallic enclosed equipment so that with maximum fault current flowing, shall be maintained at not more than 3.5 volts above ground.
3. Conduit terminating in concentric, eccentric or oversized knockouts at panelboards, cabinets, gutters, etc. shall have grounding bushings and bonding jumpers installed interconnecting all such conduits.
4. Provide bonding jumpers across expansion and deflection couplings in conduit runs, pipe connections to water meters, dielectric couplings in metallic cold water piping system.
5. Provide internal ground wire in flexible conduit connected at each end via grounding bushing.
6. Provide external ground wire wrapped around flexible conduit and terminate to connectors designed for the purpose.

F. Site lighting grounding: Bond all metallic light poles and bollards. Provide ground rods where indicated on the Drawings.

G. Telecommunication system grounding:

1. In addition to grounding noted on the Drawings for the power systems, provide a telecommunication system ground riser for interconnecting the MDF, MPOE and all of the IDF rooms in the building.
2. Riser shall consist of the following:
   a. Provide a main telecommunication system ground bus wall mounted in the MDF room at the ground floor of building.
   b. Provide telecommunication system ground bus wall mounted in each IDF room and at MPOE room.
   c. From the main telecommunication system ground bus provide one #1/0 THHN in 1-1/4" conduit to the main electrical room and terminate conductor at the main building power system ground bus.
   d. Additionally, from the main telecommunication system ground bus provide one #1/0 THHN in 1-1/4" conduit to the MPOE room and terminate conductor at the telecommunication system ground bus.
   e. If IDF rooms exist on the ground floor of building, provide one #1/0 THHN in 1-1/4" conduit from the telecommunication system ground bus in each room to the main telecommunication system ground bus in the MDF room. If there are no IDF rooms at ground floor, provide one #1/0 THHN in 1-1/4" conduit from the telecommunication system ground bus in each IDF room at second floor and route to the main telecommunication system ground bus in the MDF room at ground floor.
   f. From each of the telecommunication system ground buses at the IDF rooms on ground or second floor, route one #1/0 THHN in 1-1/4" conduit as a riser up the building to intertie all the telecommunication system ground buses in each IDF room.

H. Switchgear operating at over 1000 volts, unit substations and generators:

1. Provide a safety grid and/or mat encased in the middle of the concrete pad or floor beneath the switchgear or equipment with bare copper conductor pigtails extending up through slab at both ends of switchgear/equipment, within footprint of gear.
2. The grid/mat shall extend a minimum of 48" beyond the footprint of the equipment on both ends and at the back side of switchgear.
3. The grid/mat shall extend a minimum of 72" beyond the footprint on the equipment on the front side of switchgear.
4. Terminate the safety grid/mat #1/0 AWG bare copper conductor pigtails to the electrical equipment ground bus within sections at each end of equipment lineup.

3.3 FIELD QUALITY CONTROL

A. Independent Testing: Contractor shall arrange and pay for the services of an independent Testing Agency to perform all quality control electrical testing required herein.

B. Prefunctional testing:

1. Provide Testing Agency with Contract Documents for their review prior to the commencement of ground testing.
2. Visual and mechanical inspection:
   a. The Testing Agency shall inspect the grounding electrode and connections prior to concrete encasement, burial or concealment.
   b. Check tightness and welds of all ground conductor terminations.
   c. Verify installation complies with the intent of the Contract Documents
3. Obtain and record ground resistance measurements both from electrical equipment ground bus to the ground electrode and from the ground electrode to earth. Furnish and install additional bonding and add grounding electrodes as required complying with resistance limits specified under this Section of the Specification.
4. A typewritten record of measured resistance values shall be submitted for review and included with the operation and maintenance manual furnished to the Owner at the time of Project closeout and before certificate of final payment is issued.

END OF SECTION 26 05 26

PART 1 - GENERAL

1.1 SUMMARY

A. Work included: Labor, materials and equipment necessary to complete the installation required for the item specified under this Division, including but not limited to:

1. Rigid steel conduit and fittings.
2. PVC insulated rigid steel conduit and fittings.
3. Intermediate metal conduit and fittings.
4. Electrical metallic tubing and fittings.
5. Rigid non-metallic conduit and fittings.
6. Flexible metallic conduit and fittings.
7. Liquidtight flexible metallic conduit and fittings.
8. Miscellaneous conduit fittings and products.

B. Related Work: Consult all other Sections, determine the extent and character of related Work and properly coordinate Work specified herein with that specified elsewhere to produce a complete installation.

1. Division 01: Cutting and patching.
2. Division 31: Earthwork. Excavation and backfill for conduit and utilities on Project site.
3. Division 07: Sheet metal flashing and trim.
4. Division 09: Painting. Exposed conduit and other devices.

1.2 REFERENCES

A. Comply with the latest edition of the following applicable Specifications and standards except as otherwise indicated or specified:

1. Federal Specifications (FS):

FS WW-C-563;	Electrical Metallic Tubing.
FS WW-C-566;	Specification for Flexible Metal Conduit.
FS WW-C-581;	Specification for Galvanized Rigid Conduit.
FS W-C-1094A;	Conduit and Conduit Fittings Plastic, Rigid.

2. American National Standards Institute, Inc. (ANSI):

ANSI C80.1;	Rigid Steel Conduit, Zinc-Coated.
ANSI C80.3;	Electrical Metallic Tubing, Zinc Coated.

3. Underwriters Laboratories, Inc. (UL):

UL 1;	Flexible Metal Conduit.
UL 6;	Rigid Metal Conduit.

UL 360;	Liquid-Tight Flexible Steel Conduit.
UL 514B;	Conduit, Tubing and Cable Fittings.
UL 635;	Insulating Bushings.
UL 651;	Schedule 40 and 80 Rigid PVC Conduit.
UL 651A;	Type EB and A Rigid PVC Conduit and HDPE Conduit.
UL 797;	Electrical Metallic Tubing - Steel.
UL 1242;	Intermediate Metal Conduit - Steel.

4. National Electrical Manufacturer Association (NEMA):

NEMA RN1;	PVC Externally coated Galvanized Rigid Steel Conduit.
NEMA TC 2;	Electrical Plastic Tubing and Conduit.
NEMA TC 3;	PVC Fittings for use with Rigid PVC Conduit.
NEMA TC 6;	PVC Plastic Utilities Duct (EB and DB Type)
NEMA TC 9;	Fittings for PVC Plastic Utilities Duct (EB and DB Type)

1.3 SUBMITTALS

A. Submit in accordance with the requirements of Section 260010: Basic Electrical Requirements the following items:

1. Data/catalog cuts for each product and component specified herein, listing all physical and electrical characteristics and ratings indicating compliance with all listed standards.
2. Clearly mark on each data sheet the specific item(s) being submitted and the proposed application.
3. Submit Manufacturer's installation instruction. Provide written instructions for raceway products requiring glues, special tools or specific installation techniques.

1.4 QUALITY ASSURANCE

A. All materials, equipment and parts comprising the units specified herein shall be new, unused and currently under production.

B. Only products and applications listed in this Section may be used on the Project unless otherwise submitted and approved.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Products furnished by the following Manufacturers shall be acceptable if in compliance with all features specified herein and indicated on the Drawings.

1. Metal conduit:
   a. Allied Tube and Conduit Co.
   b. Triangle PWC, Inc.
   c. Western Tube and Conduit Corp.
   d. Spring City Electrical Manufacturing Co.

e. Occidental Coating Co. (OCAL).

f. Alflex Corp.

g. American Flexible Metal Conduit Co.

h. Anaconda.

2. Nonmetallic conduit:

a. Carlon.

b. PW Pipe.

3. Fittings:

a. Appleton Electric Co.

b. OZ/Gedney.

c. Thomas & Betts Corp.

d. Spring City Electrical Manufacturing Co.

e. Occidental Coating Co. (OCAL).

f. Carlon.

B. Substitutions: Under provisions of Section 260010. Basic Electrical Requirements.

2.2 GALVANIZED RIGID STEEL CONDUIT (GRS)

A. Conduit: Full weight, threaded, hot-dip galvanized steel, conforming to ANSI C80.1 and UL 6.

B. Standard threaded couplings, locknuts, bushings and elbows: Only materials of steel or malleable iron are acceptable. Locknuts shall be bonding type with sharp edges for digging into the metal wall of an enclosure.

C. Three piece couplings: Electroplated, cast malleable iron.

D. Insulating bushings: Threaded polypropylene or thermosetting phenolic rated 150 degree C minimum.

E. Insulated grounding bushings: Threaded cast malleable iron body with insulated throat and steel "lay-in" ground lug with compression screw.

F. Insulated metallic bushings: Threaded cast malleable iron body with plastic insulated throat rated 150 degrees C.

G. All fittings and connectors shall be threaded.

2.3 PVC INSULATED GALVANIZED RIGID STEEL CONDUIT (PVC GRS)

A. Conduit: Full weight, threaded, hot-dip galvanized steel, conforming to ANSI C80.1 and NEMA RN-1 with nominal 20 or 40 mil thermoplastic vinyl coating, heat fused and bonded to the exterior of the conduit.

B. Fittings: Conduit couplings and connectors shall be as specified for galvanized rigid steel conduit and shall be factory PVC coated with an insulating jacket equivalent to that of the coated material.

2.4 INTERMEDIATE METAL CONDUIT (IMC)

A. Conduit: Hot dip galvanized steel meeting the requirements of NEC Article 345 and conforming to ANSI C80.6 and UL 1242.

B. Fittings: Conduit couplings, connector and bushing shall be as specified for galvanized rigid steel conduit. Integral retractable type IMC couplings are also acceptable.

2.5 ELECTRICAL METALLIC TUBING (EMT)

A. Conduit: Shall be formed of cold rolled strip steel, electrical resistance welded continuously along the longitudinal seam and hot dip galvanized after fabrication. Conduit shall conform to ANSI C80.3 Specifications and shall meet UL requirements.

B. Set screw type couplings: Electroplated, steel or cast malleable iron, UL listed concrete tight. Use set screw type couplings with four setscrews each of conduit sizes over 2 inches. Setscrews shall be of case hardened steel with hex head and cup point to firmly seat in wall of conduit for positive grounding.

C. Set screw type connectors: Electroplated steel or cast malleable iron UL listed concrete tight with male hub and insulated plastic throat, 150 degree C temperature rated. Setscrew shall be same as for couplings.

D. Raintight couplings: Electroplate steel or cast malleable iron; UL listed raintight and concrete tight, using gland and ring compression type construction.

E. Raintight connectors: Electroplated steel or cast malleable iron, UL listed raintight and concrete tight, with insulated throat, using gland and ring compression type construction.

2.6 RIGID NON-METALLIC CONDUIT (PVC)

A. Conduit:

1. Rigid polyvinyl chloride, Schedule 40 or 80 conforming to NEMA TC1 and UL 651, latest edition. UL listed for exposed and direct-burial applications and for 90 degrees C conductor insulation. Conduit shall include an integral bell fitting at one end.
2. Rigid polyvinyl chloride, Type EB or DB conforming to NEMA TC 6 and UL 651, latest edition. UL listed for concrete encased burial and direct burial applications and for 90 degrees C conductor insulation. Conduit shall include an integral bell fitting at one end.

B. Fittings: Couplings, adaptors, transition fittings, etc., shall be molded PVC, slip on, solvent weld type conforming to NEMA TC3 for Schedule 40 or 80 and NEMA TC 9 for type EB or DB.

2.7 FLEXIBLE METALLIC CONDUIT (FMC)

A. Conduit: Shall be fabricated in continuous lengths from galvanized steel strip, spirally wound and formed to provide an interlocking design and conforming to UL 1.

B. Fittings: Connectors shall be of the single screw clamp variety with steel or cast malleable iron bodies and threaded male hubs with insulated throats. Exception: Pressure cast screw-in connectors shall be acceptable for fixture connection in suspended ceilings and cut-in outlet boxes within existing furred walls.

