BID DOCUMENTS COVER SHEET

CONTRACT DOCUMENTS

FOR

D-1037 LIBRARY CLASSROOMS

AT

DIABLO VALLEY COLLEGE

321 Golf Club Road, Pleasant Hill, California CA 94523

CONTRA COSTA COMMUNITY COLLEGE DISTRICT

Consist of the following:

DSA File #7-C1
DSA Application #01-114358

Architect:
KYA Architecture
720 York Street Suite 104
San Francisco, CA 94110

November 10, 2014
SECTION 00007
SEALS PAGE AND DSA TESTS

ARCHITECT: Kendall Young Associates
Kendall M. Young
720 York Street, Suite 104
San Francisco, CA 94124
415-552-1118

[Signature]
11-2-14
Date

Kent Calvin Law
1801 Murchison Drive Suite 160
Burlingame, CA 94010
650-697-5691

[Signature]
11-4-14
Date

ELECTRICAL ENGINEER: ACG Engineers, Inc
Antonio C. Jakosalen
7347 Mission Street
Daly City, CA 94014
650-994-4906

[Signature]
11-4-14
Date

END OF SECTION 00007
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SECTION 00015
PROJECT DIRECTORY

ARCHITECT: Kendall Young Associates
Kendall Young
720 York Street, Suite 104
San Francisco, CA 94110
415-552-1118

STRUCTURAL ENGINEER: Not Applicable

ELECTRICAL ENGINEER: ACG Engineers, Inc
Antonio C. Jakosalen
7347 Mission Street
Daly City, CA 94014
650-994-4906

CIVIL ENGINEER Not Applicable

Kent Calvin Law
1801 Murchison Drive Suite 160
Burlingame, CA 94010
650-697-5691

PLUMBING ENGINEER: Not Applicable

OWNER: Contra Costa Community College District
500 Court Street
Martinez, CA 94553
925-229-1000

FACILITIES PLANNING: Ray Pyle, Chief Facilities Planner
925-229-6842
Ben Azarnoush, Director of Construction Operations
925-229-6844
PROJECT MANAGER: David Lenahan  
HLC Associates, Inc  
5 La Mesa Lane  
Walnut Creek, CA 94596  
925-945-8598

CONSTRUCTION MANAGER: Critical Solutions, Inc.  
1801 Oakland Blvd., Suite 300  
Walnut Creek, CA 94596  
925-825-4219

DVC – BUILDINGS & GROUNDS: Tony Melendrez, Buildings & Grounds Manager  
925-969-4275

DVC – INFORMATION TECHNOLOGY: Percy Roper, Technology Systems Manager  
925-969-2270

END OF SECTION 00015
NOTICE INVITING BIDS

D-1037 LIBRARY CLASSROOMS
DIABLO VALLEY COLLEGE
321 Golf Club Road, Pleasant Hill, CA 94523

NOTICE IS HEREBY GIVEN that the Governing Board of the Contra Costa Community College District (District), Martinez, California, will receive sealed bid proposals for the furnishing of all labor, materials, equipment, transportation and services for the construction of the project entitled D-1037 LIBRARY CLASSROOMS.

Construction Cost Estimate (Range): $700,000.00 to $1,000,000.00; License Required: B-General Building Contractor;

In general, the Work consists of interior improvements and modifications to existing computer labs and ancillary spaces, construction of two (2) new classrooms within the existing Media Center area, and various ADA-related site improvements. Other Work includes, but is not limited to, hazardous materials abatement and demolition in preparation for improvements.

Project Documents including but not limited to plans, specifications, addenda, bidders lists, bid results, etc. can be viewed online at the Contra Costa Builders Exchange at: http://onlineplanservice.com/PublicWorks/ProjectList.aspx?Agency=49

The viewing software is free and can be downloaded from the website. If you are interested in receiving project notifications automatically, please register by clicking on the “Register” button on the Project Details page. Plan page copy service is available and can be ordered online through the Contra Costa Builders Exchange. Please feel free to contact the Contra Costa Builders Exchange at: 2440 Stanwell Drive, Suite “B”, Concord, California 94520, Tel: (925) 685-8630.

Hard copies of plans and specifications shall be available for purchase at ARC located at 5753 Pacheco Blvd., Pacheco, California, Phone: (925) 682-6930. To purchase plans at ARC’s Public Planroom website use the link: https://order.e-arc.com/arcEOC/PWELL_Main.asp?mem=23. Go to the Public Planroom for access to the documents without a login required. Payment for hardcopies shall be the responsibility of the bidder, and shall be made directly to ARC. The District does not provide hardcopies of bid documents or reimburse cost of printing, delivery, or any expenses related to the bidding process.

For information directly from the District, you may also log in to the District Website: https://insite.4cd.edu/webapps/PurchasingViewBids. Project documents available include but are not limited to plans, specifications, addenda, bidders lists, bid results, etc., and can be viewed on this District webpage.

All questions related to this project must be in writing and are directed to:

Jovan Esprit, Contracts Manager
Contra Costa Community College District
500 Court St., Martinez, CA 94553
Email: jesprit@4cd.edu
Facsimile: 925-370-7512;

Each bid shall be made on the bid form, which is included in the Bid Documents and when submitted, shall be accompanied by a Bid Bond or Certified Cashier’s Check in the amount of 10% of bid (made payable to the
Contra Costa Community College District). The District reserves the right to forfeit Bid Bond submitted for failure of the successful bidder to secure Payment & Performance Bonds.

Important Information:
Pre-Bid Meeting and Job Walk, Date / Time: November 24, 2014, at 10:00AM — MANDATORY
Pre-Bid Meeting and Job Walk, Location: DVC Job Trainer
DIABLO VALLEY COLLEGE
321 Golf Club Road
Pleasant Hill, CA 94523

Last Date / Time for
Bidder’s Requests for Information: December 8, 2014 prior to 5:00PM
Last Day to Issue Addendum: December 15, 2014
Bids Due No Later Than, Date / Time: January 5, 2015, prior to 2:00 PM
Bids Must Be Received at:
Contra Costa Community College District (Lobby)
500 Court St.
Martinez, CA 94553
Attn: Jovan Esprit — Contracts Manager (CCCCD)

Bids must be received by the District prior to the time and by the date noted above. Bids that are not received by the District prior to the time and by the date noted above will not be accepted, and will be returned to the Bidder unopened.

The successful bidder will be required to furnish a labor and material bond in an amount equal to one hundred percent (100%) of the contract price and a faithful performance bond in an amount equal to one hundred percent (100%) of the contract price, said bonds to be secured from a surety company acceptable to the Contra Costa Community College District and authorized to execute such surety in the State of California.

This project is a public works project and is subject to prevailing wage rate laws. A copy of the prevailing rates of wages is on file with the Contracts & Purchasing Office of the Contra Costa Community College District. Said rates of wages shall be included in the contract for the work by this reference.

Attention is directed to Section 4100 through 4113 of the Public Contract Code concerning Subcontractors, with emphasis on Section 4104, known as the “Subletting and Subcontracting Fair Practices Act, effective July 1, 2014.

Attention is directed to Labor Code Section 1725.5 regarding Department of Industrial Relations (DIR) contractor registration process including registration criteria and implementation of DIR registration requirements. Labor Code Section 1771.7 establishes contractor’s obligation to submit Certified Pay Roll (CPR) to the Department of Labor and Standards Enforcement (DLSE) and public works monitoring and enforcement. Labor Code Section 1773.3 requires the District to submit a PWC-100 to DIR for all public works contract awarded effective January 1, 2015.

Attention is directed to Agreement Form, Article 5, and GENERAL CONDITIONS, Article 8, paragraphs 8.4.1 and 8.4.2, regarding liquidated damages. Liquidated Damages shall be set for $500 Dollars for each calendar day the work is delayed. The Governing Board of the Contra Costa Community College District reserves the right to reject any and all bids and/or waive any informality or irregularity in any bid received. No bidder may withdraw their Bid for a period of ninety (90) days after the date set for opening thereof.

END OF SECTION 00100
1.1 ISSUING OF DOCUMENTS

A. Complete sets of Bidding Documents may be purchased at ARC Reprographic Services located at 5753 Pacheco Blvd., Pacheco, California, (925) 682-6930 or via the ARC Reprographic Services internet website, www.e-arc.com. Payment shall be made to ARC Reprographic Services for the cost of printing. To order documents via the internet, log on to https://order.e-arc.com/arcEOC/PWELL_Main.asp?mem=23. In the lower left side of the webpage under “PUBLIC PLANROOM”, click the “GO→” button and select the documents you need to order.

B. Bidding Documents may be examined at the Contra Costa Community College District, 500 Court Street, Martinez, CA 94553. By Appointment: Georgette Stewart, Facilities Department, phone: (925) 229-6847.

C. Project documents including but not limited to plans, specifications, addenda, bidders lists, bid results, etc. can be viewed at online plan service through the Contra Costa Builders Exchange at: http://onlineplanservice.com/PublicWorks/Projectlist.aspx?Agency=49

1.2 QUALIFICATIONS OF BIDDERS

A. Bidders may be required to furnish evidence satisfactory to the District and the Architect that he has sufficient means and has had sufficient experience in the class of work called for to enable him to complete the Contract in a satisfactory manner.

B. Bidders shall be Contractors properly licensed in accordance with the laws of the State of California.

C. The successful Bidder shall furnish satisfactory Certificates of Insurance coverage as specified in the Contract Documents.

1.3 RECEIPT AND OPENING OF BIDS

A. Contra Costa Community College District hereinafter referred to as the District, will receive Bids at the same time and place specified in the Notice inviting Bids.

B. Complete the Bid Form included in the Project Manual.

C. The envelopes containing the Bids shall be sealed, addressed to the District, and designated as “D-1037 Library Classrooms – Contra Costa Community College District”. The envelope shall contain the name and address of the Bidder.

D. Bids that are mailed shall have the previously described envelope placed inside an envelope addressed to: CONTRA COSTA COMMUNITY COLLEGE DISTRICT, 500 Court Street, Martinez, CA 94553 ATTENTION: JOVAN ESPRIT, Contracts Manager. Bids should be mailed in time to be received prior to the time set forth in the Advertisement for Bids.

E. Bids which are conditional (or which make alterations, omissions, or reservations to the terms of the Bidding Documents) may be rejected as non-responsive.
F. All monetary figures are required, both in writing and in numerals. In event of conflict between written quotations and numerical quotations, written quotations shall govern.

G. Type or print all bid data legibly in ink except signatures which shall be in script. Mistakes may be crossed out and corrections inserted, if each is initialed in ink by signer of Bid.

H. Bidder's business address and signature shall be on the Bid. A Bid by a partnership shall furnish the full names of partners and be signed in the partnership name by one member of the partnership, or by authorized representative, followed by the signature and designation of the person signing. Bids by corporations, with corporate seal affixed, shall be signed with the legal name of the corporation followed by the name of the state of incorporation and by the signature and designation of the person authorized to bind it to the matter. The name of each person signing shall also be typed or printed below the respective signatures. When required by the District, satisfactory evidence of authority of the office signing in behalf of the corporation shall be furnished.

I. No Bids will be received after the date and time set forth in the Notice Inviting Bids.

1.4 BID SECURITY

A. Submit with the Bid a Bid Security in the amount of 10 percent (10%) of the Bid.

B. The District reserves the right to forfeit the Bid Bond submitted for failure of the successful bidder to secure Payment & Performance Bonds.

1.5 SURETY BONDS

A. The successful Bidder shall furnish a Labor and Material Payment Bond in the amount equal to one hundred percent (100%) of the Contract Price and a faithful Performance Bond in the amount equal to 100 percent (100%) of the Contract Price as security for the successful performance of the work and payment of persons performing labor and furnishing materials. The Bonds shall be executed by a surety company or companies acceptable to the District and authorized to execute such in the State in which the Project is located and shall be furnished within 10 days after Notice of Acceptance of said Bid. Surety shall be made in favor of the District and shall cover the guarantee periods as well as the construction period.

1.6 WITHDRAWAL OR REVISIONS OF BID

A. This Bid may be withdrawn or revised prior to the scheduled time for receipt. Bids not withdrawn prior to the scheduled time for receipt may not be withdrawn for a period of 90 days.

1.7 BID PROTESTS

A. Inquiries or questions based on alleged patent ambiguity of the plans, specifications or estimate must be communicated as a bidder inquiry prior to bid opening. Any such inquiries or questions, submitted after bid opening, will not be treated as a bid protest.

B. Bidder may file a protest with the District against the Bid of other Bidder or Bidders ("Bid Protest") subject to the provisions of this Article. The procedures and time limits set forth in this Article are mandatory and are a Bidder's sole and exclusive remedy in protesting other
Bidders’ bids. Failure to comply with these procedures shall constitute a waiver of any right to pursue a Bid Protest, or to contest the District’s award of the contract for the work that is the subject of the Bid, in any legal proceeding before any authority with jurisdiction.

C. Bid Protests and Responses shall be governed by the following time limitations:

1. Bidder must deliver any Bid Protest to the District in writing before 2:00PM, five (5) working days after the date of bid opening. The District will reject any Bid Protest not received by the District by this deadline. Bidder must concurrently deliver a copy of its Bid Protest to all Bidders against whose Bids the Bid Protest is directed. The Bidder must include with its Bid Protest written proof to the District’s satisfaction that Bidder has delivered a copy of its Bid Protest to the other Bidder whose bid is the subject of the Bid Protest.

2. A Bidder whose Bid is the subject of a Bid Protest must deliver its written response, if any, (“Response”) to the District, before 2:00PM, ten (10) working days after the date of bid opening. The District will reject any Response not received by the District by this deadline.

D. Delivery of Bid Protest or Response:

1. Bidder may deliver a Bid Protest to the District by personal delivery or electronic transmission such as by facsimile. Bidder is solely responsible for ensuring that the District receives any Bid Protest or Response by the deadlines set forth herein.

2. The District will not consider Bid Protests or Responses by telephone conversation or any other non-written communication.

3. Bidder shall submit any Bid Protest or Response to: David Wetmore, Director of Purchasing and Contract Services, Contra Costa Community College District, 500 Court Street, Martinez, CA 94553, Facsimile: 925-370-7512.

E. Content of Bid Protest:

1. A Bid Protest must state the basis for the protest and provide supporting evidence.

2. A Bid Protest must refer to the specific portion of the Bid that forms the basis of the protest.

3. A Bid Protest must include the name, address, and telephone number of the person representing the protesting Bidder.

4. A Bid Protest must be clearly identified as a Bid Protest.

1.8 AWARD AND REJECTION OF BIDS

A. In awarding or rejecting Bids, the District reserves the following rights:

1. Identification of successful Bidder will not be determined at time of opening Bids.

2. To obtain opinion of counsel on legality and sufficiency of bids.

3. To reject all Bids, to re-bid, or waive irregularities or informalities in a Bid, and to accept or reject alternates.

4. Request proof that the successful Bidder can provide performance and payment bonds as required.
1.9 EXAMINE DOCUMENTS AND VISIT SITE

A. Before submitting a Bid, the Bidder shall examine the Bidding Documents, visit the site of the work, attend the required site visit arranged by the District and obtain Certification of Attendance signed by the District, ascertain existing conditions and limitations, including those of labor, and include in the Bid a sum to cover the cost of all items described in the Contract Documents.

B. No consideration will be granted for alleged misunderstanding of the materials to be furnished or work to be done. The tender of a Bid carries with it the agreement to terms and conditions referred to in the Contract Documents.

1.10 DISCREPANCIES, AMBIGUITIES, OR CONFLICTS

A. If the Bidder is in doubt as to the true meaning of any part of the Contract Documents; finds discrepancies, errors or omissions therein; or finds variances in any of the Contract Documents with applicable rules, regulations, ordinances and/or laws, a written request for an interpretation or correction thereof must be submitted to the District's Contract Manager. Bidders are solely responsible for submitting to District's Contract Manager such request. Ambiguities or inconsistencies arising as a result of separation of sections or portions of the drawings or specifications by or for subcontractor bidding shall not relieve the Contractor for providing the complete Work without increase to or adjustment in the Contract Price or the Time for performance. Interpretations or corrections of the Contract Documents will be by written addendum issued by the Architect. No person is authorized to render an oral interpretation or correction of any portion of the Contract Documents to any Bidder, and no Bidder is authorized to rely on any such oral interpretation or correction. Failure to request interpretation or clarification of any portion of the Contract Documents pursuant to the foregoing is a waiver of any discrepancy, defect or conflict therein.

1.11 ADDENDA

A. Cost for work included in any Addenda issued during the time of bidding shall be included in the Bid, and will become a part of the Contract. List Addenda received as indicated on the Bid Form.

1.12 FORM OF AGREEMENT

A. The form of agreement to be used for the Contract is provided by the District and is included in the Project Manual.

1.13 AWARD OF CONTRACT

A. The District will be allowed a period of ninety (90) days after Bid Opening Date for evaluating the Bids.

B. Bidders of record will be notified of the results of the District's evaluation of bids and Award of Contract, if any.

C. The contractor shall begin work within ten (10) calendar days of receipt of Notice to Proceed.

END OF SECTION 00200
SECTION 00210
INFORMATION AVAILABLE TO BIDDERS

PART 1 - REPORT AND INFORMATION

1.1 Existence of reports, record drawings, and utility surveys: Contra Costa Community College District, its consultants, and prior contractors may have collected documents providing a general description of the site and conditions of the work. These documents may consist of geotechnical reports for and around the site, record drawings, utility drawings, and information regarding underground utilities. These reports, documents and other information are not part of the Contract Documents and do not show new work to be constructed, rather, they show existing conditions that Contractor may have to address as part of its construction planning.

1.2 Available Documentation: The following existing documentation is available for review through District office for this project:

A. Existing building Drawings
   1. Library Building construction drawings
   2. Campus Utilities Maps

1.3 Contractor shall acknowledge and accept that the documents are not a part of the Contract Documents and are made available to bidders for reference only. The District and its representatives are not responsible for any and all discrepancies between the documents and the existing and actual as-built conditions, and do not guarantee the accuracy of the documents.

1.4 The District and Architect assume no responsibility for the completeness or accuracy of the documents or the records compiled there from and the interpretations made from the documents. There is no express or implied guarantee that the conditions indicated in the documents are representative of those existing throughout the building and/or site Conditions differing substantially from those indicated may be encountered.

END OF SECTION 00210
SECTION 00300
BID PROPOSAL FORM

PROJECT NUMBER / NAME: D-1037 Library Classrooms
CAMPUS / LOCATION: Diablo Valley College, 321 Golf Club Rd. Pleasant Hill, CA 94523
DISTRICT: CONTRA COSTA COMMUNITY COLLEGE DISTRICT
500 Court St, Martinez, CA 94553

Herein Referred to as "District"

1. INTRODUCTION

A. The Bidder proposes to perform the Work for the Contract Sum and within the proposed Contract Time, based upon an examination of the site and the Bid and Contract Documents.

B. The Bidder certifies this Bid is submitted in good faith.

C. The Bidder agrees that the Contract Sum and other proposed terms will be considered in evaluating Bids and may be negotiated and adjusted before awarding of Contract.

D. The signed copy of the Certification of the Visit to the Site shall be attached to the Bid Form Submittal.

E. A fully executed Statement of Bidder's Qualifications signed by an authorized officer of the Bidder submitting the Bid shall be attached to the Bid Form.

F. A fully executed Non-Collusion Affidavit signed by an authorized officer of the Bidder submitting Bid shall be attached to the Bid Form.

G. The District shall award the contract to the lowest responsive and responsible Bidder. The evaluation of the low bid shall be based on the total of Item 2.A Base Bid.

H. The District reserves the right to award the Additive/Deductive Alternates, if any, through change orders as budget allows within 30 calendar days after the Award of Contract.

2. CONTRACT SUM

A. BASE BID
For labor, materials, bonds, fixtures, equipment, tools, transportation, services, sales taxes and other costs necessary to complete the general construction in accordance with the Contract Documents, for a stipulated Contract Sum in the amount of:

__________________________ Dollars ($____________)
3. ALTERNATES -NONE

4. COMPLETION TIME

A. For establishing the Date of Final Completion the contract time for the Base Bid shall be as indicated in Section 00600, Construction Agreement. This time may be subject to modification to facilitate the work, as mutually agreed upon at a later date.

B. The Bidder certifies that the Bid is based on the Contract Time for completion as stated in Section 00600, Construction Agreement. Bidder further certifies that the Base Bid amount is sufficient to cover all labor, materials, central office and construction site overhead, profit, and all other costs related to the completion of the Project for the entire Project construction time for both the General Contractor and all Subcontractors, as stated above in paragraphs 2 and 3.

5. ADDENDA

A. The Bidder acknowledges receipt of the following Addenda, and certifies the Bid has provided for all modifications and considerations required therein.

   None [ ]

   Addendum No.: _______ dated ________________

   Addendum No.: _______ dated ________________

   Addendum No.: _______ dated ________________

   Addendum No.: _______ dated ________________

   Addendum No.: _______ dated ________________

B. List of Additional Addenda Attached: Yes [ ] No. [ ].

6. DESIGNATION OF SUBCONTRACTORS

A. The Bidder has set forth a complete list indicating the type of work, Subcontractor’s name, business address, and Subcontractor’s California Contractor’s license number of each Subcontractor who will perform work in excess of one-half of one percent of the Contract Sum.

   i. Bidder shall be solely responsible to correct any errors in the listing of the California Contractor’s license number.

   ii. Bidder must, within 24 hours after bid opening, submit any corrected California Contractor’s license number information.
iii. Bidder shall submit, via email, any corrected California Contractor's license number information to:
   Jovan Esprit, Contracts Manager
   Contra Costa Community College District
   Email: jesprit@4cd.edu

   iv. Bidder's failure to submit a corrected California Contractor's license number in compliance with the process set forth in the Instructions To Bidders will cause the bid to be nonresponsive.

B. Any portion of the work in excess of the specified amount having no designated Subcontractor shall be performed by the Bidder.

C. Substitution of listed Subcontractors will not be permitted unless approved in advance by the District.

D. Prior to signing the Contract, the District reserves the right to reject any listed Subcontractor.

<table>
<thead>
<tr>
<th>Type of Work</th>
<th>Subcontractor's Name</th>
<th>Business Address</th>
<th>License #</th>
</tr>
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<tbody>
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<td>(5)</td>
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</table>

E. Complete list of Subcontractors is attached:  Yes [ ]  No [ ]

F. Continuation list of Subcontractors is attached: Yes [ ]  No [ ]
7. **ACCEPTANCE AND AWARD**

   A. The District reserves the right to reject this Bid and to negotiate changes before or after execution of the Contract. This Bid shall remain open and shall not be withdrawn for a period of 90 days after Bid Opening date.

   B. If written notice of acceptance of this Bid is mailed or delivered to the Bidder within 90 days after the date set for the receipt of this bid, or other time before it is withdrawn, the Bidder will execute and deliver to the District a Contract prepared by District with the required Surety Bonds and Certificates of Insurance, within 10 days after personal delivery or deposit in the mail of the notification of acceptance.

   C. Notice of acceptance or request for additional information may be addressed to the Bidder at the address provided.

8. **BID SECURITY**

   A. The required 10 percent (10%) Bid Security for this Bid is attached in the form of:

   - ( ) Bid Bond Issued By: ____________________________
   - ( ) Certified or Cashier's Check No. ____________________________
     Issued by: ____________________________

9. **BIDDER'S BUSINESS INFORMATION**

   A. **Individual [ ]:**

      Personal Name: ____________________________
      Business Name: ____________________________
      Address: ____________________________
      Zip Code: ____________________________
      Telephone: ____________________________
      Fax Number: ____________________________

   B. **Partnership [ ]:**

      Co-partners' Names: ____________________________
      Business Name: ____________________________
Address: ______________________________

_________________________ Zip Code: __________

Telephone: ______________________________

Fax Number: ______________________________

C. Corporation [ ]:

Firm Name: ______________________________

Address: ______________________________

_________________________ Zip Code: __________

Telephone: ______________________________

Fax Number: ______________________________

State of Incorporation: ______________________________

President: ______________________________

Secretary: ______________________________

Treasurer: ______________________________

Manager: ______________________________

D. Power of Attorney:

Name: ______________________________

Title: ______________________________

E. Contractor License No. ______________________________ State of __________

F. Bidder is submitting this proposal on behalf of a Joint Venture. Names, license numbers, and relevant information are given on a separate attachment:

Yes [ ] No [ ]

G. Upon request, furnish appropriate documentation to substantiate and/or support the data given.
10. The undersigned hereby certifies under penalty of perjury under the laws of the State of California that all the information submitted by the Bidder in connection with this Bid and all the representations herein made are true and correct.

Executed this ______ day of ______________________, 20______

_________________________  ________________
Contractor's License No Expiration Date

_________________________
Firm Name

_________________________
Signature

_________________________
By (Print or Type Name)

_________________________
Title

End of Section 00300
NONCOLLUSION AFFIDAVIT

(TO BE EXECUTED BY BIDDER AND SUBMITTED WITH BID)

State of California
County of Contra Costa


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 sham; 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 or agent thereof to effectuate
a collusive or sham bid.

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

Date: ___________________ Signature: ____________________________

State of California
County of Contra Costa

On ___________________, before me, ____________________________, Notary Public, personally appeared

______________________________, personally known to me (or proved to me on the basis of
satisfactory evidence) to be the person(s) whose name(s) is/are subscribed to the within instrument and acknowledged to me
that he/she/they executed the same in his/her/their authorized capacity(ies), and that by his/her/their signature(s) on the
instrument the person(s), or the entity upon behalf of which the person(s) acted, executed the instrument.

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

WITNESS my hand and official seal.

Date: ___________________ Signature: ____________________________

[SEAL]

END OF SECTION 00350
SECTION 00400

STATEMENT OF BIDDER'S QUALIFICATIONS

Contra Costa Community College District (District), in accordance with Public Contract Code Section 20651.5, requires each prospective bidder for a contract, as described under Section 20651, to complete and submit to the District a standardized questionnaire and financial statement in a form specified by the District, including a complete statement of the prospective bidder's financial ability and experience in performing public works. The questionnaire and financial statement shall be verified under oath by the bidder in the manner in which civil pleadings in civil actions are verified. The questionnaire responses of prospective bidders and their financial statements shall not be deemed public records and shall not be open to public inspection. All information requested must be provided and be current as of the date of the Bid.

I, ____________________________, being first duly sworn, depose and say:

(Name)

I am the ___________________________ of ___________________________

(Title) (Company / Entity)

Firm Name: ___________________________ Check One: ☐ Corporation ☐ Partnership ☐ Sole Proprietor ☐ Joint Venture

(as it appears on license)

Contact Person: ___________________________

Address: __________________________________________

Phone: ___________________________ Fax: ___________________________

Email: ___________________________ Tax ID No.: ___________________________

If firm is a sole proprietor or partnership:

Owner(s) of Company ___________________________

Contractor's License Number(s): (California State License Board Classification)

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

Contra Costa Community College District
Diablo Valley College
D-1037 Library Classrooms

Section 00400 - Page 1 of 10
Statement of Bidder's Qualifications
For Bidders That Are Corporations:

1a. Date incorporated: ________________________________

1b. Under the laws of what state: ________________________

1c. Provide all the following information for each person who is either (a) an officer of the corporation (president, vice president, secretary, treasurer), or (b) the owner of at least ten percent of the corporation’s stock.