2.8 LIQUIDTIGHT FLEXIBLE METALLIC CONDUIT (LFMC)

A. Conduit: Shall be fabricated in continuous lengths from galvanized steel strips, interlocking spirally wound, covered with extruded liquidtight jacket of polyvinyl chloride (PVC) and

conforming to UL 360. Provide conduit with a continuous copper-bonding conductor wound spirally between the convolutions.

B. Fittings: Connector body and gland nut shall be of cadmium plated steel or cast malleable iron, with tapered, male, threaded hub; insulated throat and neoprene "O" ring gasket recessed into the face of the stop nut. The clamping gland shall be of molded nylon with an integral brass push-in ferrule.

2.9 RIGID NON-METALLIC CONDUIT (FRE)

A. Conduit: Rigid fiberglass reinforced epoxy composed of glass filaments encapsulated in an epoxy matrix. Each conduit length shall have an integral wound in expanded couplings. Size 2" through 6" shall incorporate an integral urethane gasket for sealing. No threads or adhesive shall be required to assemble the joints for in ground installations. All conduit and fittings will be pigmented with carbon black dispersed homogeneously throughout the epoxy glass matrix for U.V. protection.

B. Conduit and fittings shall be filament wound.

C. Conduit shall be suitable for continuous operation from -40°C to +110°C without significant change of mechanical properties. Conduit combustion by-products shall not contain chlorine gas in excess of trace levels and always less than OSHA limits.

D. FRE conduit shall be designated so conductors shall not adhere to conduit or fittings in fault conditions.

E. Dimensions: Conduit and fittings in 2" through 6" sizes inclusive shall have inside diameter equal to the trade size.

2.10 MISCELLANEOUS CONDUIT FITTINGS AND PRODUCTS

A. Watertight conduit entrance seals: Steel or cast malleable iron bodies and pressure clamps with PVC sleeve, neoprene sealing grommets and PVC coated steel pressure rings. Fittings shall be supplied with neoprene sealing rings between the body and PVC sleeve.

B. Watertight cable sealing bushings: One piece, compression molded sealing ring with PVC coated steel pressure disks, stainless steel sealing screws and zinc plated cast malleable iron locking collar.

C. Expansion fittings: Multi-piece unit comprised of a hot dip galvanized malleable iron or steel body and outside pressure bussing designed to allow a maximum of 4" conduit movement (2" in either direction). Furnish with external braid tinned copper bonding jumper. Unit shall be UL listed for wet or dry locations.

D. Expansion/deflection couplings: Multi-piece unit comprised of a neoprene sleeve with internal flexible tinned copper braid attached to bronze end couplings with stainless steel bands. Coupling shall accommodate .75-inch deflection, expansion or contraction in any direction and allow 30-degree angular deflections. Flexible, corrosion-resistant, watertight, moisture and heat resistant molded rubber jacket and stainless steel jacket clamps. Unit shall comply with UL467 and UL514. Manufacturer shall be OZ/Gedney Type DX, Steel City Type EDF or equal.

E. Fire rated penetration seals:

1. UL building materials directory classified.

2. Conduit penetrations in fire rated separation shall be sealed with a UL classified fill, void or cavity material.
3. The fire rated sealant material shall be the product best suited for each type of penetration and may be a caulk, putty, composite sheet or wrap/strip.

F. Standard products not herein specified:

1. Provide listing of standard electrical conduit hardware and fittings not herein specified for approval prior to use or installation, i.e. locknuts, bushings, etc.
2. Listing shall include Manufacturers name, part numbers and a written description of the item indicating type of material and construction.
3. Miscellaneous components shall be equal in quality, material and construction to similar items herein specified.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Contractor shall thoroughly examine Project site conditions for acceptance of conduit system installation to verify conformance with Manufacturer and Specification tolerances. Do not commence with installation until all conditions are made satisfactory.

3.2 APPLICATION

A. Galvanized rigid steel conduit (GRS) shall be used in the following applications:

1. For feeders and branch circuits located indoors, concealed or exposed above suspended ceilings, in damp/wet locations, in crawl spaces, in attics, chases, furred spaces, equipment rooms, loading docks or in hazardous locations in accordance with NEC and local Codes.
2. For feeders and branch circuits concealed in concrete floors and walls when not in contact with earth.

B. PVC insulated galvanized rigid steel conduit shall be used in the following applications:

1. Use 40-mil coating for feeders and branch circuits in damp or wet locations.
2. Use 20 or 40 mil for feeders and branch circuits concealed in concrete walls or slabs in contact with earth.
3. Use 20 or 40-mil for runs beneath floor slabs on grade.
4. Use 40-mil for all below grade penetrations through floor slabs on grade or exterior walls.

C. Intermediate metal conduit (IMC): Shall be used for the same application as galvanized rigid steel conduit as specified herein.

D. Electrical metallic tubing (EMT): Shall be used exposed or concealed for interior electrical feeders 4" and smaller, interior power and lighting branch circuits and low tension distribution system where run above suspended ceilings, in concrete slabs and walls not in contact with earth, in stud walls, furred spaces and crawl spaces. EMT shall not be installed exposed below 6 feet above the finish floor except within electrical, communication or signal rooms or closets.

E. Rigid non-metallic conduit (PVC): Shall be used in the following applications:

1. Schedule 40 or 80 for feeders and branch circuits run beneath ground floor slab except that bends and penetrations through the floor must be PVC coated galvanized rigid steel.

2. Schedule 40 or 80 for exterior branch circuits directly buried in earth, 18" minimum below grade. PVC may be used below exterior slabs not subject to vehicular traffic.
3. PVC may be used below exterior slab subjects to vehicular traffic when encased in a minimum of 2 inches of concrete.
4. Only schedule 80 PVC may be used for above ground conduit extensions on utility poles.
5. PVC elbows shall be radius sweep type schedule 40 for bends 45°or less and large radius sweep type schedule 80 for bends 46°or greater.
6. In general, PVC may not be run exposed in concrete walls or in floor slabs unless expressly indicated on the Drawings.
7. EB or DB type may be installed in lieu of the above only if encased in a minimum of 2 inches of concrete.
8. Serving utility electrical and telephone and cable television service entrance conduits may be EB or DB type conduit only if acceptable by serving utility. Coordinate in field prior to installation.

F. Flexible metallic conduit (FMC): Shall be used only in dry locations for connections from an adjacent outlet box or conduit to all motors, transformers, vibrating equipment or machinery, controllers, solenoid valves, float and flow switches or similar devices and to lighting fixtures installed in suspended ceilings, minimum sizes shall be 3/8" for lighting fixtures and control wiring and 1/2" for motor and transformer connections. U.O.N.

G. Liquidtight flexible metallic conduit (LFMC): Shall be used in wet or damp locations for connections from adjacent outlet box or conduit to all motors, transformers, vibrating equipment or machinery, controllers, solenoid valves, float and flow switches or similar devices. These areas are typically food preparation and dishwashing areas, sump wells, loading docks, pump rooms, exterior areas, etc. Minimum sizes shall be 1/2".

H. Rigid non-metallic conduit (FRT): Shall be used for direct burial, concrete encasement and for bridge applications whether suspended or encased; except in hazardous location, where indicated on Contract Drawings or by these Specification.

3.3 PREPARATION

A. Locations of conduit runs shall be planned in advance of the installation and coordinated with ductwork, plumbing, ceiling and wall construction in the same areas and shall not unnecessarily cross other conduits or pipe, nor prevent removal of ceiling tiles or panels, nor block access to mechanical or electrical equipment.

B. Where practical, install conduits in groups in parallel vertical or horizontal runs and at elevations that avoid unnecessary offsets.

C. All conduits shall be run parallel or at right angles to the centerlines of columns and beams, whether routed exposed, concealed above suspended ceiling or in concrete slabs.

D. Conduits shall not be placed closer than 12 inches to a flue, parallel hot water, steam line or other heat producing source or three inches from such lines when crossing perpendicular to the runs.

E. Exposed conduit installation shall not encroach into the ceiling height headroom of walkways or doorways. Where possible, install horizontal raceway runs above water and below steam piping.

F. The largest trade size conduits in concrete floor and wall slabs shall not exceed 1/3 the floor or wall thickness and conduits shall be spaced a minimum of three conduit diameters apart unless otherwise noted on the Drawings. All conduits shall be installed in the center of concrete slabs or wall and shall not be placed between reinforcing steel and the bottom of floor slabs.

G. In long runs of conduit, provide sufficient pull boxes inside buildings to facilitate pulling wires and cables, with spacing not to exceed 150 feet. Support pull boxes from structure independent of conduit supports. These pull boxes are not indicated on the Drawings.

H. Provide all reasonably inferred standard conduits fitting and products required to complete conduit installation to meet the intended application whether noted, indicated or specified in the Contract Documents or not.

I. Connect recessed lighting fixtures to conduit runs with maximum six feet of flexible metal conduit or MC cable extending from a junction box to the fixture or manufactured wiring system.

3.4 INSTALLATION

A. Install conduit in accordance with Manufacturer's written instructions, as indicated on Drawings and as specified herein.

B. Minimum Conduit Size: Unless otherwise noted herein or on Drawings, minimum conduit size shall be 1/2" for interior applications and 3/4" for exterior and underground applications.

C. All conduit sizes indicated on the Drawings are sized for copper conductors with THHN/THWN insulation. If conductor type or size is changed the Contractor shall be responsible for resizing conduits upward to meet Code.

D. In general, all conduit work shall be concealed where possible. Exceptions shall be electrical, communication and mechanical rooms, exposed ceiling areas, and parking garages.

E. Conduit connections to motors and surface cabinets shall be concealed, with the exception of electrical, communication and mechanical rooms, or unless exposed Work is clearly called for on the Drawings.

F. Install conduits in complete runs before pulling in cables or wires.

G. Install conduit free from dented, bruises or deformations. Remove and replace any damaged conduits with new undamaged material.

H. Conduits shall be well protected and tightly covered during construction using metallic bushings and bushing "pennies" to seal open ends.

I. In making joints in rigid steel conduit, ream conduit smooth after cutting and threading. Coat all field-threaded joints with UL approved conductive type compound to ensure low resistance ground continuity through conduit and to prevent seizing and corrosion.

J. Clean any conduit in which moisture or any foreign matter has collected before pulling in conductors. Paint all field-threaded joints to prevent corrosion.

K. In all empty conduits or ducts, install a "True Tape" conduit measuring tape line to provide overall conduit length for determining length of cables/conductors for future use.

L. Conduit systems shall be mechanically and electrically continuous throughout. Install code size, insulated, copper, green-grounding conductors in all conduit runs for branch circuits and feeders. This conductor is not indicated on the Drawings. Refer to Section 260526: Grounding and Bonding.

M. Metallic conduit shall not be in contact with other dissimilar metal pipes (i.e. plumbing).

N. Make bends with standard conduit bending hand tool or machines. The use of any item not specifically designed for the bending of electrical conduit is strictly prohibited.

O. A run of conduit between terminations at wire pulling points shall not contain more than the equivalent of four quarter bends (360 degrees, total).

3.5 PENETRATIONS

A. Locate penetrations and holes in advance where they are proposed in the structural sections such as footings, beams, wall, etc. Penetrations are acceptable only when the following occurs:

1. Where indicated on the Structural Drawings.
2. As approved by the Structural Engineer prior to construction and after submittal of Drawing showing location, size and position of each penetration.

B. Cutting or holes:

1. Cut holes through concrete, masonry block or brick floors and floors of structure with a diamond core drill or concrete saw. Pneumatic hammer, impact electric, hand or manual hammer type drills are not allowed, except where permitted by the Structural Engineer as required by limited working space. Obtain the approval of the Structural Engineer prior to drilling through structural sections.
2. Provide sleeves or "can outs" for cast-in-place concrete floors and walls. Following conduit installation, seal all penetrations using non-iron bearing, chloride free, non-shrinking, dry-pack grouting compounds; or fire rated penetration-sealing materials.
3. Cut holes for conduit penetrations through non-concrete and non-masonry walls, partitions or floors with a hole saw. The hole shall be only as large as required to accommodate the size of the conduit.
4. Provide single piece escutcheon plates around all exposed conduit penetrations in public places.