<table>
<thead>
<tr>
<th>Name</th>
<th>Position</th>
<th>Years with Company</th>
<th>% Ownership</th>
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1d. Identify every construction firm that any person listed above has been associated with (as owner, general partner, limited partner or officer) at any time during the last five years.

NOTE: For this question, “owner” and “partner” refer to ownership of ten percent or more of the business, or 10 percent or more of its stock, if the business is a corporation.

<table>
<thead>
<tr>
<th>Person’s Name</th>
<th>Construction Firm</th>
<th>Dates of Person’s Participation with Firm</th>
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</table>
For Bidders That Are Partnerships:

1a. Date of formation: 

1b. Under the laws of what state: 

1c. Provide all the following information for each partner who owns 10 per cent or more of the firm.

<table>
<thead>
<tr>
<th>Name</th>
<th>Position</th>
<th>Years with Partnership</th>
<th>% Ownership</th>
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</table>

1d. Identify every construction company that any partner has been associated with (as owner, general partner, limited partner or officer) at any time during the last five years.

NOTE: For this question, “owner” and “partner” refer to ownership of ten per cent or more of the business, or ten per cent or more of its stock, if the business is a corporation.

<table>
<thead>
<tr>
<th>Person’s Name</th>
<th>Construction Company</th>
<th>Dates of Person’s Participation with Company</th>
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</table>
**For Bidders That Are Sole Proprietorships:**

1a. Date of commencement of business. 

1b. Tax ID number of company owner 

1c. Identify every construction firm that the business owner has been associated with (as owner, general partner, limited partner or officer) at any time during the last five years.

**NOTE:** For this question, “owner” and “partner” refer to ownership of ten per cent or more of the business, or ten per cent or more of its stock, if the business is a corporation.

<table>
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<tr>
<th>Person’s Name</th>
<th>Construction Company</th>
<th>Dates of Person’s Participation with Company</th>
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**For Bidders That Intend to Make a Bid as Part of a Joint Venture:**

1a. Date of commencement of joint venture. 

1b. Provide all of the following information for each firm that is a member of the joint venture that expects to bid on one or more projects:

<table>
<thead>
<tr>
<th>Name of Firm</th>
<th>% Ownership of Joint Venture</th>
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</table>
For All Bidders

2. Has there been any change in ownership of the firm at any time during the last five years?
   NOTE: A corporation whose shares are publicly traded is not required to answer this question.
   ☐ Yes ☐ No
   If “yes,” explain on a separate signed page (referring to this question).

3. Is the firm a subsidiary, parent, holding company or affiliate of another construction firm?
   NOTE: Include information about other firms if one firm owns 50 percent or more of another,
   or if an owner, partner, or officer of your firm holds a similar position in another firm.
   ☐ Yes ☐ No
   If “yes,” explain on a separate signed page (referring to this question).

4. Are any corporate officers, partners or owners connected to any other construction firms?
   NOTE: Include information about other firms if an owner, partner, or officer of your firm
   holds a similar position in another firm.
   ☐ Yes ☐ No
   If “yes,” explain on a separate signed page (referring to this question).

5. List all California construction license numbers, classifications and expiration dates of the
   California contractor licenses held by your firm:
   ____________________________________________________________
   ____________________________________________________________
   ____________________________________________________________
   ____________________________________________________________
   □ Yes □ No
   If more space is needed add a separate signed page (referring to this question).

6. If any of your firm’s license(s) are held in the name of a corporation or partnership, list below
   the names of the qualifying individual(s) listed on the CSLB records who meet(s) the experience and
   examination requirements for each license.
   ____________________________________________________________
   □ Yes □ No
   If more space is needed add a separate signed page (referring to this question).

7. Has your firm changed names or license number in the past five (5) years?
   ☐ Yes ☐ No
   If “yes,” explain on a separate signed page, including the reason for the change, and all former
   names under which the firm has conducted business.

8. Has any owner, partner or (for corporations) officer of your firm operated another construction
   firm under any other name in the last five (5) years?
   ☐ Yes ☐ No
   If “yes,” explain on a separate signed page (referring to this question), including the reason for
   the change.
9. Have you attached your latest copy of a REVIEWED OR AUDITED financial statement with accompanying notes and supplemental information?
   □ Yes □ No
   NOTE: A financial statement that is not either reviewed or audited is not acceptable. A letter verifying availability of a line of credit may also be attached; however, it will be considered as supplemental information only, and is not a substitute for the required financial statement.

10. Is the attached Financial Statement for the identical organization of the Bidder?
   □ Yes □ No
   If "no", explain the relationship and financial responsibility of the organization whose financial statement of provided (i.e., parent/subsidiary, etc.)

If more space is needed add a separate signed page (referring to this question).

11. Contractor possesses a VALID AND CURRENT California Contractor's license for the project or projects for which it intends to submit a bid.
   □ Yes □ No

12. List the categories of work your firm typically performs with its own forces, and check the adjacent boxes of those categories of work that will be self-performed on this project

   □ ___________________________ □ ___________________________
   □ ___________________________ □ ___________________________
   □ ___________________________ □ ___________________________

13. On a separate signed page (referring to this question), list all construction projects your organization has in progress and for each project listed, state; (i) a general description of the work performed or to be performed by your organization; (ii) the owner's name, name of the owner's representative, the owner's address and telephone number; (iii) the project architect, address and telephone number; (iv) percent presently completed and (v) the scheduled completion date.

14. On a separate signed page (referring to this question), list all construction projects completed by your organization in the past three years, and for each project, state: (i) a general description of the work performed by your organization on the project; (ii) the owner's name, name of the owner's representative, the owner's address and telephone number; (iii) the initial and final contract amount; (iv) the initial and final dates of completion; and (v) whether the project was completed within contract time and contract budget.

15. Has a claim or other demand ever been made against your organization's California Contractors License Bond?
   □ Yes □ No
   If yes, on a separate signed page (referring to this question), state the following: (i) the name,
address and telephone number of each person or entity making claim or demand; (ii) the date of each claim or demand; (iii) the circumstances giving rise to each such claim or demand; and (iv) the disposition of each such claim or demand.

16. Has a complaint ever been filed against your organization's California Contractors License with the California Contractors State License Board (CSLB)?

☐ Yes  ☐ No

If yes, on a separate signed page (referring to this question), state the following for each complaint: (i) the name, address and telephone number of each person or entity making the complaint; (ii) the date of each complaint; (iii) the circumstances giving rise to each such complaint; and (iv) the disposition of each such complaint, including without limitation, any disciplinary or other action imposed or taken by the California Contractors State License Board as a result of any such complaint.

17. Have any lawsuits or other proceedings ever been brought against your organization or any of its principals or officers in connection with any construction contract or construction project?

☐ Yes  ☐ No

If "yes," on a separate signed page (referring to this question) describe the circumstances, the amount or relief sought and the disposition of each such lawsuit or other proceeding.

18. Has your organization ever filed a lawsuit or initiated other proceedings in connection with any construction contract or construction project?

☐ Yes  ☐ No

If "yes," on a separate signed page (referring to this question) describe the circumstances, the amount or relief sought and the disposition of each such lawsuit or other proceeding.

19. Are there any judgments, orders or arbitration awards pending, outstanding or by which your organization or any of its officers or principals are bound by?

☐ Yes  ☐ No

If "yes," on a separate signed page (referring to this question) describe each such judgment, order or arbitration award and the present status of the satisfaction or discharge thereof.

20. Has any California State License Board (CSLB) license held by your firm, or its Responsible Managing Employee (RME) or Responsible Managing Officer (RMO) been suspended or revoked within the last five (5) years?

☐ Yes  ☐ No

21. Has your organization ever failed to complete a construction contract?

☐ Yes  ☐ No

If "yes," on a separate signed page (referring to this question) state the following; (i) describe each such contract; (ii) the owner's name, address and telephone number; (iii) a description of the project; and (iv) the circumstances of the failure to complete.

22. Has your organization ever been declared in default of a construction contract?

☐ Yes  ☐ No

If "yes," on a separate signed page (referring to this question) state the following: (i) describe each such contract; (ii) the owner's name, address and telephone number; (iii) a description of the project; and (iv) the circumstances of the declaration of default.
23. Has a claim or other demand ever been asserted against any Bid Bond, Performance Bond or Labor and Material Payment Bond posted by your organization in connection with any construction contract or your submittal of a bid or proposal on a construction contract?
   □ Yes  □ No
   If "yes," on a separate signed page (referring to this question) state the following: (i) state the name, address and telephone number of each such claimant; (ii) the date of the claim; and (iii) the disposition thereof.

24. At the time of submitting this qualification form, is your firm ineligible to bid on or be awarded a public works contract, or perform as a subcontractor on a public works contract, pursuant to either Labor Code section 1777.1 or Labor Code section 1777.7?
   □ Yes  □ No

25. At any time during the last five (5) years, has your firm, or any of its owners, officers, or partners been convicted of a crime involving the awarding of a contract of a government or Public construction project, or the bidding or performance of a government or Public contract?
   □ Yes  □ No

26. Has your firm or any of its owners, officers, or partners ever been convicted of a crime involving any federal, state, or local law related to bidding, awarding, or performance of any construction contract?
   □ Yes  □ No

27. Has your firm or any of its owners, officers or partners ever been found liable in a civil suit or found guilty in a criminal action for making any false claim or material misrepresentation to any public agency or entity in any way related to any construction contract?
   □ Yes  □ No

28. Is your firm CURRENTLY the debtor in a bankruptcy case?
   □ Yes  □ No

29. In the last twelve (12) months has your firm, or any firm with which any of your company’s owners, officers or partners was associated, been debarred, disqualified, removed or otherwise prevented from bidding on, or completing, any government agency or public works project for any reason?
   NOTE: “Associated with” refers to another construction firm in which an owner, partner or officer of your firm held a similar position.
   □ Yes  □ No
   If YES, on a separate signed page (referring to this question) state the following: (i) describe each such project; (ii) the owner’s name, address and telephone number; (iii) the circumstances and specific reason given for being prevented from bidding on or completing the project.

30. Has your organization ever refused to sign a contract awarded to it?
   □ Yes  □ No
   If YES, on a separate signed page (referring to this question) state the following: (i) describe each such contract; (ii) the owner’s name, address and telephone number; (iii) a description of the project; and (iv) the circumstances of the refusal to sign the contract.
31. In the last twelve (12) months 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?

☐ Yes ☐ No

If YES, on a separate signed page (referring to this question) state the following: (i) describe each such contract; (ii) the owner's name, address and telephone number; (iii) a description of the project; and (iv) the circumstances of the determination.

32. Contractor has CURRENT workers' compensation insurance policy as required by the Labor Code or is legally self-insured pursuant to Labor Code section 3700 et. seq.

☐ Yes ☐ No

☐ Contractor is exempt from this requirement, because it has no employees

33. Within the last two (2) years has there ever been a period when your firm had employees but was without Workers' Compensation insurance or state-approved self-insurance?

☐ Yes ☐ No

34. Attach to this statement true and correct copies of the following:

34.1 Your organization's California Contractor's License (the copy must clearly and legibly show: (i) the licensee name; (ii) the expiration date; and (iii) the classification(s) of licensure).

34.2 The Contractor's License Bond posted by your organization in connection with your organization's California Contractor's License pursuant to California Business & Professions Code 7071.5 and 7071.6 (the copy must clearly and legibly show; (i) the Bond number or other information sufficient for identification; (ii) the name, address and telephone number of the Surety on the Bond; (iii) the signature of the individual executing the Bond on behalf of the Surety and if such individual's authority is conferred by a power of attorney or by such individual's designation as an attorney in fact on behalf of the Surety, include a clear and legible copy of such power of attorney or attorney in fact designation; (iv) the principal on such Bond; and (v) the expiration date of such Bond).

34.3 If your organization's California Contractor's License is issued by virtue of the qualification of a responsible managing employee or responsible managing officer of your organization, the Qualifier's Bond, if required pursuant to California Business & Professions Code 7071.9 (the copy must clearly and legibly show; (i) the bond number or other information sufficient for identification; (ii) the name, address and telephone number of the Surety on the Bond; (iii) the signature of the individual executing the Bond on behalf of the Surety and if such individual's authority is conferred by a power of attorney or by such individual's designation as an attorney in fact on behalf of the Surety, include a clear and legible copy of such power of attorney or attorney in fact designation; (iv) the principal on such Bond; and (v) the expiration date of such Bond).
35. 

Certification

The responses to each and all of the foregoing are complete and accurate; there are no omissions of material fact or information such that would render any of the foregoing false or misleading; there are no misstatements of fact in any of the foregoing.

I, the undersigned, certify and declare that I have read all the foregoing answers to this Section and know their contents. The matters stated in the above answers are true of my own knowledge and belief, except as to those matters stated on information and belief, and as to those matters I believe them to be true. I declare under penalty of perjury under the laws of the State of California, that the foregoing is correct.

Dated: _____________

(Printed Name)

(Signature)

NOTARY PUBLIC

Acknowledgement (By Corporation, Partnership or Individual)

STATE OF CALIFORNIA )
COUNTY OF CONTRA COSTA ) ss.