C. Sealing:

1. Non-rated penetrations: Pack opening around conduits with non-flammable insulating material and seal with gypsum wallboard taping compound.
2. Fire stop: Where conduits, wireways and other electrical raceways pass through fire rated partitions, walls, smoke partitions or floor; install a UL classified fire stop material to provide an effective barrier against the spread of fire, smoke and gases. Completely fill and seal clearances between raceways and openings with the fire stop material.

D. Waterproofing: At floor, exterior wall and roof conduit penetrations, completely seal clearances around the conduit and make watertight as specified in Division 07: Sealants and Caulking.

1. Install specified watertight conduit entrance seals at all below grade wall and floor penetrations. Conduits penetrating exterior building walls and building floor slab shall be PVC coated rigid galvanized steel.
2. For roof penetrations furnish and install roof flashing, counter flashing and pitch-pockets as specified under Roofing and Sheet Metal Sections of the Specifications.

3. Provide membrane clamps and cable sealing fittings for any conduit that horizontally penetrates the waterproof membrane.

4. Conduits that horizontally penetrate a waterproof membrane shall fall away from and below the penetration on the exterior side a minimum of two times the conduit diameters.

3.6 CONCEALED IN CONCRETE

A. Install conduits approximately in the center of the slab so that there will be a minimum of 3/4-inch of concrete around the conduits.

B. Installation of conduit in structural concrete that is less than three inches thick is prohibited. Topping slabs, maintenance pads and curbs are exempted.

C. Tie conduits to reinforcing rods or otherwise secure them to prevent sagging or shifting during concrete placement. Run conduit larger than 1-inch trade size, parallel with or at right angles to the main reinforcement; where at right angles to the reinforcement, the conduit shall be close to one of the supports of the slab.

D. Where nonmetallic conduit or tubing is used, raceways must be converted to PVC coated rigid steel conduit before rising above floor.

E. Make couplings and connections watertight.

F. Protect stub-ups from damage where conduits rise from floor slabs. Arrange so curved portion of bends is not visible above the finished slab.

G. Provide schedule 40 non-metallic sleeve through concrete or masonry walls where aluminum conduit penetrations are required.

3.7 UNDERGROUND INSTALLATION

A. Perform trenching, backfilling and compaction operations as specified in Division 31: Trenching.

B. Install service utility company underground conduits in strict conformance to each utility company's requirements. Obtain a copy of each utility company's installation guidelines prior to commencing Work.

C. Tops of conduits shall be as follows unless otherwise noted:

D. Not less than 18 inches below finished grade.

E. Not less than 24 inches below roadways, paved parking lots, driveways or any surface subject to vehicular traffic.

F. Not less than 4 inches below building floor slab for branch circuits. Major feeders and large signal conduits (2" and greater) at not less than 18 inches.

G. Depth of service utility conduits shall conform to utility company requirements.

H. Furnish and install specified underground conduit marker 12" above conduits in trenches with all buried conduits.

3.8 TERMINATIONS AND JOINTS

A. Use raceway fittings that are of types compatible with the associated raceway and suitable for the use and location. For intermediate steel conduit, use threaded rigid steel conduit fittings except as otherwise indicated.

B. Raceways shall be joined using specified couplings or transition couplings where dissimilar raceway systems are joined.

C. Conduits shall be securely fastened to cabinets, boxes and gutters using two locknuts and an insulating bushing or specified insulated connectors. Where joints cannot be made tight, use bonding jumpers to provide electrical continuity of the raceway system. Where terminations are subject to vibration, use bonding bushings or wedges to assure electrical continuity. Where subject to vibration or dampness, use insulating bushings to protect conductors. Install grounding bushings or bonding jumpers on all conduits terminating at concentric or eccentric knockouts.

D. Conduit terminations exposed at weatherproof enclosures and cast outlet boxes shall be made watertight using specified connectors and hubs.

E. Stub-up connections: Extend conduits through concrete floor for connection to freestanding equipment with an adjustable top or coupling threaded inside for plugs and set flush with the finished floor. Extend conductors to equipment with rigid steel conduit; flexible metal conduit may be used 6 inches above the floor. Where equipment connections are not made under this contract, install screwdriver operated threaded flush plugs with floor.

F. Install specified cable sealing bushings on all conduits originating outside the building walls and terminating in switchgear, cabinets or gutters inside the building. Install cable sealing bushings or raceway seal for conduit terminations in all grade level or below grade exterior pull, junction or outlet boxes.

G. Raceway seal: Inject into wire filled raceways, a pre-formulated rigid 2 lbs. density polyurethane foam which expands a minimum 35 times it's original bulk. Foam shall have the physical properties of water vapor transmission of 1.2 to 3.0 perms; water absorption less than 2% by volume, fungus and bacterial resistant. Foam shall permanent seal against water, moisture, insects and rodents. Install raceway sealing foam at the following points:

1. Where conduits enter buildings from below grade.

H. Install expansion couplings where any conduit crosses a building separation or expansion joint as follows:

1. Conduits three inches and larger, shall be rigidly secured to the building structure on opposite sides of a building expansion joint and provided with expansion or deflection couplings. Install the couplings in accordance with the Manufacturer's recommendations.

2. Conduits smaller than three inches shall be rigidly secured to the building structure on opposite sides of a building expansion joint with junction boxes on both sides of the joint. Connect conduits to junction boxes with 15 inches of slack flexible conduit. Flexible conduit shall have a copper green ground-bonding jumper installed. For concrete embedded conduit, use expansion and deflection couplings as specified above for three inches and larger conduits.

I. Use short length (maximum of 6ft) of the appropriate FMC or LFMC conduit for connections to motors and other electrical equipment subject to movement, vibration, misalignment, cramped quarters or noise transmission. Provide liquidtight flexible metal conduit for installation in exterior locations, moisture or humidity-laden atmosphere, corrosive atmosphere, water hose or spray wash-down operations and locations subject to seepage or dripping of oil, grease or water. Provide a green ground wire with FMC or LFMC conduit.

3.9 SUPPORTS

A. Provide supports for raceways as specified in Section 260529: Electrical Hangers and Supports.

B. All raceways systems shall be secured to building structures using specified fasteners, clamps and hangers spaced according to the NEC.

C. Support single runs of conduit using one-hole pipe straps. Where run horizontally on walls in damp or wet locations, install "clamp backs" to space conduit off the surface.

D. Multiple conduit runs shall be supported using "trapeze" hangers fabricated from specified construction channel, mounted to 3/8-inch diameter, threaded steel rods secured to building structures. Fasten conduit to construction channel with standard one-hole pipe clamps or the equivalent. Provide lateral seismic bracing for hangers.

E. Individual 1/2" and 3/4" conduits installed above suspended ceilings may be attached to the ceiling's hanger wire using spring steel support clips provided that not more than two conduits are attached to any single support wire.

F. Support exposed vertical conduit runs at each floor level, independent of cabinets or switches to which they run, by means of acceptable supports.

G. Fasteners and supports in solid masonry and concrete:

1. Use steel or malleable iron concrete inserts set in place prior to placing the concrete.
2. After concrete installation:
    a. Steel expansion anchors not less than ¼ inch bolt size and not less than 1-1/8 inch embedment.
    b. Power set fasteners not less than ¼ inch diameter with depth of penetration not less than three inches.
    c. Use vibration and shock resistant anchors and fasteners for attaching to concrete ceilings.

H. Hollow masonry: Toggle bolts are permitted. Bolts supported only by masonry block are not acceptable.

I. Metal structures: Use machine screw fasteners or other devices specifically designed and approved for the application.

END OF SECTION 26 05 31

PART 1 - GENERAL

1.1 SUMMARY

A. Work included: Labor, materials and equipment necessary to complete the installation required for the item specified under this Division, including but not limited to:

1. Wall and ceiling outlet boxes.
2. Pull and junction boxes.

B. Related Work: Consult all other Sections, determine the extent and character of related Work and properly coordinate Work specified herein with that specified elsewhere to produce a complete installation.

1. Division 08: Access doors. Wall and ceiling access doors.

1.2 REFERENCES

A. Comply with the latest edition of the following applicable Specifications and standards except as otherwise indicated or specified.

1. American National Standards Institute/National Electrical Manufacturer Association:

ANSI/NEMA OS-1;	Sheet-Steel Outlet Boxes, Device Boxes, Covers and Box Supports.
ANSI/NEMA OS-2;	Nonmetallic Outlet Boxes, Device Boxes, Covers and Box Supports.
NEMA 250;	Enclosures for Electrical Equipment (1000 volts maximum).

2. Underwriters Laboratories (UL):

UL 50;	Enclosures for Electrical Equipment.
UL 514A;	Metallic Outlet Boxes.
UL 1773;	Termination Boxes.

1.3 SUBMITTALS

A. Submit in accordance with the requirements of Section 260010: Basic Electrical Requirements, the following items:

1. Data/catalog cuts for each product and component specified herein, listing all physical and electrical characteristics and ratings indicating compliance with all listed standards.
2. Clearly mark on each data sheet the specific item(s) being submitted and the proposed application.
3. Submit Manufacturer's installation instructions.

1.4 QUALITY ASSURANCE

A. All materials, equipment and parts comprising the units specified herein shall be new, unused and currently under production.

B. Only products and applications listed in this Section may be used on the Project unless otherwise submitted.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Products furnished by the following Manufacturers shall be acceptable if in compliance with all features specified herein and indicated on the Drawings.

1. Outlet and junction boxes:
   a. Spring City Electrical Manufacturing Co.
   b. Thomas & Betts Corp.
   c. Raco, Inc.
2. Cast boxes:
   a. Appleton Electric Co.
   b. Crouse-Hinds.
3. Floor boxes:
   a. Hubbell Inc.
   b. Walker.
   c. Raceway Components, Inc.
4. Pullboxes:
   a. Circle AW Products.
   b. Hoffman Engineering Co.
5. Precast concrete boxes:
   a. Christy Concrete Products, Inc.
   b. Brooks Products, Inc.
   c. Forni Corp.

B. Substitutions: Under provisions of Section 260010: Basic Electrical Requirements.

2.2 OUTLET BOXES

A. Standard outlet box:

1. Provide galvanized, one-piece die formed or drawn steel, knockout type box of size and configuration best suited to the application indicated on the Drawings.
2. 4-inch square by 1-1/2 inch deep shall be minimum box size.
3. ANSI/NEMA OS 1.

B. Concrete box:

1. Provide galvanized steel, 4-inch octagon rings with mounting lugs, backplate and adapter ring as required.
2. Select height as necessary to position knockouts above concrete reinforcing steel.
3. ANSI/NEMA OS 1.

C. Tile box:

1. Provide outlet boxes for installation in tile or concrete block walls.

2. Standard outlet boxes with raised, square corners and device covers are acceptable.

3. ANSI/NEMA OS 1.

D. Cast metal outlet body:

1. Provide four inch round, galvanized cast iron alloy with threaded hubs and mounting lugs as required.

2. Provide boxes with cast cover plates of the same material as the box and neoprene cover gaskets.

E. Conduit outlet body: Provide Cadmium plated cast iron alloy, oblong conduit outlet bodies with threaded conduit hubs and neoprene gasket, cast iron covers.

2.3 PULL AND JUNCTION BOXES

A. Sheet metal pull and junction box:

1. Provide standard outlet or concrete ring boxes wherever possible; otherwise use minimum 16 gauge galvanized sheet metal, NEMA 1 boxes, sized to Code requirements with covers secured by cadmium plated machine screws located 6 inches on centers.

2. ANSI/NEMA OS 1.

B. Cast metal pull and junction box: Provide standard cast malleable iron outlet or device boxes wherever possible; otherwise use cadmium plated, cast malleable iron boxes with bolt-on, interchangeable conduit hub plates with neoprene gaskets.

C. Flush mounted pullboxes and junction boxes: Provide overlapping covers with flush head cover retaining screws, prime coated.

D. Precast concrete boxes: Provide high density reinforced concrete pull and junction box with end and side knockouts and non-settling shoulders. Use cast iron lid with hold down bolts or use traffic rated covers in areas subject to vehicular traffic.

2.4 FLOOR BOXES

A. Refer to Section 262726: Wiring Devices for floor mounted service boxes.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Contractor shall thoroughly examine Project site conditions for acceptance of box installation to verify conformance with Manufacturer and Specification tolerances. Do not commence with installation until all conditions are made satisfactory.

3.2 PREPARATION

A. Install all outlet boxes flush with building walls, ceilings and floors except where boxes are installed in mechanical and electrical rooms, in cabinetry, above accessible ceilings or where exposed Work is called for on the Drawings.

B. Locate pullboxes and junction boxes in concealed locations above removable ceilings or exposed in electrical rooms, utility rooms or storage areas.

C. Install outlet boxes at the locations and elevations indicated on the Drawings or specified herein. Make adjustments to locations as required by structural conditions and to suit coordination requirements of other trades.

D. Locate switch outlet boxes on the latch side of doorways unless otherwise indicated.

E. Locate outlet boxes above hung ceilings having concealed suspension systems, adjacent to openings for removable recessed lighting fixtures.

F. Do not install outlet boxes back-to-back, separate boxes by at least 6". In fire rated walls separate boxes by at least 24" and wall stud.

G. Adjust position of outlet boxes in finished masonry walls to suit masonry course lines. Coordinate cutting of masonry walls to achieve neat openings for boxes.

3.3 INSTALLATION

A. Install boxes in accordance with Manufacturer's written instructions, as indicated on Drawings and as specified herein.

B. Locate electrical boxes as indicated on Drawings and as required for splices, taps, wire pulling, equipment connections and Code compliance.

C. Install junction or pullboxes where required to limit bends in conduit runs to not more than 360 degrees or where pulling tension achieved would exceed the maximum allowable for the cable to be installed. Note that these boxes are not indicated on the Drawings.

D. Install raised covers (plaster rings) on all outlet boxes in stud walls or in furred, suspended or exposed concrete ceilings. Covers shall be of a depth to suit the wall or ceiling finish.

E. Leave no unused openings in any box. Install close-up plugs as required to seal openings.

F. Provide cast metal boxes with gasketed cast metal cover plates where boxes are exposed in damp or wet locations.

G. Provide precast concrete boxes in exterior planting areas, walkways, roads etc.

H. Provide an access panel in permanent ceiling or wall where boxes are installed and will be inaccessible.

I. For boxes mounted in exterior walls, make sure that there is insulation behind outlet boxes to prevent condensation in boxes.

J. For outlets mounted above counters, benches or backsplashes, coordinate location and mounting heights with built-in units. Adjust mounting height to agree with required location for equipment served.

K. Use conduit outlet bodies to facilitate pulling of conductors or to make changes in conduit direction only. Do not make splices in conduit outlet bodies.

L. Add additional sheet rock as necessary to maintain original fire rating of walls where boxes are installed.

M. Install galvanized steel coverplates on boxes in unfinished areas, above accessible ceilings and on surface mounted outlets.

3.4 SUPPORTS

A. Provide boxes installed in metal stud walls with brackets designed for attaching directly to the studs or mount boxes on specified box supports.

B. Mount boxes, installed in suspended ceilings of gypsum board or lath and plaster construction, to 16 gauge metal channel bars attached to main ceiling runners.

C. Support boxes independently of conduit system.

D. Support boxes, installed in suspended ceilings supporting acoustical tiles or panels, directly from the structure above wherever pendant mounted lighting fixtures are to be installed from the box.

E. Support boxes, mounted above suspended acoustical tile ceilings, directly from the structure above.

END OF SECTION 26 05 33

UNDERGROUND DUCTS AND STRUCTURES

PART 1 - GENERAL

1.01 SUMMARY

A. Work included: Labor, materials and equipment necessary to complete the installation required for the item specified under this Division, including but not limited to:

1. Underground conduits and ducts.
2. Handhole and pullboxes.
3. Other underground utility structures.
4. Excavation, trenching and backfill.

B. Related Work: Consult all other Sections, determine the extent and character of related Work and properly coordinate Work specified herein with that specified elsewhere to produce a complete installation.

1.02 REFERENCES

A. Comply with the latest edition of the following applicable Specifications and standards except as otherwise indicated or specified:

1. Federal Specifications (FS):

FS RR-F-621F;	Frames, Covers, Gratings, Steps, Sump and Catch Basin, Manhole.
FS SS-S-210A;	Sealing Compound, Preformed Plastic for Expansion Joints and Pipe Joints.
FS WW-C-581;	Specification for Galvanized Rigid Conduit.
FS W-C-1094A;	Conduit and Conduit Fittings Plastic, Rigid.

2. American Concrete Institute (ACI):

ACI 318;	Building Code Requirements for Structural Concrete

3. American National Standards Institute, Inc. (ANSI):

ANSI C80.1;	Rigid Steel Conduit, Zinc-Coated.

4. American Society for Testing And Materials (ASTM):

ASTM C31:	Standard Practice for Making and Curing Concrete Test Specimens in the Field
ASTM C39;	Test Method for Compressive Strength of Cylindrical Concrete Specimens
ASTM C172;	Standard Practice for Sampling Freshly Mixed Concrete
ASTM C192;	Practice for Making and Curing Concrete Test Specimens in the Laboratory
ASTM C231;	Test Method for Air Content of Freshly Mixed Concrete by the Pressure Method
ASTM C478;	Specification for Precast Reinforced Concrete Manhole Sections
ASTM C805;	Test Method for Rebound Number of Hardened Concrete
ASTM C857;	Practice for Minimum Structural Design Loading for Underground Precast Concrete Utility Structures

ASTM C858;	Specification for Underground Precast Concrete Utility Structures
ASTM C877;	Specification for External Sealing Bands for Concrete Pipe, Manholes and Precast Box Sections
ASTM C891;	Practice for Installation of Underground Precast Concrete Utility Structures
ASTM C990;	Specification for Joints for Concrete Pipe, Manholes, and Precast Box Sections Using Preformed Flexible Joint Sealants
ASTM C1037;	Practice for Inspection of Underground Precast Concrete Utility Structures
ASTM C1064;	Standard Test Method for Temperature of Freshly Mixed Concrete
ASTM C1231;	Standard Practice for Use of Unbonded Caps in Determination of Compressive Strength of Hardened Concrete Cylinder
ASTM C1611;	Standard Test Method for Slump Flow of Self-Consolidating Concrete

5. Underwriters Laboratories, Inc. (UL):

UL 6;	Rigid Metal Conduit.
UL 651;	Schedule 40 and 80 Rigid PVC Conduit.
UL 651A;	Type EB and A Rigid PVC Conduit and HDPE Conduit.

6. National Electrical Manufacturer Association (NEMA):

NEMA RN1;	PVC Externally-coated Galvanized Rigid Steel Conduit.
NEMA TC 2;	Electrical Plastic Tubing and Conduit.
NEMA TC 3;	PVC Fittings for use with Rigid PVC Conduit.
NEMA TC6;	PVC Plastic Utilities Duct (EB and BD Type).

1.03 DEFINITIONS

A. Duct: Electrical conduit and other raceway, either metallic or nonmetallic, used underground embedded in earth or concrete.

B. Duct bank: Two or more conduits or other raceway installed underground in same trench or concrete envelope.

C. Handhole: An underground junction box in a duct or duct bank.

1.04 SUBMITTALS

A. Submit in accordance with the requirements of Section 260010: Basic Electrical Requirements, the following items:

1. Data/catalog cuts for each product and component specified herein, listing all physical and electrical characteristics and ratings indicating compliance with all listed standards.

2. Clearly mark on each data sheet the specific item(s) being submitted and the proposed application.

3. Shop Drawings showing details and design calculations for precast handholes, including reinforced steel. Submit Manufacturer's installation instructions.

4. Complete bill of material listing all components.

5. Coordination Drawings showing duct profiles and coordination with other utilities and underground structures. Include plans and section drawn to accurate scale.

1.05 QUALITY ASSURANCE

A. All materials, equipment and parts comprising the units specified herein shall be new, unused and currently under production.

B. Only products and applications listed in this Section may be used on the Project unless otherwise submitted and approved.

C. Precast concrete vaults shall be designed and fabricated by an experienced and acceptable precast concrete manufacturer. The manufacturer shall have been regularly and continuously engaged in the manufacture of precast concrete units similar to that indicated in the project specifications or drawings for at least 10 years.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

A. Products furnished by the following Manufacturers shall be acceptable if in compliance with all features specified herein and indicated on the Drawings.

1. Underground precast concrete utility structures:

a. Oldcastle Enclosure Solutions.

b. Jensen Precast.

2. Conduits, ducts and fittings:

a. Prinne Conduit.

b. JM Eagle.

c. Cantex.

d. Occidental Coating Company (OCAL).

B. Substitution: Under provisions of Section 260010: Basic Electrical Requirements.

2.02 CONDUIT AND DUCT

A. PVC insulated galvanized rigid steel conduit (PVC GRS):

1. Conduit: Full weight, threaded, hot-dip galvanized steel, conforming to ANSI C80.1 and NEMA RN-1 with nominal 20 or 40 mil thermoplastic vinyl coating, heat fused and bonded to the exterior of the conduit.

2. Fittings: Conduit couplings and connectors shall be steel or malleable iron as required with factory PVC coating and insulated jacket equivalent to that of the coated material.

B. Rigid non-metallic conduit (PVC):

1. Conduit:

a. Rigid polyvinylchloride, schedule 40 or 80 conforming to NEMA TC2 and UL 651. UL listed for exposed and direct-burial applications and for 90 degrees C conductor insulation. Conduit shall include an integral bell fitting at one end.

b. Rigid polyvinylchloride, type EB or DB conforming to NEMA TC 6 and UL 651. UL listed for concrete encased burial and direct burial applications and for 90 degree C conductor insulation. Conduit shall include an integral bell fitting at one end.

2. Fittings: Couplings, adaptors, transition fittings, bell ends, etc., shall be molded PVC, slip on and solvent weld type. Schedule 40 or 80 conforming to NEMA TC 3 and type EB or DB conforming to NEMA TC 9.

3. Factory elbows: Maximum radius bends shall be 24 inches.

C. Duct supports: Rigid PVC spacers selected to provide minimum duct spacing and concrete cover depths, while supporting ducts during concrete pour.

D. Duct sealing compound: Non-hardening, safe for human skin contact, not deleterious to cable insulation, workable at temperatures as low as 35 degree F, withstands temperature of 300 degrees F without slump and adheres to clean surfaces of plastic ducts, metallic conduits, conduit coatings, concrete, cable sheaths and jackets, etc.

2.03 PULLBOXES AND HANDHOLES

A. Construction: High densities precast reinforced concrete box, extension, base and cover. Furnish box with end and side knockouts and non-settling shoulders. Cover shall have hold-down bolts and two lifting eyes.

B. Size: As indicated on the Drawings.

C. Cover markings: Covers shall read "SIGNAL" and "FIRE ALARM" as appropriate.

D. Rated covers: Use cast iron lid with H20 traffic rating when subject to vehicular traffic.

2.04 CONSTRUCTION MATERIALS

A. Mortar: Conform to ASTM C270, Type M, except for quantities less than 2.0 Cu. Ft., where packaged mix complying with ASTM C387, Type M may be used.

B. Concrete: Conform to Division 03: Cast-in-place concrete for concrete and reinforcing.

1. Strength: 3,000-PSI minimum 28-day compressive strength.

2. Aggregate for duct encasement: 3/8-inch maximum size.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Contractor shall thoroughly examine Project site conditions for acceptance of duct and manhole installation to verify conformance with Manufacturer and Specification tolerances. Do not commence with installation until all conditions are made satisfactory.