On _____________, before me, ________________, Notary Public,

personally appeared ________________, personally known to me (or proved to me on the basis of satisfactory evidence) to be the person(s) whose name(s) is/are subscribed to the within instrument and acknowledged to me that he/she/they executed the same in his/her/their authorized capacity(ies), and that by his/her/their signature(s) on the instrument the person(s), or the entity upon behalf of which the person(s) acted, executed the instrument.

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

Witness my hand and official seal.

Notary Public

[SEAL]
SECTION 00450

CERTIFICATION OF SITE VISIT

The Governing Board of the
Contra Costa Community College District
500 Court Street
Martinez, California 94553

Gentlemen/Ladies:

I visited the **D-1037 Library Classrooms** project site,
on ________________________________
to inspect the proposed work, which would be turned over to me in its present condition, with a representative of the Contra Costa Community College District in order to acquaint myself with the proposed work so that I might fully understand the facilities, difficulties, and restrictions attending the execution of the work under the contract, and acknowledge I had the opportunity to check the Record Drawing as-built drawings and/or previous Contract Documents, site conditions and Bid Documents with the authorized representative of the District.

**Owner Representative:**

<table>
<thead>
<tr>
<th>Project Manager – CCCCD Facilities</th>
<th>Date</th>
</tr>
</thead>
</table>

or

<table>
<thead>
<tr>
<th>Manager – Buildings &amp; Grounds</th>
<th>Date</th>
</tr>
</thead>
</table>

**Bidder:**

Name of Firm or Company

________

Authorized Signatory

________

Address

________

Phone Number

________

Fax Number

________

NOTE: Any bidder who fails to return this CERTIFICATION, fully executed, including signature of company representative AND a Contra Costa Community College District representative, with the proposal form, may have their bid rejected as non-responsive.

END OF SECTION 00450
PAYMENT BOND
(CALIFORNIA PUBLIC WORK)

KNOW ALL MEN BY THESE PRESENTS:

THAT WHEREAS, the Contra Costa Community College District (sometimes referred to hereinafter as "Obligee") has awarded to ____________________________ (hereinafter designated as the "Principal" or "Contractor"), an agreement for the work described as follows: ____________________________ (hereinafter referred to as the "Public Work"); and

WHEREAS, said Contractor is required to furnish a bond in connection with said Contract, and pursuant to California Civil Code Section 9550;

NOW, THEREFORE, We, ____________________________, the undersigned Contractor, as Principal; and ____________________________, a corporation organized and existing under the laws of the State of ______________, and duly authorized to transact business under the laws of the State of California, as Surety, are held and firmly bound unto the Contra Costa Community College District and to any and all persons, companies, or corporations entitled by law to file stop notices under California Civil Code Section 9100, or any person, company, or corporation entitled to make a claim on this bond, in the sum of ________________________ Dollars ($__________), said sum being not less than one hundred percent (100%) of the total amount payable by said Obligee under the terms of said Contract, for which payment will 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 said Principal, its heirs, executors, administrators, successors, or assigns, or subcontractor, shall fail to pay any person or persons named in Civil Code Section 9100; or fail to pay for any materials, provisions, or other supplies, used in, upon, for, or about the performance of the work contracted to be done, or for any work or labor thereon of any kind, or for amounts due under the Unemployment Insurance Code, with respect to work or labor thereon of any kind; or shall fail to deduct, withhold, and pay over to the Employment Development Department, any amounts required to be deducted, withheld, and paid over by Unemployment Insurance Code Section 13020 with respect to work and labor thereon of any kind, then said Surety will pay for the same, in an amount not exceeding the amount herein above set forth, and in the event suit is brought upon this bond, also will pay such reasonable attorneys' fees as shall be fixed by the court, awarded and taxed as provided in California Civil Code Sections 9550 et seq.

This bond shall inure to the benefit of any person named in Civil Code Section 9100 giving such person or his/her assigns a right of action in any suit brought upon this bond.

It is further stipulated and agreed that the Surety of this bond shall not be exonerated or released from the obligation of the bond by any change, extension of time for performance, addition, alteration or modification in, to, or of any contract, plans, or specifications, or agreement pertaining or relating to any scheme or work of improvement herein above described; or pertaining or relating to the furnishing of labor, materials, or equipment therefor; nor by any change or modification of any terms of payment or extension of time for payment pertaining or
relating to any scheme or work of improvement herein above described; nor by any rescission or attempted rescission of the contract, agreement or bond; nor by any conditions precedent or subsequent in the bond attempting to limit the right of recovery of claimants otherwise entitled to recover under any such contract or agreement or under the bond; nor by any fraud practiced by any person other than the claimant seeking to recover on the bond; and that this bond be construed most strongly against the Surety and in favor of all persons for whose benefit such bond is given; and under no circumstances shall the Surety be released from liability to those for whose benefit such bond has been given, by reason of any breach of contract between the Obligee and the Contractor or on the part of any obligee named in such bond; that the sole condition of recovery shall be that the claimant is a person described in California Civil Code Sections 9100, and who has not been paid the full amount of his or her claim; and that the Surety does hereby waive notice of any such change, extension of time, addition, alteration or modification herein mentioned.

IN WITNESS WHEREOF, we have hereunto set our hands and seals this __________ day of __________, 20__.

PRINCIPAL/CONTRACTOR:

__________________________________

By: __________________________________

SURETY:

__________________________________

By: __________________________________

Attorney-in-Fact
IMPORTANT: 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 for service of process in California)

____________________________________________________  ______________________________________________________

Telephone: ______________________  Telephone: ______________________

STATE OF CALIFORNIA  )
COUNTY OF  ) ss.

On ______________________ before me, ______________________ (insert name and title of the officer), 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 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 representatives of the bonding company must be attached hereto.
CONTRACT PERFORMANCE BOND
(CALIFORNIA PUBLIC WORK)

KNOW ALL MEN BY THESE PRESENTS:

THAT WHEREAS, Contra Costa Community College District (sometimes referred to hereinafter as “Obligee”) has awarded to ___________________ (hereinafter designated as the “Principal” or “Contractor”), an agreement for the work described as follows: ________________________ (hereinafter referred to as the “Public Work”); and

WHEREAS, the work to be performed by the Contractor is more particularly set forth in that certain contract for said Public Work dated _______________ (hereinafter referred to as the “Contract”), which Contract is incorporated herein by this reference; and

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

NOW, THEREFORE, we, ________________________, the undersigned Contractor, as Principal, and ________________________, a corporation organized and existing under the laws of the State of ____________, and duly authorized to transact business under the laws of the State of California, as Surety, are held and firmly bound unto the Contra Costa Community College District in the sum of ________________________ Dollars ($__________), said sum being not less than one hundred percent (100%) of the total amount payable by said Obligee under the terms of said Contract, for which amount well and truly to be made, we bind ourselves, our heirs, executors, administrators, successors, and assigns, jointly and severally, firmly by these presents.

THE CONDITION OF THIS OBLIGATION IS SUCH THAT, if the bounded Contractor, his or her heirs, executors, administrators, successors or assigns, shall in all things stand to and abide by, and well and truly keep and perform the covenants, conditions, and agreements in said Contract and any alteration thereof made as therein provided, on his or her part, to be kept and performed at the time and in the manner therein specified, and in all respects according to their intent and meaning; and shall faithfully fulfill guarantees of all materials and workmanship; and indemnify, defend and save harmless the Obligee, its officers and agents, as stipulated in said Contract, then this obligation shall become null and void; otherwise it shall be and remain in full force and effect.

The Surety, for value received, hereby stipulates and agrees that it shall not be exonerated or released from the obligation of this bond (either by total exoneration or pro tanto) by any change, extension of time, alteration in or addition to the terms of the contract or to the work to be performed there under or the specifications accompanying the same, nor by any change or modification to any terms of payment or extension of time for any payment pertaining or relating to any scheme of work of improvement under the contract. Surety also stipulates and agrees that it shall not be exonerated or released from the obligation of this bond (either by total exoneration or pro tanto) by any overpayment or underpayment by the Obligee that is based upon estimates.
approved by the Architect. The Surety stipulates and agrees that none of the aforementioned changes, modifications, alterations, additions, extension of time or actions shall in any way affect its obligation on this bond, and it does hereby waive notice of any such changes, modifications, alterations, additions or extension of time to the terms of the contract, or to the work, or the specifications as well notice of any other actions that result in the foregoing.

Whenever Principal shall be, and is declared by the Obligee to be, in default under the Contract, the Surety shall promptly either remedy the default, or shall promptly complete the Contract through its agents or independent contractors, subject to acceptance and approval of such agents or independent contractors by Obligee as hereinafter set forth, in accordance with its terms and conditions and to pay and perform all obligations of Principal under the Contract, including, without limitation, all obligations with respect to warranties, guarantees and the payment of liquidated damages; or, at Obligee’s sole discretion and election, Surety shall obtain a bid or bids for completing the Contract in accordance with its terms and conditions, and upon determination by Obligee of the lowest responsible bidder, arrange for a contract between such bidder and the Obligee and make available as Work progresses (even though there should be a default or succession of defaults under the contract or contracts of completion arranged under this paragraph) sufficient funds to pay the cost of completion less the “balance of the Contract price” (as hereinafter defined), and to pay and perform all obligations of Principal under the Contract, including, without limitation, all obligations with respect to warranties, guarantees and the payment of liquidated damages. The term “balance of the Contract price,” as used in this paragraph, shall mean the total amount payable to Principal by the Obligee under the Contract and any modifications thereto, less any withholdings by the Obligee, less any withholdings by the Obligee allowed under the Contract.

Surety expressly agrees that the Obligee may reject any agent or contractor which may be proposed by Surety in fulfillment of its obligations in the event of default by the Principal. Unless otherwise agreed by Obligee, in its sole discretion, Surety shall not utilize Principal in completing the Contract nor shall Surety accept a bid from Principal for completion of the work in the event of default by the Principal.

No final settlement between the Obligee and the Contractor shall abridge the right of any beneficiary hereunder, whose claim may be unsatisfied.

The Contractor and Surety shall remain responsible and liable for all patent and latent defects that arise out of or are related to the Contractor’s failure and/or inability to properly complete the Public Work as required by the Contract and the Contract Documents. The obligation of the Surety hereunder shall continue so long as any obligation of the Contractor remains.

Contractor and Surety agree that if the Obligee is required to engage the services of an attorney in connection with enforcement of the bond, Contractor and Surety shall pay Obligee’s reasonable attorneys’ fees incurred, with or without suit, in addition to the above sum.

In the event suit is brought upon this bond by the Obligee and judgment is recovered, the Surety shall pay all costs incurred by the Obligee in such suit, including reasonable attorneys’ fees to be fixed by the Court.
IN WITNESS WHEREOF, we have hereunto set our hands and seals this _____ day of ______________________, 20____.

PRINCIPAL/CONTRACTOR:

__________________________________________________________

By: ______________________________________________________

SURETY:

__________________________________________________________

By: ______________________________________________________

Attorney-in-Fact

The rate of premium on this bond is __________________________ per thousand.

The total amount of premium charged: $_______________________ (This must be filled in by a corporate surety).

IMPORTANT: 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 for service of process in California)

__________________________________________________________

__________________________________________________________

Telephone: ________________________________ Telephone: ________________________________
STATE OF CALIFORNIA          )
COUNTY OF                   ) ss.

On ______________________ before me, ____________________________ (insert name and title of the officer)

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 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 representatives of the bonding company must be attached hereto.
SECTION 00510

NOTICE OF AWARD

DATE: ________________

TO: ________________________________

ADDRESS: ________________________________

PROJECT: ________________________________

The Contract Sum of your contract is ________________________________ Dollars, ($________). 

You must comply with the following conditions within ten (10) calendar days of the date of this Notice of Award, that is, by ________________.

1. You must deliver to the District two fully executed counterparts of Section 00600, “Construction Agreement.”

2. You must deliver to the District the “Contract Performance Bond,” and “Payment Bond,” executed by you and your surety, which are included in Section 00500.

3. You must deliver to District the insurance certificates required in Section 00700, for insurance required in Section 00600, Construction Agreement.

Failure to comply with these conditions within the time specified will entitle District to consider your bid abandoned, to annul this Notice of Award, and to declare your Bid Security forfeited. Within ten (10) calendar days after you comply with these conditions, the District will return to you one fully signed counterpart of the Construction Agreement.

Contra Costa Community College District

By: ________________________________

Title: ________________________________

END OF DOCUMENT

Contra Costa Community College District
Diablo Valley College
D-1037 Library Classrooms
SECTION 00600
CONSTRUCTION AGREEMENT

CONTRACT NO. __________

(Construction Agreement)

This Agreement shall not be enforceable until ratified and approved by the Contra Costa Community College District’s Governing Board. The estimated board meeting date is ________________ 2014.

§1.1 Parties: (Public Agency) CONTRA COSTA COMMUNITY COLLEGE DISTRICT
500 Court St, Martinez, CA 94553
Contractor Address:

§1.2 Effective Date: ________________

§1.3 The Work: D-1037 Library Classrooms project.

§1.4 Completion Time: 90 Calendar Days from the Notice to Proceed to Substantial Completion, and 30 Calendar Days from Substantial Completion to Final Completion (Remaining Work).

§1.5.1 Liquidated Damages, Substantial Completion: $500 per Calendar Day beyond the Contract Substantial Completion Date.

§1.5.2 Liquidated Damages, Remaining Work/Final Completion: $500 per calendar day Remaining Work is delayed beyond the Contract Final Completion Date.