3.02 EARTHWORK

A. Excavation and backfill: Conform to Division 31, Earthwork.

B. Excavation for underground electrical structures: Conform to elevations and dimensions indicated within a tolerance of plus or minus 0.10 foot; plus a sufficient distance to permit placing and removal of concrete formwork, installation or services, other construction and for inspection.

1. Excavate, by hand, areas within drip-line of large trees. Protect the root system for damage and dry-out. Maintain moist conditions for root system and over exposed roots with burlap. Paint root cuts of 1 inch in diameter and larger with emulsified asphalt tree paint.

2. Take care not to disturb bottom of excavation. Excavate by hand to final grade just before concrete reinforcement is placed.

C. Trenching: Excavate trenches for electrical installation as follows:

1. Excavate trenches to the uniform width, sufficiently wide to provide ample working room and a minimum of 6 to 9 inches clearances on both sides of raceways and equipment.
2. Excavate trenches to depth indicated or required.
3. Limit the length of open trench to that in which installations can be made and the trench backfilled within the same day.
4. Where rock is encountered, carry excavation below required elevation and backfill with a layer of crushed stone or gravel prior to installation of raceways and equipment. Provide a minimum of 6 inches of stone or gravel cushion between rock bearing surface and electrical installations.

D. Backfilling and filling: Place soil materials in layers to required sub-grade elevations for each area classification, using materials and methods specified in Division 31: Earthwork.

1. Under building slabs, use drainage fill materials.

3.03 CONDUIT AND DUCT INSTALLATION

A. Install duct lines in accordance with Manufacturer's written instructions, as indicated on the Drawings and as specified herein.

B. Application:

1. Direct burial ducts: Schedule 40, minimum 24-inches below finished grade.
2. Below roads and paved surfaces:
   a. Schedule 80, minimum 36-inches below finished grade.
   b. Concrete encased type EBDB, minimum 30 inches below finished grade.
3. Penetrations of building and equipment slabs: PVC insulated rigid steelSchedule 80.

C. Slope duct to drain towards handholes and away from building and equipment entrances. Pitch not less than 4-inches per 100-feet. Curved sections in duct lines shall consist of long sweep bends with a minimum radius of 25-feet in the horizontal and vertical directions. The use of manufactured bends is limited to building entrances and equipment stub-ups.

D. Underground conduit stub-ups to inside of building and exterior equipment shall be PVC insulated rigid steel.

E. Make joints in ducts and fittings watertight according to Manufacturer's instructions. Stagger couplings so those of adjacent ducts do not lie in the same plane.

F. Terminate duct lines at handholes with end bells spaced 10-inches on center for 5-inch ducts and varied proportionately for other duct sizes. Change from regular spacing to end-bell spacing 10-feet from the end bell without reducing duct line slope and without forming trap in the line. Grout end bells into pull box walls from both sides to provide watertight entrance.

G. Separation between direct buried duct lines shall be 3-inches minimum for like systems and 12 inches minimum between power and signal ducts.

H. For direct burial installations install continuous warning strip of heavy gage plastic imprinted "electrical ducts below", approximately 12-inch wide at 12-inches above ducts.

I. Mandrel all ducts upon completion of installation and prior to pulling cables.

3.04 HANDHOLE AND PULL BOX INSTALLATION

A. Install handholes in accordance with Manufacturer's written instructions, as indicated on Drawings and as specified herein.

B. Handholes shall be installed flush with finished grade or surface. Install on a level 6-inch bed of well-tamped gravel or crushed stone.

C. Orientation of handholes shall be coordinated in advance with Landscape Architect and arranged to minimize connecting duct bends and deflections.

3.05 FIELD QUALITY CONTROL

A. Testing: Demonstrate capability and compliance with requirements upon completion of installation of underground duct and structures.

1. Duct integrity: Rod ducts with a mandrel 1/4-inch smaller in diameter than internal diameter of ducts. Where rodding indicates obstructions in ducts, remove the obstructions and retest.

3.06 CLEANING

A. Pull brush through full length of ducts. Use round bristle brush with a diameter 1/2-inch greater than internal diameter of duct.

B. Clean internal surfaces of handholes. Remove foreign material.

END OF SECTION

ELECTRICAL IDENTIFICATION

PART 1 - GENERAL

1.1 SUMMARY

A. Work included: Labor, materials and equipment necessary to complete the installation required for the item specified under this Division, including but not limited to:

1. Wire and cable identification.
2. Buried electrical line warnings.
3. Junction box identification.
4. Inscribed device coverplates.

B. Related Work: Consult all other Sections, determine the extent and character of related Work and properly coordinate Work specified herein with that specified elsewhere to produce a complete installation.

1. Division 09: Painting.

1.2 SUBMITTALS

A. Submit in accordance with the requirements of Section 260010: Basic Electrical Requirements, the following items:

1. Data/catalog cuts for each product and component specified herein.
2. Schedules for nameplates to be furnished.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Products furnished by the following Manufacturers shall be acceptable if in compliance with all features specified herein and indicated on the Drawings.

1. Conduit and wire markers:
   a. Thomas & Betts Corp.
   b. Brady.
   c. Griffolyn.
2. Inscription Tape:
   a. Kroy.
   b. Merlin.

B. Substitutions: Under provisions of Section 260010: Basic Electrical Requirements.

2.2 NAMEPLATES

A. Type NP: Engraved, plastic laminated labels, Signs and Instruction Plates. Engrave stock melamine plastic laminate 1/16-inch minimum thickness for signs up to 20 square inches or 8 inches in length; 1/8 inch thick for larger sizes. Engraved nameplates shall have white letters and be punched for mechanical fasteners.

B. Color and letter height as specified in Part 3: Execution.

2.3 LEGEND PLATES

A. Type LP: Die-stamped metal legend plate with mounting hole and positioning key for panel mounted operator devices, i.e. motor control pilot devices, hand-off-auto switches, reset buttons, etc.

B. Stamped characters to be paint filled.

2.4 BRASS TAGS

A. Type BT: Metal tags with die-stamped legend, punched for fastener.

B. Dimensions: 2" diameter 19 gauge.

2.5 PANELBOARD DIRECTORIES (400 AMP OR LESS)

A. Directories: A 6" x 8" minimum size circuit directory frame and card with clear plastic covering shall be provided inside the inner panel door.

B. Circuit numbering: Starting at the top, odd numbered circuits in sequence down the left hand side and even numbered circuits down the right hand side. Multi-section panelboards shall have continuous consecutive circuit numbers, i.e. Section 1 (circuit numbers 1-42), Section 2 (circuit numbers 43-84), Section 3 (circuit numbers 85-126).

2.6 WIRE AND TERMINAL MARKERS

A. Provide self-adhering, pre-printed, machine printable or write-on, self-laminating vinyl wrap around strips. Blank markers shall be inscribed using the printer or pen recommended by Manufacturer for this purpose.

2.7 CONDUCTOR PHASE MARKERS

A. Colored vinyl plastic electrical tape, 3/4" wide, for identification of phase conductors. Scotch 35 Brand Tape or equal.

2.8 UNDERGROUND CONDUIT MARKER

A. 6-inch wide, yellow polyethylene tape, with continuous black imprinting reading "Caution - Buried Electric Line Below".

2.9 INSCRIBED DEVICE COVERPLATES

A. Coverplate material shall be as specified in Section 262726: Wiring Devices.

B. Methods of inscription: (Unless otherwise noted)

1. Type-on-tape:
   a. Imprinted or thermal transfer characters onto tape lettering system.
   b. Tape trimmer.
   c. Matte finish spray-on clear coating.
2. Engraving:
   a. 1/8" high letters.
   b. Paint filled letters finished in black.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Contractor shall thoroughly examine Project site conditions for acceptance of identification device installation to verify conformance with Manufacturer and Specification tolerances. Do not commence with installation until all conditions are made satisfactory.

3.2 NAMEPLATES

A. Installation:

1. Degrease and clean surfaces to receive nameplates.
2. Install nameplates parallel to equipment lines.
3. Secure nameplates to equipment fronts using machine screws.

B. Provide type 'NP' color coded nameplates that present, as applicable, the following information:

1. Equipment or device designation.
2. Amperage, KVA or horsepower rating, where applicable.
3. Voltage or signal system name.
4. Source of power or control.

C. Nameplates for power system distribution equipment and devices are to be black.

D. Nameplates for signal systems equipment and devices are to be black except as follows:

1. Fire alarm and life safety - Red.

E. Minimum letter height shall be as follows:

1. For panelboards, switchboards, battery panels, etc.: ½ inch letters to identify equipment designation. Use ¾ inch letters to identify voltage, phase, wires, etc.
2. For individual circuit breakers, switches and motor starters in panelboards, switchboards use 3/8-inch letters to identify equipment designation. Use 1/8-inch letters to identify all other.
3. For individual mounted circuit breakers, disconnect switches, enclosed switches and motor starters use 3/8-inch letters to identify equipment designation. Use 1/8" letters to identify all other.
4. For transformers use 1/2 inch letters to identify equipment designation. Use ¼ inch letters to identify primary and secondary voltages, etc.
5. For equipment cabinets, terminal cabinets, control panels and other cabinet enclosed apparatus use 3/8-inch letters to identify equipment designation.

3.3 LEGEND PLATES

A. Provide panel-mounted operators devices such as pilot lights, reset buttons, "HAND-OFF-AUTO" switches, etc.

3.4 BRASS TAGS

A. Provide type BT tags for individual ground conductors to exposed ground bus indicating connection i.e. "UFER", "Cold water bond", etc.

B. Provide tags for all feeder cables in underground vaults and pull boxes.

C. Provide tags for empty conduits in underground vault, pull boxes and stubs.

3.5 PANELBOARD DIRECTORIES (400 AMP OR LESS)

A. Provide typewritten directories arranged in numerical order denoting loads served by room number or area for each circuit.

B. Verify room numbers or area designation with Project Manager.

C. Mount panelboard directories in a minimum 6" x 8" metal frame under clear plastic cover inside every panelboard.

3.6 WIRE AND CABLE IDENTIFICATION

A. Provide wire markers on each conductor in panelboards, pull boxes, outlet and junction boxes and at load connection. Identify with branch circuit or feeder number for power and lighting circuits and with control wire number as indicated on equipment Manufacturer's Shop Drawings for control wiring.

B. Provide colored phase markers for conductors as noted in Section 260519: Building Wire and Cable. Apply colored, pressure sensitive plastic tape in half-lapped turns for a distance of 3 inches from terminal points and in boxes where splices or taps are made. Apply the last two laps of tape with no tension to prevent possible unwinding. Do not cover cable identification markings by taping.

3.7 UNDERGROUND CONDUIT MARKERS

A. During trench backfilling, for exterior underground power, signal and communications lines, install continuous underground plastic line marker, located directly above line at 6 to 8 inches below finished grade. Where multiple lines installed in a common trench or concrete envelope, do not exceed an overall width of 16 inches; install a single line marker.

3.8 JUNCTION BOX IDENTIFICATION

A. The cover of junction, pull and connection boxes for both power and signal systems, located above suspended ceilings and below ceilings in non-public areas, shall be clearly marked with a permanent ink felt pen. Identify the circuit(s) (panel designation and circuit numbers) contained in each box, unless otherwise noted or specified.

3.9 INSCRIBED DEVICE COVERPLATE

A. General:

1. Lettering type: Helvetica, 12 point or 1/8" high.
2. Color of characters shall be black.
3. Locate the top of the inscription ½" below the top edge of the coverplate.
4. Inscription shall be centered and square with coverplate.

B. Application:

1. Provide inscribed coverplates for devices as outlined below:
   a. Receptacles.
   b. Outlets in surface raceways.

c. Multi-ganged (four or more) switch arrangement.

d. Special purpose switches, i.e. projection screens, shades, exhaust fans, etc.

e. Telecommunication outlets.