§1.6 Public Agency’s Agent: CONTRA COSTA COMMUNITY COLLEGE DISTRICT (“District”)

§1.7 Contract Sum: MILLION THOUSAND, HUNDRED DOLLARS and NO CENTS
($00,000,000.00)

2. SCOPE OF WORK:

In general, the Work consists of interior improvements and modifications to existing computer labs and ancillary spaces, construction of two (2) new classrooms within the existing Media Center area, and various ADA-related site improvements. Other Work includes, but is not limited to, hazardous materials abatement and demolition in preparation for improvements.

3. WORK CONTRACT, CHANGES

(a) By their signatures below, effective on the above date, these parties promise and agree as set forth in this Agreement, incorporating by these references labor and materials contained in Section 2, Scope of Work.
(b) Contractor shall, at Contractor's own cost and expense, and in a workmanlike manner, fully and faithfully perform and complete the work; and will furnish all materials, labor, services, equipment, and transportation necessary, convenient and proper in order fairly to perform the requirements of this contract, all strictly in accordance with the Public Agency's drawings and specifications.

(c) The work can be changed only with Public Agency's prior written order specifying such change and its cost agreed to by the parties; and the Public Agency shall never have to pay more than specified in Section 1.7 without such an order.

4. **TIME: NOTICE TO PROCEED AND ACCEPTANCE**

(a) Contractor shall start this work as directed in the specifications or the Notice to Proceed and shall complete it as specified in Section 1, Completion Time.

(b) Remaining Work after Substantial Completion. If the Architect or District determines that the work required by the Contract is Substantially Complete during any inspection conducted pursuant to this Agreement or Specification Section 00700, General Conditions, the Contractor shall be notified of that determination and the District shall determine if there is Remaining Work. A list of Remaining Work shall be issued only by the District or the Architect and only after the District has certified Substantial Completion. The District or Architect shall give the Contractor the necessary instructions for correction or completion of the Remaining Work, and the Contractor shall immediately comply with and execute such instructions within the Contract Time. Upon completion of the Remaining Work, another inspection shall be made that shall constitute the Final Inspection, provided the Remaining Work has been completed to the satisfaction of the District. If the remaining work has been completed to the satisfaction of the District, the District shall make the final acceptance and notify the Contractor in writing of this acceptance as of the date of Final Inspection.

(c) Final Acceptance – Upon due notice from the Contractor of completion of the entire project, the District shall make an inspection. If all construction provided for and contemplated by the contract is found to be completed to the District's satisfaction then that inspection shall constitute the Final Inspection and the District shall notify the Contractor in writing of final acceptance effective as of the date of the Final Inspection.

(d) Default for failure to Complete Remaining Work In the event the Contract Time expires before the Remaining Work is completed to the satisfaction of the District, the District may provide notice to the Contractor that the Remaining Work shall be completed by Contractor to the satisfaction of the District within ten consecutive calendar days from the date of such notice. The failure of the Contractor to satisfactorily complete the Remaining Work within the ten days shall entitle to District to declare Contractor in default and thereafter terminate the Contract. The ten-day notice provided under this paragraph shall not be construed as adding any time to the Contract Time and is a time period solely for the purposes of providing notice of default.

(e) Application for Final Payment. After the Contractor has completed all Remaining Work to the satisfaction of the District and delivered all maintenance and operating instructions, schedules, guarantees, warranties, bonds, certificates of inspection, marked-up record documents and other documents as required by the Contract, and after the District or Architect has indicated that the work is acceptable, Contractor may make application for final payment following the Payments Procedures for progress payments. The final application for payment shall be accompanied by all documentation called for in the Contract Documents, together with complete and legally effective
releases or waivers (satisfactory to the District) of all liens arising out of or filed in connection with the work on the project.

(f) Final Payment and Acceptance. If the Architect determines that the work has been completed and the Contractor's other obligations under the Contract have been fulfilled, the Architect shall, within ten working days after receipt of the final application for payment, indicate in writing the Architect's recommendation of payment and present the application to District for payment. Thereupon the Architect shall prepare a Certificate of Final Completion. Otherwise, Architect shall return the application to Contractor indicating in writing the reasons for refusing to recommend final payment. Contractor shall make the corrections identified in the Architect's refusal to recommend final payment. Thirty days after presentation to District of the application and accompanying documentation, with the Architect's recommendation and notice of acceptability of the work, the amount recommended by Architect shall be come due and payable by District to Contractor.

5. LIQUIDATED DAMAGES

5.1 LIQUIDATED DAMAGES - SUBSTANTIAL COMPLETION

If the Contractor fails to complete this contract and this Work within the time fixed therefore, allowance being made for contingencies as provided herein, Contractor becomes liable to the Public Agency for all its loss and damage there from; and because, from the nature of the case, it is and will be impracticable and extremely difficult to ascertain and fix the Public Agency's actual damage from any delay in performance hereof, it is agreed that Contractor will pay as liquidated damages to the Public Agency the reasonable sum specified in Section 1, the result of the parties' reasonable endeavor to estimate fair average compensation therefore, for each calendar day's delay in finishing said Work; and if the same be not paid, Public Agency may, in addition to its other remedies, deduct the same from any money due or to become due Contractor under this Contract. If the Public Agency for any cause authorizes or contributes to a delay, suspension of work or extension of time, its duration shall be added to the time allowed for completion, but it shall not be deemed a waiver nor be used to defeat any right of the Agency to damages for non-completion or delay hereunder. Pursuant to Government Code Section 4215, the Contractor shall not be assessed liquidated damages for delay in completion of the work, when such delay was caused by the failure of the Public Agency or the owner of a utility to provide for removal or relocation of existing utility facilities.

5.2 LIQUIDATED DAMAGES-THE REMAINING WORK

The Remaining Work, as such work is determined by the Public Agency or Public Agency's Representative, shall be completed within the Contract Time or any proper extension thereof granted by Public Agency. If the Contractor shall neglect, fail or refuse to complete the Remaining Work within the Contract Time or any proper extension thereof granted by the Public Agency, then the Contractor does hereby agree, as part consideration for the awarding of this Contract, to pay to the Public Agency the amount specified in the Contract, not as a penalty but as liquidated damages for the Remaining Work for each such breach of Contract set forth herein for each and every consecutive calendar day that the Contractor shall be in default after expiration of the Contract Time.
6. **INTEGRATED DOCUMENTS**

The drawings and specifications and special provisions of the Public Agency's Notice Inviting Bids, and Contractor's accepted bid for this work are hereby incorporated into this Contract; and they are intended to cooperate, so that anything exhibited in the drawings and not mentioned in the specifications or special provisions, or vice versa, is to be executed as if exhibited, mentioned and set forth in both, to the true intent and meaning thereof when taken all together; and differences of opinion concerning these shall be finally determined by the Public Agency.

7. **PAYMENT**

(a) For strict and literal fulfillment of these promises and conditions, and full compensation for all this work, the Public Agency shall pay the Contractor the sum specified in Section 1, except that in unit price contracts the payment shall be for finished quantities at unit bid prices.

(b) On or about the first day of each calendar month, the Contractor shall submit to the Public Agency a verified application for payment, supported by a statement showing all materials actually installed during the preceding month, the labor expended thereon, and the cost thereof; whereupon, after checking, the Public Agency shall issue to Contractor a certificate for the amount determined to be due, minus five (5%) percent thereof pursuant to the Public Agency's General Terms and Conditions, but not until defective work and materials have been removed, replaced and made good.

8. **PAYMENTS WITHHELD**

(a) The Public Agency or its agent may withhold any payment, or because of later discovered evidence nullify all or any certificate for payment, to such extent and period of time only as may be necessary to protect the Public Agency from loss because of:

(1) Defective work not remedied, or work not completed, or
(2) Claims filed or reasonable evidence indicating probable filing, or
(3) Failure to properly pay subcontractors or for material or labor, or
(4) Reasonable doubt that the work can be completed for the balance then unpaid, or
(5) Damage to another contractor, or
(6) Damage to the Public Agency, other than damage due to delays.

(b) The Public Agency shall use reasonable diligence to discover and report to the Contractor, as the work progresses, the materials and labor which are not satisfactory to it, so as to avoid unnecessary trouble or cost to the Contractor in making good any defective work or parts.

(c) Thirty-five (35) calendar days after Public Agency files its notice of completion of the entire work, it shall issue a certificate to the Contractor and pay the balance of the contract sum after deducting all amounts withheld under this contract, provided the Contractor shows that all claims for labor and materials have been paid, no claims have been presented to the Public Agency based on acts or omissions of the Contractor, and no liens or withhold notices have been filed against the work or site, and provided there are not reasonable indications of defective or missing work or of late-recorded notices of liens or claims against Contractor.
9. **INSURANCE**

**Contractor’s Liability Insurance:** Before the commencement of the Work, the Contractor shall purchase from and maintain in a company or companies lawfully authorized to do business in California as admitted carriers with a financial rating of at least A status as rated in the most recent edition of Best’s Insurance Reports or as amended by the Supplementary General Conditions, if any, such insurance as will protect the Public Agency from claims set forth below, which may arise out of or result from the Contractor’s operations under the Contract and for which the Contractor may be legally liable, whether such operations are by the Contractor, by a Subcontractor, by anyone directly or indirectly employed by any of them, or by anyone for whose acts any of them may be liable.

(a) Claims for damages because of bodily injury, sickness, disease, or death of any person District would require indemnification and coverage for employee claim;

(b) Claims for damages insured by usual personal injury liability coverage, which are sustained by a person as a result of an offense directly or indirectly related to employment of such person by the Contractor or by another person;

(c) Claims for damages because of injury or destruction of tangible property, including loss of use resulting therefrom, arising from operations under the Contract Documents;

(d) Claims for damages because of bodily injury, death of a person, or property damage arising out of the ownership, maintenance, or use of a motor vehicle, all mobile equipment, and vehicles moving under their own power and engaged in the Work;

(e) Claims involving contractual liability applicable to the Contractor’s obligations under the Contract Documents, including liability assumed by and the indemnity and defense obligations of the Contractor and the Subcontractors; and

(f) Claims involving Completed Operations, Independent Contractors’ coverage, and Broad Form property damage, without any exclusions for collapse, explosion, demolition, underground coverage, and excavating. (XCU)

(g) Claims involving sudden or accidental discharge of contaminants or pollutants.

**Subcontractor Insurance Requirements:** The Contractor shall require its Subcontractors to take out and maintain similar public liability insurance and property damage insurance as required under the above paragraph, titled “Contractor’s Liability Insurance, in amounts commensurate with the value of the subcontract. A “claims made” or modified “occurrence” policy shall not satisfy the requirements of the above paragraph, titled “Contractor’s Liability Insurance, without prior written approval of the District.

**Additional Insured Endorsement Requirement:** The Contractor shall name, on any policy of insurance, the District, Architect, Inspector, the State of California, their officers, employees, agents and independent contractors as Additional Insured. Subcontractors shall name the Contractor, the District, Architect, Inspector, the State of California, their officers, employees, agents and independent contractors as Additional Insured.

The Additional Insured Endorsement included on all such insurance policies shall state that coverage is afforded the additional insured with respect to claims arising out of operations performed by or on behalf of the insured. If the Additional Insured have other insurance which is applicable to the loss, such other insurance shall be on an excess or contingent basis. The insurance provided by the Contractor must be
designated in the policy as primary to any insurance obtained by the Public Agency. The amount of the insurer's liability shall not be reduced by the existence of such other insurance.

**Workers’ Compensation Insurance:** During the term of this Contract, the Contractor shall provide workers’ compensation insurance for all of the Contractor’s employees engaged in Work under this Contract on or at the Site of the Project and, in case any of the Contractor’s Work is subcontracted, the Contractor shall require the Subcontractor to provide workers’ compensation insurance for all the Subcontractor’s employees engaged in Work under the subcontract. Any class of employee or employees not covered by a Subcontractor’s insurance shall be covered by the Contractor’s insurance. In case any class of employees engaged in Work under this Contract or at the Site of the Project is not protected under the Workers’ Compensation laws, the Contractor shall provide or cause a Subcontractor to provide adequate insurance coverage for the protection of those employees not otherwise protected. The Contractor shall file with the District certificates of insurance as required under Section 00700, Article 11.6, and in compliance with Labor Code § 3700.

**Specific Insurance Requirement:** Contractor shall take out and maintain and shall require all subcontractors, if any, whether primary or secondary, to take out and maintain:

(a) **Workers’ Compensation Insurance:** $1,000,000.00; Contractor is aware of and complies with Labor Code Section 3700 and the Worker’s Compensation Law.

(b) **Comprehensive General Liability Insurance** with a combined single limit per occurrence of not less than $1,000,000.00 and $2,000,000.00 project specific aggregate, or Commercial General Liability Insurance (including automobile insurance) which provides limits of not less than:

   (1) Per occurrence (combined single limit) $1,000,000.00
   (2) Project Specific Aggregate (for this project only) $2,000,000.00
   (3) Products and Completed Operations $1,000,000.00

(c) **Insurance Covering Special Hazards**

   The following Special hazards shall be covered by riders or riders to above mentioned public liability insurance or property damage insurance policy or policies of insurance, in amounts as follows:

   (1) Automotive and truck where operated in amounts $1,000,000.00
   (2) Material Hoist where used in amounts $1,000,000.00
   (3) Explosion, Collapse and Underground (XCU coverage) $1,000,000.00

(d) In addition, provide Excess Liability Insurance coverage in the amount of Two Million Dollars ($2,000,000.00).