2. Type-on-tape inscriptions shall be provided for the following devices:

a. Receptacles.

b. Outlets in surface raceways.

c. Telecommunication outlets.

d. Type-on-tape installation:

1) Tape shall be trimmed to the height of the letters.

2) Trim tape length to 1/4 inch back from each edge of coverplate.

3) Contractor hands shall be clean or covered with surgical type glove prior to application of tape. Tape installations with visible fingerprints or smudges will not be acceptable.

3. Engraved inscriptions shall be provided for the following devices:

a. Multi-ganged switches.

b. Special purpose switches.

END OF SECTION 26 05 53

PART 1 - GENERAL

1.1 SUMMARY

A. Work included: Labor, materials and equipment necessary to complete the installation required for the item specified under this Division, including but not limited to:

1. Fire alarm control panel (FACP).
2. Initiating devices.
3. Notification devices.
4. Fireman's remote annunciator panel (FRAP).
5. Record Drawings.
6. Pretesting and final testing.

B. Work furnish and installed under another Section, but connected under this Section:

1. Fire sprinkler alarm system flow switches, valve monitors and post indicating valves.
2. Door hold-open/closure devices with/without integral smoke detectors.
3. Fire barrier roll-down doors and shutters.
4. Fire/smoke dampers.

C. Work furnished and connected to alarm system under this Section, but installed and connected to HVAC system under another Section:

1. Duct mounted smoke detectors at supply air equipment 2000 cfm and larger.

D. Work furnished and installed under another Section: HVAC shutdown wiring via dry contacts in remote mounted programmable relays.

E. Related Work: Consult all other Sections, determine the extent and character of related Work and properly coordinate Work specified herein with that specified elsewhere to produce a complete installation.

1. Division 26: Electrical Systems

1.2 REFERENCES

A. Comply with the latest edition of the following applicable Specifications and standards except as otherwise indicated or specified:

1. American National Standards Institute, Inc. (ANSI):

   ANSI C62.41: Guide for Surge Voltage in Low-Voltage AC Power Circuits.

   ANSI / ASME A17.1 Safety Code for Elevators and Escalators (1996 edition).

2. National Fire Protection Association (NFPA):

   NFPA 72; National Fire Alarm Code.

3. Underwriters Laboratories, Inc. (UL):

UL 38;	Manual Signaling Boxes for Fire Alarm Systems.
UL 268;	Smoke Detectors for Fire Alarm Signaling Systems.
UL 268A;	Smoke Detectors for Duct Application.
UL 464;	Audible Signal Appliances.
UL 497B;	Protectors for Data Communications and Fire Alarm Circuits.
UL 521;	Heat Detectors for Fire Protective Signaling Systems.
UL 864;	Control Units and Accessories for Fire Alarm Systems.
UL 1424;	Cables for Power-Limited Fire-Alarm Circuits.
UL 1481;	Power Supplies for Fire-Protective Signaling Systems.
UL 1638	Visual Signaling Appliances Standard.
UL 1971	Signal Devices for Hearing Impaired.

4. Factory Mutual System (FM):

FM P7825	Approval Guide.

1.3 DEFINITIONS

A. Addressable device: A fire alarm system component with discrete identification that can have its status individually identified or that is used to individually control other functions.

B. Alarm signal: A signal indicating an emergency that requires immediate action, such as a signal indicative of fire.

C. Annunciator: A unit containing one or more indicator lamps, alphanumeric displays or other equivalent means in which each indication provides status information about a circuit, condition or location.

D. Class B wiring: Circuit that is monitored for integrity such that a single break, a single wire-to-wire short or a single loss of carrier condition will be indicated by a trouble signal on the FACP no matter where the break, short or loss of carrier condition occurs, but which would prohibit devices beyond the fault, short or carrier loss from remaining operational. This would be Style 4 wiring for signaling line circuits, Class B for initiating device circuits and Style Y for notification device circuits.

E. Initiating device: A system component that originates transmission of a change-of-state condition, such as in a smoke detector, manual fire alarm box or supervisory switch.

F. Initiating device circuit: A circuit to which automatic or manual initiating devices are connected where the signal received does not identify the individual device operated.

G. Multiplexing: A signaling method characterized by simultaneous or sequential transmission or both and reception of multiple signals on a signaling line circuit, a transmission channel or a communication channel, including means for positively identifying each signal.

H. Notification appliances: A fire alarm system component such as a bell, horn, speaker, light or text display that provides audible, tactile or visible outputs or any combination thereof.

I. Notification appliance circuit: A circuit or path directly connected to a notification appliance(s).

J. Signaling line circuit: A circuit or path between any combination of circuit interfaces, control units or transmitters over which multiple system input signals or output signals or both, are carried.

K. Supervisory signal: A signal indicating the need for action in connection with the supervision of guard tours, the fire suppression systems or equipment or the maintenance features of related systems.

L. Trouble signal: A signal initiated by the fire alarm system or device indicative of a fault in a monitoring circuit or component.

1.4 SYSTEM DESCRIPTION

A. The fire alarm system shall be zone non-coded addressable. It shall be 24 VDC closed circuit, electronically supervised, common signaling, device indicating, automatic alarm type; operating from manual pull stations, smoke detectors, heat detectors and sprinkler system switches. The system shall include all wiring, raceways, pull boxes, terminal cabinets, outlet and mounting boxes, control equipment, alarm and supervisory signal initiating devices, alarm notification devices and all other accessories required for a complete operating system.

B. The fire alarm control panel shall have emergency voice evacuation.

C. Provide all demolition of existing initiating devices, notification devices, power supplies, control panels and associated wire.

D. Provide blank steel cover plates over all existing device outlets that are not used for this project.

E. Provide system with the following circuit functions:

1. Class B for initiating device circuits.
2. Class B, Style 4 for signaling line circuits.
3. Class B for notification appliance circuits.

F. For system description of output controls and monitoring, based on input signals, refer to Sequence of Operation Matrix on the Drawings.

G. In addition to the above sequence of operation, the FACP shall perform the following functions:

1. Identify every addressable device by location, priority and device type.
2. Read and display at FACP the sensitivity of addressable smoke and heat detection devices.
3. Remain 100% operational and capable of responding to an alarm condition while in the routine maintenance mode.
4. Be capable of supporting non-addressable as well as addressable devices.
5. Allow individual programmable control of each connected remote or panel-mounted relay.
6. Provide the user with the field programmability to add or change addressable device types and custom messages on-site.
7. Display up to 99 alarms and/or up to 99 trouble indications, one at a time, as a list on the system printer/terminal.
8. Change the status of configured circuits (arming or disarming) and change status of relays.

9. Generate an addressable detector sensitivity report providing a chamber voltage listing (device testing) for each detector.

1.5 SUBMITTALS

A. Submit in accordance with the requirements of Section 260010: Basic Electrical Requirements, the following items:

1. Data/catalog cuts for each product and component specified herein, listing all physical and electrical characteristics and ratings indicating compliance with all listed standards.
2. Describe system operation, equipment and dimensions and indicate features of each component.
3. Clearly mark on each data sheet the specific item(s) being submitted and the proposed application.
4. Shop Drawings shall include:
   a. Basic:
      1) Name of Owner and occupant.
      2) Address of the building.
      3) Contractor's name, address, telephone number and license number.
   b. Symbols legend.
   c. Equipment list showing quantity, make, model and CSFM listing number for each device.
   d. Wire and cable schedule.
   e. Scope of Work with overall system description.
   f. Sequence of operation matrix with system inputs signals and output functions.
   g. Code summary and Building type.
   h. Assignment of Class and/or Style designation for device circuits.
   i. Plot plan and floor plans of building with partitions, walls and room identification, showing locations of each device and control/monitoring equipment, conduit routing and size and cable/conductor type and quantity. Field devices shall all have a discrete identification designation located adjacent to each device on the Drawings.
   j. Point-to-point wiring diagram in block or riser format showing all fire alarm components, device designations, conduit, wire types and sizes.
   k. Provide 1/4" scale plan of equipment layout in main fire control room.
   l. Include elevations of control panel and remote annunciator panel(s).
   m. Elevation indicating mounting heights for manual pull stations, audible and visual devices and combination audible/visual devices.
   n. Rated penetration details.
   o. Typical wiring diagram details of field devices.
   p. Detector mounting details at HVAC ducts.

q. Battery standby calculations showing total standby power needed to meet the specified system requirements.

r. Voltage drop calculations for system wiring circuits.

5. Furnish structural calculations for equipment anchorage as described in Section 260010: Basic Electrical Requirements.

6. Submit Manufacturer's installation instructions.

7. Complete bill of materials listing all components.

8. Provide California State Fire Marshal 'CSFM' listing sheet for each device.

9. Warranty.

B. Contractor shall submit approved Shop Drawings for review by Engineer prior to the purchase and installation of equipment. Drawings shall be wet stamped and signed by a registered professional Engineer.

C. Record Drawings.

1. Furnish Record Drawings as described in Section 260010: Basic Electrical Requirements, utilizing Shop-Drawing submissions with updated field conditions. These Drawings shall include but not be limited to the following:

a. Plot plans and building floor plans, showing point-to-point wiring location of and conduit routing to all devices.

b. Block Diagram/Riser Diagram showing the FACP, system components and all conduit and wire type/sizes between each.

2. Drawings shall be incorporated into the Record Drawing submission.

3. Final acceptance will not be made until the Engineer has approved the Record Drawings.

1.6 OPERATION AND MAINTENANCE MANUAL.

A. Supply operation and maintenance manuals in accordance with the requirements of Section 260010: Basic Electrical Requirements, to include the following:

1. A detailed explanation of the operation of the system.

2. Instructions for routine maintenance.

3. Pictorial parts list and part numbers.

4. Schematic Drawings of wiring system, including all initiation and annunciation devices, control panel, annunciators, etc.

5. Telephone numbers for the authorized parts and service distributors.

6. Final testing reports.

1.7 QUALITY ASSURANCE

A. All materials, equipment and parts comprising the units specified herein shall be new, unused and currently under production.

B. Only products and applications listed in this Section may be used on the Project unless otherwise submitted.

1.8 PRODUCT DELIVERY, STORAGE AND HANDLING

A. Delivery: Fire alarm system components shall not be delivered to the Project site until protected storage space is available. Storage outdoors covered by rainproof material is not acceptable. Equipment damaged during shipment shall be replaced and returned to Manufacturer at no cost to Owner.

B. Storage: Store in a clean, dry, ventilated space free from temperature extremes. Maintain factory wrapping or provide a heavy canvas/plastic cover to protect units from dirt, water, construction debris and traffic. Provide heat where required to prevent condensation.

C. Handling: Handle in accordance with Manufacturer's written instructions. Be careful to prevent internal component damage, breakage, denting and scoring. Damaged units shall not be installed. Replace damaged units and return equipment to Manufacturer.

1.9 WARRANTY

A. Units and components offered under this Section shall be covered by a 1 year parts and labor warranty for malfunctions resulting from defects in materials and workmanship. Warranty shall begin upon acceptance by the Owner.

B. The warranty package shall include, but not be limited to the following:

1. Emergency maintenance service.
2. Service by factory trained service representative of system Manufacturer.
3. Replacement of any defective components.

1.10 SYSTEM START-UP

A. Upon completion of installation, a factory trained dealer service representative shall perform initial start-up of the fire alarm system. Sufficient time shall be allowed to properly check the system out and perform required minor adjustments before the Engineer's witnessed test shall begin.

1.11 MAINTENANCE

A. Extra Material:

1. Provide the following fire alarm system components as extra materials, matching the products installed and packaged for storing.
    a. Manual pull station: Furnish a quantity equal to 10 percent of the number installed with a minimum of 2 devices.
    b. Detectors: Furnish a quantity equal to 10 percent, for each type of the number installed with a minimum of 2 devices.
    c. Strobes Speakers/Strobes: Furnish a quantity equal to 10 percent of the number installed with a minimum of 2 devices.