**Builder’s Risk/ “All Risk” Insurance/ Course-of-Construction Insurance Requirements:** 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, Course of Construction or similar first party property coverage issued on a replacement cost value basis consistent with the total replacement cost of all insurable Work and the Project included within the Contract Documents. Coverage is to insure against all risks of accidental direct physical loss, and must include, by the basic grant of coverage or by endorsement, the perils of vandalism, malicious mischief (both without any limitation regarding vacancy or occupancy), fire, sprinkler leakage, civil authority, sonic boom, earthquake, flood, collapse, wind,
lightning, smoke and riot. The coverage must include debris removal, demolition, increased costs due to enforcement of building ordinance and law in the repair and replacement of damage and undamaged portions of the property, and reasonable costs for the Architect’s and engineering services and expenses required as a result of any insured loss upon the Work and Project 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 and the Architect as additional named insureds, and any other person with an insurable interest as designated by the District.

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.

10. BONDS

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

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

On signing this contract, Contractor shall deliver to Public Agency for approval good and sufficient bonds with sureties, in amount(s), specified in the specifications or special provisions, guaranteeing faithful performance of this contract and payment for all labor and materials hereunder.

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

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

11. FAILURE TO PERFORM

If the Contractor at any time refuses or neglects, without fault of the Public Agency or its agent(s), to supply sufficient materials or workers to complete this agreement and work as provided herein, for a
period of ten days or more after written notice thereof by the Public Agency, the Public Agency may furnish same and deduct the reasonable expenses thereof from the contract price.

12. **LAWS APPLY: General**

Both parties recognize the applicability of various federal, state and local laws and regulations, especially Chapter 1 of Part 7 of the California Labor Code (beginning with Section 1720, and including Sections 1735, 1777.5, 1777.6, forbidding discrimination) and intend that this agreement complies therewith. The parties specifically stipulate that the relevant penalties and forfeitures provided in the Labor Code, especially in Sections 1775, 1776, and 1813, concerning prevailing wages and hours, shall apply to this agreement as though fully stipulated herein.

13. **SUBCONTRACTORS**

Public Contract Code Sections 4100-4113 are incorporated herein.

14. **WAGE RATES**

(a) Pursuant to Labor Code Section 1773, the Director of the Department of Industrial Relations has ascertained the general prevailing rates of wages per diem, and for holiday and overtime work, in the locality in which this work is to be performed, for each craft, specified in the call for bids for this work and are on file with the Public Agency, and are hereby incorporated herein.

(b) This schedule of wages is based on a working day of eight (8) hours unless otherwise specified; and the daily rate is the hourly rate multiplied by the number of hours constituting the working day. When less than that number of hours are worked, the daily wage rate is proportionately reduced, but the hourly rate remains as stated.

(c) The Contractor, and all subcontractors, must pay at least these rates to all persons on this work, including all travel, subsistence, and fringe benefit payments provided for by applicable collective bargaining agreements. All skilled labor not listed above must be paid at least the wage scale established by collective bargaining agreement for such labor in the locality where such work is being performed. If it becomes necessary for the Contractor or any subcontractor to employ any person in a craft, classification or type of work (except executive, supervisory, administrative, clerical or other non-manual workers as such) for which no minimum wage rate is specified, the contractor shall immediately notify the Public Agency which shall promptly determine the prevailing wage rate therefore and furnish the Contractor with the minimum rate based thereon, which shall apply from the time of the initial employment of the person affected and during the continuance of such employment.

15. **HOURS OF LABOR**

Eight hours of labor in one calendar day constitutes a legal day's work, and no worker employed at any time on this work by the Contractor or by any subcontractor shall be required or permitted to work longer thereon except as provided in Labor Code Sections 1810-1815.
16. **APPRENTICES**

Properly indentured apprentices may be employed on this work in accordance with Labor Code Sections 1777.5 and 1777.6, forbidding discrimination.

17. **PREFERENCE FOR MATERIALS**

The Public Agency desires to promote the industries and economy of Contra Costa County, and the Contractor therefore promises to use the products, workers, laborers and mechanics of this County in every case where the price, fitness and quality are at least equal.

18. **ASSIGNMENT**

This agreement binds the heirs, successors, assigns, and representatives of the Contractor; but Contractor cannot assign it in whole or in part, nor any monies due or to become due under it, without the prior written consent of the Public Agency and the Contractor's surety or sureties, unless they have waived notice of assignment.

19. **NO WAIVER BY PUBLIC AGENCY**

Inspection of the work and/or materials, or approval of work and/or materials inspected, or statement by any officer, agent or employee of the Public Agency indicating the work or any part thereof complies with the requirements of this contract, or acceptance of the whole or any part of said work and/or materials, or payments therefore, or any combination of these acts, shall not relieve the Contractor of Contractor's obligation to fulfill this contract as prescribed; nor shall the Public Agency be thereby stopped from bringing any action for damages or enforcement arising from the failure to comply with any of the terms and conditions hereof.

20. **HOLD HARMLESS AND INDEMNITY**

(a) Contractor promises to and shall hold harmless and indemnify from the liabilities as defined in this section.

(b) The indemnities benefited and protected by this promise are the Public Agency and its elective and appointive boards, commissions, officers, agents and employees.

(c) The liabilities protected against are any liability or claim for damage of any kind allegedly suffered, incurred or threatened because of actions defined below, including personal injury, death, property damage, inverse condemnation, or any combination of these, regardless of whether or not such liability, claim or damage was unforeseeable at any time before the Public Agency approved the improvement plan or accepted the improvements as completed, and including the defense of any suit(s) or action(s) at law or equity concerning these.

(d) The actions causing liability are any act or omission (negligent or non-negligent) in connection with the matters covered by this contract and attributable to the contractor, subcontractor(s), or any officer(s), agent(s), or employee(s) of one or more of them.

(e) Non-conditions: The promise and agreement in this section is not conditioned or dependent on whether or not any Indemnities has prepared, supplied, or approved any plan(s), drawing(s),
specifications(s) or special provision(s) in connection with this work, has insurance or other indemnification covering any of these matters, or that the alleged damage resulted partly from any negligent or willful misconduct of any Indemnities.

21. EXCAVATION

Contractor shall comply with the provisions of Labor Code Section 6705, if applicable, by submitting to Public Agency a detailed plan showing the design of shoring, bracing, sloping, or other provisions to be made for worker protection from the hazard of caving ground during trench excavation.

22. GOVERNMENT CODE SECTION 10532

Contractor shall be subject to the examination and audit of the Auditor General for a period of three years after final payment under the contract.

23. WARRANTY

(a) In addition to any other warranties or guaranties in the Contract Documents, the Contractor warrants, except as provided in paragraph (i) of this clause, that work performed under this contract conforms to the contract requirements and is free of any defect in equipment, material, or design furnished, or workmanship performed by the Contractor or any subcontractor or supplier at any tier.

(b) This warranty shall continue for a period of 1 year from the date of final acceptance of the Work or Phase of Work, unless otherwise provided or extended in the Contract Documents. If the District takes possession of any part of the work before final acceptance, this warranty shall continue for a period of 1 year from the date the District takes possession.

(c) The Contractor shall remedy at the Contractor’s expense any failure to conform, or any defect. In addition, the Contractor shall remedy at the Contractor’s expense any damage to District-owned or controlled real or personal property, when that damage is the result of—

(1) The Contractor’s failure to conform to contract requirements; or
(2) Any defect of equipment, material, workmanship, or design furnished.

(d) The Contractor shall restore any work damaged in fulfilling the terms and conditions of this clause. The Contractor’s warranty with respect to work repaired or replaced will run for 1 year or as otherwise provided or extended from the date of repair or replacement.

(e) The District shall notify the Contractor, in writing, within a reasonable time after the discovery of any failure, defect, or damage.

(f) If the Contractor fails to remedy any failure, defect, or damage within a reasonable time after receipt of notice, the District shall have the right to replace, repair, or otherwise remedy the failure, defect, or damage at the Contractor’s expense.

(g) With respect to all warranties, express or implied, from subcontractors, manufacturers, or suppliers for work performed and materials furnished under this contract, the Contractor shall—

(1) Obtain all warranties that would be given in normal commercial practice;
(2) Require all warranties to be executed, in writing, for the benefit of the District, if directed by the District; and
(3) Enforce all warranties for the benefit of the District, if directed by the District.

(h) In the event the Contractor’s warranty under paragraph (b) of this clause has expired, the District may bring suit at its expense to enforce a subcontractor’s, manufacturer’s, or supplier’s warranty.

(i) Unless a defect is caused by the negligence of the Contractor or subcontractor or supplier at any tier, the Contractor shall not be liable for the repair of any defects of material or design furnished by the District nor for the repair of any damage that results from any defect in District-furnished material or design.

(j) This warranty shall not limit the District’s rights under the Inspection and Acceptance clause of this contract with respect to latent defects, gross mistakes, or fraud.

24. CONSEQUENTIAL DAMAGES

The Contractor and Public Agency waive Claims against each other for consequential damages arising out of or relating to this Contract. This mutual waiver includes:

(a) Damages incurred by the Public Agency for rental expenses, for losses of use, income, profit, financing, business and reputation, and for loss of management or employee productivity or of the services of such persons; and

(b) Damages incurred by the Contractor for principal office expenses including the compensation of personnel stationed there, for losses of financing, business and reputation, and for loss of profit except anticipated profit arising directly from the Work.

This mutual waiver is applicable, without limitation, to all consequential damages due to either party’s termination. Nothing contained in this subparagraph shall be deemed to preclude an award of liquidated direct damages, when applicable, in accordance with the requirements of the Contract Documents.

25. HAZARDOUS MATERIALS

(a) If reasonable precautions will be inadequate to prevent foreseeable bodily injury or death to persons resulting from a material or substance, including but not limited to asbestos, lead or polychlorinated biphenyl (PCB), encountered on the site by the Contractor, the Contractor shall, upon recognizing the condition, immediately stop Work in the affected area and report the condition to the Public Agency in writing.

(b) The Public Agency shall obtain the services of a licensed laboratory to verify the presence or absence of the material or substance reported by the Contractor and, in the event such material or substance is found to be present, to verify that it has been rendered harmless. The Public Agency shall furnish in writing to the Contractor the names and qualifications of persons or entities who are to perform tests verifying the presence or absence of such material or substance or who are to perform the task of removal or safe containment of such material or substance. When the material or substance has been rendered harmless, Work in the affected area shall resume upon written notification from the Public Agency and Contractor. The Contract Time shall be extended appropriately.
26. **SAFETY**

(a) **Safety Programs.** In addition to and as required by other Sections of the Contract Documents, the Contractor shall be solely responsible for initiating, maintaining and supervising all safety programs required by applicable law, ordinance, regulation or governmental orders in connection with the performance of the Contract, or otherwise required by the type or nature of the Work. The Contractor’s safety program shall include all actions and programs necessary for compliance with California or federally statutorily mandated workplace safety programs, including without limitation, compliance with the California Drug Free Workplace Act of 1990 (California Government Code §§8350 et seq.). Without limiting or relieving the Contractor of its obligations hereunder, the Contractor shall require that its Subcontractors similarly initiate and maintain all appropriate or required safety programs. Prior to commencement of Work, the Contractor shall meet with the Campus Buildings and Grounds Manager, Project Manager, and Construction Manager to review Contractor’s safety precautions and implementation of safety programs during the Work.

(b) **Safety Precautions.** In addition to and as required by other Sections of the Contract Documents, the Contractor shall be solely responsible for initiating and maintaining reasonable precautions for safety of, and shall provide reasonable protection to prevent damage, injury or loss to: (i) employees on the Work and other persons who may be affected thereby; (ii) the Work and materials and equipment to be incorporated therein, whether in storage on or off the site, under care, custody or control of the Contractor or the Contractor’s Subcontractors or Sub-subcontractors; and (iii) other property or items at the site of the Work, or adjacent thereto, such as trees, shrubs, lawns, walks, pavements, roadways, structures and utilities not designated for removal, relocation or replacement in the course of construction. The Contractor shall take adequate precautions and measures to protect existing roads, sidewalks, curbs, pavement, utilities, adjoining property and improvements thereon (including without limitation, protection from settlement or loss of lateral support) and to avoid damage thereto. Without adjustment of the Contract Price or the Contract Time, the Contractor shall repair, replace or restore any damage or destruction of the foregoing items as a result of performance or installation of the Work.

(c) **Safety Signs, Barricades.** In addition to and as required by other Sections of the Contract Documents, the Contractor shall erect and maintain, as required by existing conditions and conditions resulting from performance of the Contract, reasonable safeguards for safety and protection of property and persons, including, without limitation, posting danger signs and other warnings against hazards, promulgating safety regulations and notifying Districts and users of adjacent sites and utilities.

(d) **Safety Notices.** In addition to and as required by other Sections of the Contract Documents, the Contractor shall give or post all notices required by applicable law and comply with applicable laws, ordinances, rules, regulations and lawful orders of public authorities bearing on safety of persons or property or their protection from damage, injury or loss.
27. SIGNATURES AND ACKNOWLEDGEMENT

Public Agency, By: ________________________________

David Wetmore, Director of Purchasing and Contracts

Note to Contractor: (1) Execute acknowledgement form below, and (2) if a corporation, affix Corporate Seal.

Contractor hereby also acknowledging awareness of and compliance with Labor Code S1861 concerning Worker's Compensation Law.

Contractor:

By: ________________________________ (CORPORATE SEAL)

(Designate Official Capacity – COMPANY NAME)

________________________________________________________________________

Print NAME and TITLE

License Number __________________ Federal ID Number __________________

NOTARY PUBLIC

================================================================================================

State of California )SS. ________________________________

ACKNOWLEDGEMENT (By Corporation, Partnership or Individual)

County of Contra Costa )

The person(s) signing above for Contractor, known to me in individual and business capacity as stated, personally appeared before me today and acknowledged that he/she/they executed it and that the corporation or partnership named above executed it.

Dated: ________________________________

__________________________ (NOTARIAL SEAL)

END OF SECTION 00600
SECTION 00650
NOTICE TO PROCEED

Date: ______________________

TO: ________________________________

ADDRESS: ____________________________________________

PROJECT: ____________________________________________

You are notified that the Contract Time under the above contract will commence to run on ____________. By that date, you are to start performing your obligations under the Contract Documents. In accordance with Section 00600, Construction Agreement, the date of Substantial Completion is ________________, and the date for Final Completion is ________________.

CONTRA COSTA COMMUNITY COLLEGE DISTRICT

By: ________________________________
    Ray Pyle

Title: Chief Facilities Planner

END OF DOCUMENT
# Section 00700

## GENERAL CONDITIONS

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ARTICLE 1

GENERAL CONDITIONS

1.1 BASIC DEFINITIONS

1.1.1 Action of the Governing Board is a vote of a majority of the District’s governing board.

1.1.2 Approval for a Contract, Agreement, or Change Order means written authorization through action of the governing board unless specific delegation of approval authority is delegated to a District representative.

1.1.3 Approved. The term “approved,” when used to convey Architect’s action on Contractor’s submittals, applications, and requests, is limited to Architect’s duties and responsibilities as stated in the Conditions of the Contract.

1.1.4 Architect means the architect, engineer, or other design professional engaged by the District to design and perform general observation of the work of construction and interpret the drawings and specifications for the Project.

1.1.5 As shown, as indicated, as detailed refer to drawings accompanying this specification.

1.1.6 Bid/Bidders. The term Bid and Proposal have the same meaning, and the same is true for Bidders and Proposers.

1.1.7 Contract or Agreement. When the terms are used in these General Conditions shall be references to the Contract Documents as defined herein.

1.1.8 Contract Time. Contract Time means the number of consecutive calendar days specified in the contract immediately after the date to commence work issued by Owner in the Notice to Proceed and includes both the time allowed for completion of the work required to achieve Substantial Completion and the time allowed to complete the Remaining Work.

1.1.9 Contractor. Whenever the term “Contractor” is used in the Contract or elsewhere in the Contract Documents, it refers to a person or entity that has an agreement directly with the District to perform any of the work for the Project. The term Contractor is referred to throughout the Contract Documents as if singular in number and masculine in gender and means a Contractor or his authorized representative. The term Contractor does not include any contractors under separate and direct contract with the District. A Subcontractor is a person or entity that has a direct or indirect contract with the Contractor to perform any of the Work at the site.

1.1.10 Contractor’s Construction Schedule. The document prepared by the Contractor, which details the events of construction and establishes completion dates for the various stages of the Work and the entire project.

1.1.11 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 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.

1.1.12 Contractor, District, and Architect are those mentioned as such in the Agreement. They
are treated throughout the Contract Documents as if they are of singular number and neuter gender.
Any reference to “Owner” shall mean “District.”

1.1.13 Construction Manager. Whenever the term “Construction Manager” or “CM” is used in
the contract or elsewhere in the Contract Documents, it refers to the District assigned Construction
Manager, or the District Project Manager if no CM is assigned.

1.1.14 Days means calendar days, unless otherwise noted as working days.

1.1.15 Directed. Terms such as “directed,” “requested,” “authorized,” “selected,” “approved,”
“required,” and “permitted” mean directed by the Architect or the District, requested by the Architect
or District, and similar phrases.

1.1.16 District. Whenever the term “District” is used in the Contract Documents, it refers to
the Contra Costa Community College District or those persons designated by the District to act in/on its
behalf.

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

1.1.18 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.

1.1.19 Exposed. Whenever this term is used it shall be understood to mean any item or
surface, exterior, or interior, which can be seen by a person outside the building, or seen by a person
inside any usable space within the building during normal activity. Mechanical and electrical rooms,
utility and service tunnels, air handling rooms, and penthouses or platforms shall be considered to have
exposed surfaces, as shall the mechanical and electrical construction within them. The interior of
closets and alcoves shall be considered exposed surfaces, and shall be finished to match the finish of the
adjacent room or space, unless another finish is shown. The interiors of cabinets shall be considered
exposed, but a finish different from that of the exterior may be permitted or specified. Spaces which are
not normally occupied or used by occupants or building staff, such as shafts, hoistways, ceiling plenums,
attics and crawl spaces shall be considered "concealed" spaces, unless finishes are shown or specified for their surfaces.

1.1.20 Final Completion. The date when all Work for the total project has been completed in accordance with the terms of the Contract Documents and has been inspected following completion of Work identified in the Punchlist Inspection and accepted by the Architect and the District.

1.1.21 Furnish. Whenever this term is used it shall be understood to mean "purchase and deliver to the project site" ready for unloading, unpacking, assembly, installation, and similar operations.

1.1.22 Governing Dictionary. The definitions of words used in these Specifications, which are not defined, The General Conditions, or in referenced standards, are as given in “The American Heritage Dictionary of the English Language”.

1.1.23 Indicated. The term “indicated” refers to graphic representations, notes, or schedules on Drawings or to other paragraphs or schedules in Specifications and similar requirements in the Contract Documents. Terms such as “shown,” “noted,” “scheduled,” and “specified” are used to help the user locate the reference.

1.1.24 Inspector of Record is the individual retained by the District in accordance with titles 21 and 24 of the California Code of Regulations and who will be assigned to the Project. May also be referred to as the Project Inspector.

1.1.25 Install. Whenever this term is used it shall be understood to mean “receive, unload, inventory, store and be responsible for at the project site, transport from point of receipt to final destination, protect, unpack, erect, install in place, anchor, connect, apply, and place in operation or finish, cleaning, complete for intended use.”

1.1.26 Installer. An installer is the Contractor or another entity engaged by Contractor as an employee, Subcontractor, or Sub subcontractor, to perform a particular construction operation, including installation, erection, application, and similar operations. Using a term such as “carpentry” does not imply that certain construction activities must be performed by accredited or unionized individuals of a corresponding generic name, such as “carpenter.” It also does not imply that requirements specified apply exclusively to trades people of the corresponding generic name.

1.1.27 Locality in which the work is performed means the county in which the Project is located.

1.1.28 Option. Whenever this term is used it shall be understood to mean a choice from among the specified products or procedures which shall be made by the Contractor. The choice is not "whether" the work is to be performed, but "which" product or "which" procedure is to be used. The product or procedure chosen by the Contractor shall be provided at no increase in the cost to the District with no lessening of the Contractor’s responsibility for its performance. All or any options selected or proposed are still subject to all requirements for submittals and for approval of same.

1.1.29 Or Equal and Or Approved Equal. The terms “or equal” and “or approved equal” shall mean “or equal as approved in writing by the Architect”.

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

1.1.31 **The Project Manual.** 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.

1.1.32 **The Project Site.** Project site is the space available for performing construction activities. The extent of Project site is shown on Drawings and may or may not be identical with the description of the land on which Project is to be built.

1.1.33 **Provide** shall include “provide complete in place,” that is “furnish and install.” Complete and ready for the intended use.

1.1.34 **Punch List Inspection.** The inspection performed by the Construction Manager, Architect and the District upon written notification by the Contractor that the Work is substantially complete.

1.1.35 **Regulations.** The term “regulations” includes laws, ordinances, statutes, and lawful orders issued by authorities having jurisdiction, as well as rules, conventions, and agreements within the construction industry that control performance of the Work.

1.1.36 **Remaining Work.** Remaining Work means the work required by the Contract, but not required for Substantial Completion, that the District or Architect determines has not been satisfactorily completed at the time of Substantial Completion, deferred commissioning requirements, deferred and seasonal testing, and all maintenance and operating instructions, schedules, reports, guaranties, warranties, bonds, certificates of inspection, marked-up record documents, prevailing wage compliance reports and all other documents as required by the Contract Documents. Remaining Work may also be referred to as Punch List work.

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

1.1.38 **Site** refers to the grounds of the Project as defined in the Contract Documents and such adjacent lands as may be directly affected by the performance of the Work.

1.1.39 **The Specifications.** The Specifications are that portion of the Contract Documents consisting of the written requirements for material, equipment, construction systems, instructions, quality assurance standards, workmanship, and performance of related services.

1.1.40 **Specification Language.** These Specifications are written in the imperative mood, as defined in the Construction Specifications Institute’s Manual of Practice. Imperative language is directed to the Contractor. The indicative mood is employed on occasion when such sentence structure is necessary to convey the intended meaning in a more accurate or understandable form. The text is streamlined, with the colon (:) employed as a symbol for the words “shall be”, “shall have”, “shall conform with”, “shall comply with”, or “shall meet the requirements of”. The colon is also used to separate a paragraph title or heading from the text that follows.
1.1.41 Standards, Rules, and Regulations referred to are recognized printed standards and shall be considered as one and a part of these specifications within limits specified. Federal, state and local regulations are incorporated into the Contract Documents by reference.

1.1.42 Subcontractor, as used herein, includes those having direct or indirect contracts with Contractor and ones who furnished labor, material or services for a special design according to drawings and specifications of this Work, but does not include ones who merely furnish material not so worked.

1.1.43 Substantial Completion. The date on which the Work or designated portion thereof, as certified by the District Project Manager and Architect, is sufficiently complete, in accordance with the Contract Documents, so the District, may occupy or utilize the Work or designated portion thereof for the use for which it is intended.

1.1.44 Surety is the person, firm, or corporation that executes as surety the Contractor's Performance Bond and Payment Bond.

1.1.45 Work of the Contractor or Subcontractor shall include all labor, materials and equipment necessary for the Contractor to fulfill all of its obligations pursuant to the Contract Documents. It shall include the initial obligation of any Contractor or Subcontractor who performs any portion of the Work, to visit the Site of the proposed Work (a continuing obligation after the commencement of the Work), to fully acquaint and familiarize itself with the conditions as they exist and the character of the operations to be carried out under the Contract Documents, and make such investigation as it may see fit so that it shall fully understand the facilities, physical conditions, and restrictions attending the Work under the Contract Documents. Each such Contractor or Subcontractor shall also thoroughly examine and become familiar with the Drawings, Specifications, and associated bid documents before preparing and submitting any bid.

1.1.46 Workers includes laborers, workers, and mechanics.

1.2 EXECUTION, CORRELATION AND INTENT

1.2.1 Correlation and Intent

1.2.1.1 Documents Complementary and Inclusive. The Contract Documents are complementary; what is required by one shall be as binding as if required by all. The Contract Documents will be construed in accordance with the laws of the State of California and applicable building codes and statutes of the City and/or County where the Project is located. The intent of the Contract Documents is to describe and provide for a functionally complete and operational Project (or part thereof) to be constructed in accordance with the Contract Documents. All Work, materials, and equipment that may reasonably be inferred from the Contract Documents or from prevailing custom or trade usage as necessary to properly execute and complete the Work to conform to the requirements of the Contract Documents and provide for a functionally complete and operational Project shall be provided by Contractor with no change in the Contract Sum or Contract Time. A typical or representative detail on the Drawings shall constitute the standard for workmanship and material throughout corresponding parts of the Work. Where necessary, and where reasonably inferable from the Drawings, Contractor shall adapt such representative detail for application to such corresponding parts of the Work.
with no change in the Contract Sum or Contract Time. The details of such adaptation shall be submitted to the City for approval. Repetitive features shown in outline on the Drawings shall be in exact accordance with corresponding features completely shown. All Contract Documents form the Contractor's contract with the District. Any item of Work mentioned in the Specifications and not shown on the Drawings, or shown on the Drawings and not mentioned in the Specifications, shall be provided by Contractor as if shown or mentioned in both. Ambiguities or inconsistencies arising as a result of separation of sections or portions of the drawings or specifications by or for subcontractor bidding shall not relieve the Contractor for providing the complete Work at the Contract Price and within the Contract Time.

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

1.2.1.3 Conflicts. In the event there is a discrepancy between the various Contract Documents, the more stringent, higher quality, and greater quantity of Work shall apply.

1.2.1.4 Conformance with Laws. Each and every provision of law required by law to be inserted in this Contract shall be deemed to be inserted herein, and the Contract shall be read and enforced as though it were included herein, even if through mistake or otherwise any such provision is not inserted, or is not correctly inserted. Before commencing any portion of the Work, Contractor shall check and review the Drawings and Specifications for such portion for conformance and compliance with all laws, ordinances, codes, rules and regulations of all governmental authorities and public and municipal utilities affecting the construction and operation of the physical plant of the Project, all quasi-governmental and other regulations affecting the construction and operation of the physical plant of the Project, and other special requirements, if any, designated in the Contract Documents. Such checking shall include Title 21 and Title 24 of the California Code of Regulations, California Building Code, local utility, local water connection, local grading and all other applicable agencies. In the event Contractor observes any violation of any law, ordinance, code, rule or regulation, or inconsistency with the Contract Documents, Contractor shall, within five (5) days, notify Architect and District in writing of same and shall ensure that any such violation or inconsistency shall be corrected in the manner provided hereunder prior to the construction of that portion of the Project. The Contractor shall bear all expenses of correcting Work done contrary to said laws, ordinances, rules, and regulations if the Contractor performed same (1)
without first consulting the Architect for further instructions regarding said Work or (2) disregarded the Architect’s instructions regarding said work.

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

1.2.2 Addenda and Deferred Approvals

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

1.2.2.2 **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, including those required from the Division of the State Architect ("DSA") and the State Fire Marshall. 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 3. 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.