B. Maintenance Service:

1. For a period of one year following acceptance the equipment Supplier shall have a person(s) familiar with this Project attend four quarterly meetings with the Owner's Representative to review system performance, operation and any system problems. That person shall provide a written summary of the items discussed in each meeting and a schedule of when the system problems will be corrected. The report is due within 7 working days after each meeting.
2. During the eleventh month following system acceptance, on a weekend day, the equipment Supplier shall perform a complete test of the system, in a manner similar to the acceptance test. A written report shall be submitted to the Owner certifying that each initiating device has been tested. A copy of these test forms shall be submitted to the Engineer for review and acceptance.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Products furnished by the following Manufacturers shall be acceptable if in compliance with all features specified herein and indicated on the Drawings.

1. Silent Knight

B. Substitutions: no substitutions.

2.2 FIRE ALARM CONTROL PANEL

A. Fire Alarm Control Panel with Emergency Voice System

1. The fire alarm control panel (FACP) shall be the Silent Knight 5820XL EVS analog addressable control panel. The audio amplifiers shall be the Silent Knight EVS-50W or EVS-125W voice evacuation units. The FACP must have a 6 amp power supply and be capable of expansion to a maximum of 54 total amps via bus connected expander modules that supervise low battery, loss off AC and loss of communication.
2. The system must contain at least one Silent Knight EVS-50W watt amplifier and shall be expandable up to 500 watts utilizing up to four additional amplifiers. Each amplifier shall be capable of adding a 4 zone splitter (Silent Knight EVS-CE4) to distribute the audio information to different locations in the installation. The system shall have the capability of controlling up to 40 notification zones. The amplifiers must contain the capability of being remotely located through a four-wire SBUS communications circuit and a two-wire VBUS circuit. The system shall have the capability of adding up to four EVS-RCU remote command units.
3. The voice evacuation system must have the capability of downloading 15 to 60 second messages and utilize DSP technology for higher audio intelligibility.
4. The voice evacuation system shall be capable of operating at 25vrms or 70.7vrms for the EVS-50 must be field selectable at the amplifier level. Systems that require additional modules for voltage conversion shall not be accepted.
5. The main panel will contain one SLC circuit with the option of utilizing up to three 5815XL expander modules. Each SLC circuit shall support up to 99 detectors and 99 modules. The communication protocol on the SLC loop must be digital.

6. The FACP must support a minimum of six programmable Flexput circuits. The panel must have a built in 80 character LCD annunciator with the capability of having an additional eight supervised remote annunciators connected in the field.
7. The FACP must have a built-in UL approved digital communicator. The communicator must allow local and remote up/downloading of system operating options, event history, and detector sensitivity data.
8. The FACP must automatically test the smoke detectors in compliance with NFPA standards to ensure that they are within listed sensitivity parameters and be listed with Underwriters Laboratories for this purpose.
9. The FACP must compensate for the accumulation of contaminants that affect detector sensitivity. The FACP must have day/night sensitivity adjustments, maintenance alert feature (differentiated from trouble condition), detector sensitivity selection, auto-programming mode (Jumpstart) and the ability to upgrade the core operating software on site or over the telephone.
10. The FACP must have maintenance alert feature (differentiated from trouble condition) and a calibration trouble condition.
11. The FACP shall have a Jumpstart feature that can automatically enroll all properly connected accessories into a functional system within 60 seconds of powering up the panel. Panels that do not have these capabilities will not be accepted.
12. The main communication bus (SBUS RS485) shall be capable of class A or class B configuration with a total bus length of 6,000 feet.

B. System Wiring

1. The Signaling Line Circuit (SLC) and data communication bus (SBUS) shall be wired with standard NEC 760 compliant wiring. No twisted, shielded or mid-capacitance wiring is required for standard installations. All FACP screw terminals shall be capable of accepting 14-18 AWG wire. All system wiring shall be in accordance with the requirements of NFPA 70, the National Electrical Code (NEC) and also comply with article 760 of the NEC.

C. Signaling Line Circuits

1. Each SLC shall be capable of a wiring distance of 10,000 feet from the SLC driver module (5815XL) and be capable of supporting 99 detectors and 99 addressable module devices. The communication protocol to SLC devices must be digital. Any SLC loop device which goes into alarm must interrupt the polling cycle for priority response from the FACP. The FACP must respond consistently to a device that goes into alarm on an SLC within 10 seconds. The auxiliary 5815XL SLC loop module must be capable of being located up to 6000 feet from the FACP on the SBUS, which is separate from the SLC circuit. The SLC shall be capable of functioning in a Class A or Class B configuration.

D. SLC Loop Devices

1. Devices supported must include addressable photoelectric and ionization smoke detectors, addressable carbon monoxide detectors, addressable heat detectors, addressable input modules, relay output modules or addressable notification modules. There is to be no limit to the number of any particular device type up to the maximum of 99 detectors and 99 addressable modules that can be connected to the SLC.

2. Addressable Detector Functions

   a. The products of combustion detectors must communicate analog values using a digital protocol to the control panel for the following functions:

      1) Automatic compliance with NFPA 72 standards for detector sensitivity testing

      2) Drift compensation to assure detector is operating correctly

      3) Maintenance alert when a detector nears the trouble condition

      4) Trouble alert when a detector is out of tolerance

      5) Alert control panel of analog values that indicate fire.

E. Programmable Flexputs

1. The FACP shall support six (6) programmable Flexput circuits that are capable of being programmed as supervised reverse polarity notification circuits or supervised auxiliary power circuits that can be programmed as continuous, resettable or door holder power. The circuits shall also be programmable as input circuits in Class A or Class B configurations to support dry contact or compatible two wire smoke detectors.

F. Addressable Notification Module

1. The contractor shall furnish and install where indicated on the plans, addressable notification modules, Silent Knight model SK-Control. The modules shall be U.L. listed compatible with Silent Knight's 5820XLEVS fire alarm control panel. The notification module must provide one Class A or Class B notification output with one auxiliary power input. The notification module must be suitable for mounting in a standard 4 inch square electrical box and must include a plastic cover plate. The notification module must provide an LED that is visible from the outside of the cover plate. The notification module must be fully programmable for such applications as required by the installation. The SK-Control shall reside on the SLC loop and can be placed up to 10,000 feet from the control or 5815XI. SLC loop module.

G. Annunciators

1. The main control must have a built in annunciator with an 80-character LCD display and feature LED's for General Alarm, Supervisory, System Trouble, System Silence and Power. When in the normal condition the LCD shall display time and date based on a 200 year clock which is capable of automatic daylight savings time adjustments. All controls and programming keys are silicone mechanical type with tactile and audible feedback. Keys have a travel of .040 inches. No membrane style buttons will be permissible. The annunciator must be able to silence and reset alarms through the use of a keypad entered code or by using a firefighter's key. The annunciators must have twenty levels of user codes that will allow the limitation of operating system programming to authorized individuals.

H. Remote Annunciators

1. The fire system shall be capable of supporting up to eight (8) remote LCD annunciators, Model 5860, and eight (8) LED remote annunciators, Model 5865. LCD remote annunciators shall have the same control and display layout so that they match identically the built-in annunciator. LED remote annunciators shall have individually mapped LED's and reset and silence inputs. The reset and silence inputs must use the same firefighter's key as

the LCD annunciators. Remote annunciators shall be capable of operating at a distance of 6000 feet from the main control panel on unshielded, non-twisted cable.

I. I/O Module

1. The fire system shall be able to support up to eight (8) I/O modules, Model 5880, which shall be used to drive remote LED graphic style displays and accommodate up to eight dry contact type switch inputs. The I/O modules shall each drive up to 40 LEDs without requiring external power connections. The I/O module inputs shall be supervised and be suitable for alarm and trouble circuits as well as reset and silence switches.

J. Serial/Parallel Interface

1. The fire system shall be capable of supporting up to two (2) serial / parallel interface modules, Model 5824, that are capable of driving standard computer style printers. The interface shall be programmable as to what information is sent to it and shall include the ability to print out detector status by point, event history by point and system programming.

K. Distributed Power Modules

1. The contractor shall supply (where required) a power module, Model 5895XL, compatible with the 5820XL-EVS fire alarm control panel. The power module must have 6 amps of output power, six (6) Flexput circuits rated at 3 amps each, and two form C relay circuits rated at 2.5 amps at 24 volts DC. The six Flexput circuits shall have the same functionality as the Flexput circuits on the main panel. The 5895XL shall be capable of being connected via the SBUS at a maximum distance of 6000 feet from the main control panel. The power module shall contain an additional SBUS that is completely compatible with all 5820XLEVS add-on modules including 5860 remote annunciators, 5824 serial/parallel modules and addressable devices. The power module will also act as a bus repeater so that additional SBUS devices can be connected at a maximum distance of 6000 feet from the power module.
2. The contractor shall supply (where required) a power module model 5496 compatible with the 5820XL-EVS fire alarm control panel. The power module must have 6 amps of output power with four (4) notification circuits rated at 3 amps each. The four notification circuits shall operate as reverse polarity notification outputs or auxiliary power outputs for constant, resettable, or door holder applications. The 5496 shall be capable of being connected via the SBUS at a maximum distance of 6000 feet from the main control panel.
3. The 5820XL-EVS shall be capable of supporting up to eight (8) of the distributed power modules in any combination.
4. The power module's SBUS bus shall be electrically isolated providing ground loop isolation and transient protection.

L. Digital Communicator

1. The digital communicator must be an integral part of the control panel and be capable of reporting all zones or points of alarm, supervisory, and trouble as well as all system status information such as loss of AC, low battery, ground fault, loss of supervision to any remote devices with individual and distinct messages to a central station or remote station. The communicator must also be capable of up/downloading of all system programming options, event history and sensitivity compliance information to a PC on site or at a remote location.

2. The communicator shall have an answering machine bypass feature that will allow the panel to respond to communication even on phone lines that have other communication equipment present. The communicator must be capable of reporting via SIA and Contact ID formats. The communicator shall have a delayed AC loss report function which will provide a programmable report delay plus a 10-25 min random component to help ease traffic to the central station during a power outage. No controls that use external modems for remote programming and diagnostics shall be accepted.

M. Dry Contacts

1. The FACP will have three form "C" dry contacts, one will be dedicated to trouble conditions, the other two will be programmable for alarm, trouble, sprinkler supervisory, notification, pre-alarm, waterflow, manual pull, zone aux. 1 or zone aux. 2. The trouble contact shall be normal in an electrically energized state so that any total power loss (AC and backup) will cause a trouble condition. In the event that the microprocessor on the FACP fails, the trouble contacts shall also indicate a trouble condition.

N. Ground Fault Detection

1. There is a ground fault detection circuit to detect positive and negative grounds on all field wiring. The ground fault detection shall operate the general trouble devices as specified but shall not cause an alarm to be sounded. Ground fault will not interfere with the normal operation, such as alarm, or other trouble conditions.

O. Overcurrent Protection

1. All low voltage circuits will be protected by microprocessor controlled power limiting or self restoring poly switches for the following: smoke detector power, main power supply, indicating appliance circuits, battery standby power and auxiliary output.

P. Test Functions

1. A Lamp Test mode shall be a standard feature of the fire alarm control panel and shall test all LED's and the LCD display on the main panel and remote annunciators.
2. A Walk Test mode shall be a standard feature of the fire alarm control panel. The walk test feature shall function so that each alarm input tested will operate the associated notification appliances for six seconds. The FACP will then automatically perform a reset operation and confirm normal device operation. The event memory shall contain the information on the point tested.
3. A Fire Drill mode shall allow the manual testing of the fire alarm system notification circuits. The Fire Drill shall be capable of being controlled at the main annunciator, remote annunciators and a remote contact input.
4. A bypass mode shall allow for any point or NAC circuit to be bypassed without effecting the operation of the total fire alarm system.

Q. Remote Input Capabilities

1. The control panel shall have provisions for supervised switch inputs for the purpose of alarm reset and alarm and trouble restore.

R. Notification Appliance Mapping Structure

1. All notification circuits and modules shall be programmable via a mapping structure that allows for a maximum of 250 output groups. Each of these groups shall have the ability to be triggered by any of the panel's 125 zones. A zone may trigger groups individually or may contain a global trigger for manual pull stations, fire drills and two different system alarms. Additionally, each zone will individually control the cadence pattern of each of the groups that it is "mapped" to so that sounders can indicate a variety of conditions. The zone shall be capable of issuing a different cadence pattern for each of the groups under its control. The mapping structure must also allow a group to be designated to "ignore cadence" for use with strobes and other continuous input devices. Zones shall have eight different output categories; Detector Alarm, Trouble, Supervisory, Pre-Alarm, Waterflow, Manual pull, Zone Auxiliary 1 and Zone Auxiliary 2. Each of the categories shall have the ability to control from 1 to 8 output groups with a cadence pattern. The patterns are; March Code, ANSI S-3.41, Single Stroke Bell Temporal, California Code, Zone 1 Coded, Zone 2 Coded, Zone 3 Coded, Zone 4 Coded, Zone 5 Coded, Zone 6 Coded, Zone 7 Coded, Zone 8 Coded, Custom Output Pattern 1, Custom Output Pattern 2, Custom Output Pattern 3, Custom Output Pattern 4, Constant, ANSI 4 Temporal, Amseco Synchronization, Faraday Synchronization, Gentex Synchronization, System Sensor Synchronization and Wheelock Synchronization. This mapping/cadence pattern shall be supported by all system power supplies and notification expander modules.

S. On-Board Programmer

1. The FACP shall have an on board programmer which will allow for all system functions and options to be programmed via the on board annunciator keypad. Any panel that does not have this capability will not be accepted.

T. Downloading Software

1. The fire alarm control panel must support up/downloading of system programming from a PC under Windows XP, Windows Vista, or Windows 7. The FACP must also be able to download the detector sensitivity test results and a 1000 event system event buffer to the PC. Communication shall take place over a direct connection to the PC and/or via the same telephone lines as the built in digital communicator and shall not require an external modem to be connected to the panel. The downloading software shall contain a code that will block unauthorized persons from accessing the panel via direct connection or over the phone lines.

U. Facility Management Software

1. The FACP must support facility management software capable of providing off site access to FACP data that is necessary to manage fire system operation. A software package capable of uploading the detector sensitivity test results and the 1000 event system event buffer to the PC shall be required as part of the bid package. Communication shall take place over a direct connection to the PC and/or via the same telephone lines as the built in digital communicator. The facility management package must be separate from the downloading package and must not be capable of affecting programmed system options.

V. English Language Descriptions

1. The FACP shall provide the ability to have a text description of each system device, input zone and output group on the system. The use of individual lights to provide descriptions will not be acceptable.

2.3 SYSTEM OPERATION

A. Alarms

1. When a device indicates any alarm condition, the control panel must respond within 10 seconds. The general Alarm or Supervisory alarm LED on the annunciator(s) should light and the LCD should prompt the user as to the number of current events. The alarm information must be stored in event memory for later review. Event memory must be available at the main and all remote annunciators.
2. When the alarmed device is restored to normal, the control panel shall be required to be manually reset to clear the alarm condition, except that the alarms may be silenced as programmed.
3. An alarm shall be silenced by a code or firefighter key at the main or remote annunciators. When silenced, this shall not prevent the resounding of subsequent events if another event should occur (subsequent alarm feature). When alarms are silenced the Silenced LED on the control panel, and on any remote annunciators, shall remain lit until the alarmed device is returned to normal.

B. Troubles

1. When a device indicates a trouble condition, the control panel Trouble LED on the annunciator(s) should light and the LCD should prompt the user as to the number of current events. The trouble information must be stored in event memory for later review. Event memory must be available at the main and all remote annunciators.
2. When the device in trouble is restored to normal, the control panel shall be automatically reset. The trouble restore information must be stored in event memory for later review. Event memory must be available at the main and all remote annunciators. A trouble shall be silenced by a code or firefighter key at the main or remote annunciators. When silenced, this shall not prevent the resounding of subsequent events if another event should occur.

C. Supervision Methods

1. Each SLC loop shall be electrically supervised for opens and ground faults in the circuit wiring, and shall be so arranged that a fault condition on any loop will not cause an alarm to sound.
2. Additionally, every addressable device connected to the SLC will be supervised and individually identified if in a fault condition. The occurrence of any fault will light a Trouble LED and sound the system trouble sounder, but will not interfere with the proper operation of any circuit which does not have a fault condition.
3. Each indicating appliance circuit shall be electrically supervised for opens, grounds and short circuit faults, on the circuit wiring, and shall be so arranged that a fault condition on any indicating appliance circuit or group of circuits will not cause an alarm to sound. The occurrence of any fault will light the trouble LED and sound the system trouble sounder, but will not interfere with the proper operation of any circuit which does not have a fault condition.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Contractor shall thoroughly examine Project site conditions for acceptance of fire alarm system installation to verify conformance with Manufacturer and Specification tolerances. Do not commence with installation until all conditions are made satisfactory.

3.2 INSTALLATION

A. General:

1. Install fire alarm system in accordance with Manufacturer's written instructions, as indicated on the Drawings and as specified herein.
2. The 120/208-volt, 3 wire, 60 cycles AC two-20A circuit supply required to power the system shall be connected as indicated on the Drawings. Connect to red colored circuit breaker(s) in panel board. Identify circuit as "Fire Alarm Circuit Control."

B. Wiring:

1. Refer to Section 260519: Building Wire and Cable.
2. Individual input and output device addressability as well as remote sensitivity measurement, supervision and power shall all be performed on the same pair of wires. Wiring shall be Class B.
3. Each Class B initiating circuit shall consist of a two wire circuit, allowing multiple T-taps and not requiring any end-of-line device for supervision. Each initiating circuit shall accommodate up to thirty (30) addressable programmable initiating devices. On the initial installation, only 21 devices are to be allowed per circuit to allow for future expansion.
4. Wiring for shielding certain conductors from others or routing in separate raceways, shall be as recommended by the Manufacturer's current requirements.
5. All wiring shall be installed in a continuous steel conduit system and shall be of the size recommended by the equipment Supplier. Refer to Section 260546: Signal Systems Raceway.
6. Wire color-coding shall remain the same throughout the system.
7. No wiring other than that directly associated with fire alarm detection, alarms or auxiliary fire protection functions (no 120 VAC), shall be permitted in fire alarm conduits.
8. Make conduit and wiring connections to sprinkler flow switches, sprinkler valve monitors, P.I.V., door hold-open/closure devices, fire/smoke dampers, elevator controller.
9. All wiring shall be checked and tested to insure that there are no grounds, opens or shorts.
10. All fire alarm junction boxes shall be color-coded and marked per Section 260553: Electrical Identification.
11. Wire nut splices are not allowed.
12. Wires shall be numbered at each connection, termination and junction point. Wire numbering tags shall be Brady Perma-Code, Westline or equal wire makers. Each group of wires shall be tagged with its destination at each panel, terminal box or junction box.

3.3 FIELD QUALITY CONTROL

A. Manufacturer's field service: Contractor shall arrange and pay for the services of a factory-authorized service representative to supervise the initial start-up, pretesting and adjustment of the fire alarm system.

B. Independent testing: Contractor shall arrange and pay for the services of an independent Testing Agency to perform all quality control electrical testing, calibration and inspection required herein. Testing Agencies objectives shall be to:

1. Assure fire alarm system installation conforms to specified requirements and operates within specified tolerances.
2. Field test and inspect to insure operation in accordance with Manufacturer's recommendations and Specifications.
3. Prepare final test report including results, observations, failures, adjustments and remedies.
4. Apply label on fire alarm system control panel upon satisfactory completion of tests and results.
5. Verify settings and make final adjustments.

C. At least three weeks prior to any testing, notify the Engineer so that arrangement can be made for witnessing test, if deemed necessary. All pretesting shall have been tested satisfactorily prior to the Engineer's witnessed test.

D. Prefunctional testing:

1. Provide Testing Agency with Contract Documents and Manufacturer instructions for installation and testing.
2. Visual and mechanical inspection:
   a. Inspect for physical damage, defects alignment and fit.
   b. Perform mechanical operational tests in accordance with Manufacturer's instructions.
   c. Compare nameplate information and connections to Contract Documents.
   d. Check tightness of all control and power connections.
   e. Check that all covers, barriers and doors are secure.
3. Electrical tests:
   a. The system shall be completely tested prior to final acceptance testing. All points shall be tested from point of initiation to the final point or points of annunciation. All circuits shall be tested for continuity and ability to transmit the required signal correctly to the FACP. Any problem due to wrong wire type, wire twist, impedance, mismatches, noise filtering or shielding shall be completely corrected during pretesting and prior to any final acceptance tests.
   b. Testing shall include each and every device in the system. Coordinate with other trades as necessary for testing.
      1) Sprinkler flow switches: Record time delay from water flow to alarm and adjust as necessary for a 30-50 second delay.

2) Tamper switches: Verify "trouble "signal is received and alarmed on closing of each valve.

3) Smoke detectors , in-duct smoke detectors and duct mounted smoke detectors: Test with actual or approved artificial smoke. Verify that reset does not occur when devices are cleared of smoke. Verify supervisory circuit function.

4) Door release: Verify that proper alarm activates every held-open door, roll-down doors and shutters, that doors close completely to the closed position.

5) Elevator recall: Verify that elevators recall to designated floor by testing elevator lobby detectors with smoke. This is necessary on the ground floor and one other only.

6) Audible/visual notification: Activate by means of an alarm-initiating device that audible and visual devices are clearly audible and/or visual throughout.

7) Central station notification: Verify that one set of conductors in the terminal cabinet becomes a short circuit on any "trouble" condition and that the other set becomes a short circuit on any "alarm" condition. Verify that the conductor groups are labeled properly.

c. Test report:

1) Provide a complete report listing every device, the date it was tested, the results and the date retested (if failure occurred during the previous test). The test report shall indicate that every device tested successfully.

2) Submit two typed copies of the test report in a neatly bound folder for review and approval. Failure to comply with this will result in a delay of final testing and acceptance.

E. Functional performance testing:

1. After the approval of the test report, provide a schedule of final testing to be done in the presence of the Inspector of Record and Owner's Representative. The schedule must be received by the Engineer a minimum of 2 weeks prior to the Final Test Date and must list the dates and time slots in which the various systems can be tested.

2. Coordination of the Final Test dates with all parties (General Contractor, Mechanical Contractor, Elevator Contractor, Inspector of Record, Owner and others) shall be the sole responsibility of the Contractor. If a party is required to be present during any phase of testing to activate a device, ensure that the party or a qualified representative of the party is present throughout that phase of the testing.

F. In the event that the system fails to function properly during the testing, as a result of inadequate pretesting or preparation, the Contractor shall bear all costs incurred by the necessity for retesting including test equipment, transportation, subsistence and the Engineer's hourly rate.

G. Contractor shall replace at no costs to the Owner all devices which are found defective or do not operate within factory specified tolerances.

H. Contractor shall submit the Testing Agency's final report for review prior to Project closeout and final acceptance by the Owner. Test report shall indicate test dates, devices tested, results,

observation, deficiencies and remedies. Test report shall be included in the operation and maintenance manuals.

3.4 TRAINING

A. Refer to Specification Section 260800: Electrical Commissioning.

B. Factory authorized service representative shall conduct a 8 hour training seminar for Owner's Representatives upon completion and acceptance of system. Instructions shall include safe operation, maintenance and testing of equipment with both classroom training and hands-on instruction.

C. Contractor shall schedule training with a minimum of 7 days advance notice.

END OF SECTION 28 61 13