1.2.2.3 **Deferred Approval Requirements.** Deferred approvals shall be submitted and processed pursuant to the requirements of Division 1 of the Specifications. All deferred approvals shall be prepared by Contractor or Contractor’s agent early enough so as to not delay the Project. Contractor is aware that Title 21
California Code of Regulations Section 17(g) and Title 24 California Code of Regulations Section 4-317 have specific requirements for deferred approval as to governing agencies and as to the Architect and Engineer for the Project. As a result, any delay associated with the time for approval by applicable agencies or by the Architect or Architect’s consultants shall be Contractor’s.

1.2.3 Specification Interpretation

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

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

1.2.3.3 General Conditions. The General Conditions and supplementary general conditions are a part of each and every section of the Specifications.

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

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

1.2.3.6 Metric. The Specifications may indicate metric units of measurement as a supplement to U.S. customary units. When indicated thus: 1” (25 mm), the U. S. customary unit is specific, and the metric unit is nonspecific. When not shown with parentheses, the unit is specific. The metric units correspond to the “International System of Units” (SI) and generally follow ASTM E 380, “Standard for Metric Practice.”

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

1.2.4.1 In the event of conflict within the drawings, the following rules shall apply:

(a) General Notes, when identified as such, shall be incorporated into other portions of Drawings.

(b) Schedules, when identified as such, are complementary with other notes and other portions of Drawings including those identified as General Notes.

(c) Larger scale drawings shall take precedence over smaller scale drawings.

(d) At no time shall the Contractor base construction on scaled drawings.

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

1.2.4.3 If Contractor observes that drawings and specifications are in conflict, Contractor shall, within five (5) days, notify the Architect in writing for the purposes of obtaining an interpretation of the Contact Documents.

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

(a) General Conditions take precedence over Drawings and Specifications.

(b) Special Conditions take precedence over General Conditions.

(c) The Agreement shall take precedent over the Special Conditions.

(d) In the case of disagreement or conflict between or within standards, specifications, and drawings, the more stringent, higher quality, and greater quantity of Work shall apply.

1.3 **OWNERSHIP AND USE OF ARCHITECT’S DRAWINGS, SPECIFICATIONS AND OTHER DOCUMENTS**

The Drawings, Specifications, and other contract documents for the Project are the property of the District and/or Architect pursuant to Education Code § 17316. The Contractor may retain one contract record set. Neither the Contractor nor any Subcontractor, or material or equipment supplier shall own or claim a copyright in the Drawings, Specifications, and other documents prepared by the Architect. All copies except the Contractor’s record set, shall be returned or properly accounted for upon completion of the Work. The Drawings, Specifications, and other documents prepared by the Architect, and copies thereof furnished to the Contractor are not to be used by the Contractor or any Subcontractor, Sub-subcontractor, or material or equipment supplier on other projects or for additions to this Project outside the scope of the Work. The District and/or Architect hereby grants the Contractor, Subcontractors, Sub-subcontractors, and material or equipment suppliers a limited license to use applicable portions of the Drawings, Specifications, and other documents prepared for the Project in the execution of their Work under the Contract Documents. Submittal or distribution to meet official regulatory requirements or for other purposes in connection with this Project is not to be construed as publication in derogation of the District’s property interest or other reserved right.
ARTICLE 2

DISTRICT

2.1 INFORMATION AND SERVICES REQUIRED OF THE DISTRICT

2.1.1 Site Survey.

If applicable, the District will furnish, at its expense, a legal description of the Site and a land survey showing the boundaries of the Site. Contractor shall be responsible for all surveys regarding location of construction, grading and site work.

2.1.2 Soils.

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

2.1.3 Contractor Reliance.

If appropriate to the Work, a soils investigation report has been obtained from test holes at the Site, and such report is available for the Contractor’s use in preparing its bid and Work under this Contract. The soils report is provided for review. Any information obtained from such report or any other information given on drawings as to subsurface soil condition or to elevations of existing grades or elevations of underlying rock is approximate only. If, during the course of Work under this Contract, Contractor encounters subsurface conditions which differ materially from those indicated in the soils investigation report, then Contractor shall notify the District within five (5) calendar days of discovery of the condition, and changes to the contract price may be made in accordance with Article 7 entitled “Changes in the Work.” Contractor agrees that no claim against District will be made by Contractor for damages and hereby waives any rights to damages in the event the Contractor fails to notify District within the five-day period mentioned above.

WARNING: DISTRICT DOES NOT WARRANT THE SOILS AT THE PROJECT SITE. SOILS INVESTIGATION REPORT IS PROVIDED FOR CONTRACTORS INFORMATION ONLY. CONTRACTOR HAS CONDUCTED AN INDEPENDENT INVESTIGATION OF THE PROJECT SITE AND THE SOILS CONDITIONS OF THE SITE. DISTRICT DOES NOT WARRANT THE SOILS CONDITIONS OF THE SITE AND CONTRACTOR IS FULLY RESPONSIBLE TO ASCERTAIN SITE CONDITIONS FOR THE PURPOSES OF DETERMINING CONSTRUCTION MEANS AND METHODS PRIOR TO COMMENCING CONSTRUCTION. THE SOILS INVESTIGATION REPORT IS NOT A CONTRACT DOCUMENT.

2.1.4 Utilities.

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

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

No excavations were made to verify the locations shown for underground utilities. The service connections to these utilities may not be shown on the drawings. It shall be the responsibility of the Contractor to determine the exact location of all service connections. The Contractor shall make its own investigations, including exploratory excavations, to determine the locations and type of service connections, prior to commencing work which could result in damage to such utilities. The Contractor shall immediately notify the District’s representative as to any utility discovered by Contractor in a different position than shown in the Contract Documents or which is not shown on the Contract Documents.

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

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

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

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

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

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

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

2.1.5 Existing Utility Lines; Removal, Relocation.

2.1.5.1 Main or Trunkline Facilities. If the Contractor while performing the contract discovers utility facilities not identified by the District in the Contract Documents, Contractor shall, within five (5) days, notify the District and utility in writing.

The District has the responsibility to identify, with reasonable accuracy, main or trunkline facilities on the drawings and specifications. In the event that main or trunkline utility facilities are not identified with reasonable accuracy in the drawings and specifications, District shall assume the responsibility for their timely removal, relocation, or protection.

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

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

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

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

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

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

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

2.1.5.3 Notification. If the Contractor, while performing Work under this Contract, discovers utility facilities not identified by the District in the Contract Documents, Contractor shall, within five (5) days, notify the District and the utility in writing. If Contractor fails to notify the District within five (5) days after discovery of any utility facilities not identified by District in the Contract Documents, Contractor waives all rights to be compensated for any extra Work or damages resulting from such discovered utilities.

2.1.6 Easements.

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

2.2 DISTRICT’S RIGHT TO CARRY OUT THE WORK

If the Contractor defaults or neglects to carry out the Work in accordance with the Contract Documents, including, but not limited to:

1. Failure to supply adequate workers on the entire Project or any part thereof;
2. Failure to supply a sufficient quantity of materials;
3. Failure to perform any provision of this Contract;
4. Failure to comply with safety requirements, or due to Contractor is creation of an unsafe condition;
5. In the case of bona fide emergency;
6. Failure to order materials in a timely manner;
7. Failure to prepare deferred-approval items or shop drawings in a timely manner;
8. Failure to comply with Contractor’s schedule which would result in a delay to the critical path;

If the Contractor defaults or neglects to carry out the Work in accordance with the Contract Documents, and fails (within a five-day period after receipt of written notice or a shorter time period

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expressly stated in the written notice from the District in an emergency situation) to commence and continue correction of such default with diligence and promptness, the District may correct such deficiencies without prejudice to other remedies the District may have, including those set forth in Article 14 after providing 48 hours' notice to the Contractor. In either case, the Contractor will be invoiced the cost of correcting such deficiencies, including compensation for additional services and expenses made necessary by such default, or neglect. The invoice amount shall be deducted from the next payment due the Contractor. If payments then or thereafter due the Contractor are not sufficient to cover such amounts, the Contractor shall pay the difference to the District.
ARTICLE 3

THE CONTRACTOR

3.1 SUPERVISION AND CONSTRUCTION PROCEDURES

3.1.1 Contractor.

The Contractor shall continually supervise and direct the Work using the Contractor's best skill and attention. The Contractor shall be solely responsible for and have control over construction means, methods, techniques, sequences, procedures; and shall coordinate all portions of the Work under the Contract, unless the Contract Documents give other specific instructions concerning these matters. The Contractor shall not perform the Work without utilizing the Contract Documents or, where required, approved shop drawings, product data, or samples for any such portion of the work. If any of the Work is performed by contractors retained directly by the District, Contractor shall be responsible for the coordination and sequencing of the work of those other contractors so as to avoid any impact on the project schedule pursuant to the requirements of Article 6 and Article 8. Specific duties of the Contractor shall include those set out in Section 43 of Title 21 of the California Code of Regulations and Section 4-343 of Title 24 of the California Code of Regulations. These duties include, but are not limited to the following:

(a) Responsibilities. It is the duty of the Contractor to complete the Work covered by his or her contract in accordance with the approved drawings and specifications. The Contractor in no way is relieved of any responsibility by the activities of the Architect, Engineer, Inspector or DSA in the performance of their duties.

(b) Performance of the work. The Contractor shall carefully study the approved drawings and specifications and shall plan its schedule of operations well ahead of time. If at any time it is discovered that work is being done which is not in accordance with the approved drawings and specifications, the contractor shall correct the work immediately.

All inconsistencies or times which appear to be in error in the drawings and specifications shall promptly be called to the attention of the Architect or, Engineer, for interpretation or correction. Local conditions which may affect the structure shall be brought to the Architect's attention at once. In no case, shall the instruction of the Architect be construed to cause work to be done which is not in conformity with the approved drawings, specifications, change orders, construction change directives, and as required by law.

The Contractor shall not carry on Work except with the knowledge of the Inspector of Record.

(c) Verified Reports. The Contractor shall make and submit to the District from time to time, verified reports as required in Section 36 of Title 21 and Section 4-366 of Title 24.

Contractor shall fully comply with any and all reporting requirements of Education Code Sections 81147, et seq., in the manner prescribed by Title 24, as applicable.
3.1.2 Contractor Responsibility.

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

3.1.3 Obligations not Changed by Architect’s Actions.

The Contractor shall not be relieved of obligations to perform the Work in accordance with the Contract Documents either by activities or duties of the Architect in the Architect’s administration of the Contract or by tests, inspections, or approvals required or performed by persons other than the Contractor.

3.1.4 Acceptance/Approval of Work.

The Contractor shall be responsible to determine when any completed portions of the Work already performed under this Contract or provided pursuant to Article 6 are suitable to receive subsequent Work thereon.

3.1.5 Performance of Work With Own Force.

Contractor shall perform at least 15% of the Work, exclusive of supervisory and clerical work without the services of any subcontractor. Contractor shall supervise and direct the work competently and efficiently, devoting such attention thereto and applying such skills as may be necessary to perform the Work in accordance with the Contract Documents.

3.2 SUPERVISION

3.2.1 Full Time Supervision.

Unless personally present on the Project site where the Work is being performed, the Contractor shall keep on the Work at all times during its progress a competent construction Superintendent satisfactory to the District. The Superintendent shall be present on a full-time basis, shall be dedicated exclusively to the Project and shall not share superintendent duties with another project or job. The Superintendent shall not be replaced except with written consent of the District. The Superintendent shall represent the Contractor in its absence and shall be fully authorized to receive and fulfill any instruction from the Architect, the Inspector, the District or any other District representative. All Requests for Information shall be originated by the Superintendent and responses thereto shall be given to the Superintendent. No Work shall begin on any day by any Subcontractor or other person on the Project site until the Superintendent has arrived, or shall any Work continue during the day after the Superintendent has departed from the Project site. The Superintendent shall have authority to bind Contractor through the Superintendent’s acts. The Superintendent shall represent the Contractor, and communications given to the Superintendent shall be binding on the Contractor. Before commencing the Work, Contractor shall give written notice to District and Architect of the name and a Statement of Qualifications of such superintendent for District approval. Superintendent shall not be changed except with written consent of District, unless a superintendent proves to be unsatisfactory to Contractor and ceases to be in its employ, in which case, Contractor shall notify District and Architect in
writing. Contractor shall provide a replacement superintendent approved by the District prior to performing additional work.

3.2.2 Staff.

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

3.2.3 Right to Remove.

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

3.3 LABOR AND MATERIALS

3.3.1 Contractor to Provide.

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

3.3.2 Quality.

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

3.3.3 Replacement.

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

3.3.4 Discipline.

The Contractor shall enforce strict discipline and good order among the Contractor's and Subcontractor's employees, and other persons carrying out the Contract. The Contractor shall not
permit employment of unfit persons or persons not skilled in tasks assigned to them. As used in this subsection, “unfit” includes any person who the District concludes is improperly skilled for the task assigned to that person, who fails to comply with the requirements of this article, or who creates safety hazards which jeopardize other persons and/or property.

3.3.5 Noise, Drugs, Tobacco, and Alcohol.

Contractor shall take all steps necessary to insure that employees of Contractor or any of its subcontractors’ employees do not use, consume, or work under the influence of any alcohol, tobacco or illegal drugs while on the project. Contractor shall further prevent any of its employees or its subcontractor employees from playing any recorded music devices or radios or wearing any radio headphone devices for entertainment while working on the project. Likewise, Contractor shall prevent its employees or subcontractor’s employees from bringing any animal onto the project. Contractors shall not violate any written school policies.

3.3.6 Delivery of Material.

Contractor shall place orders for materials or equipment so that the Work may be completed in accordance with the Construction schedule for the Work as set forth in Article 8 of this Agreement. Contractor shall, upon demand from the Architect, furnish to the Architect documentary evidence including, but not limited to purchase orders, invoices, bills of materials, work orders and bills of lading, showing that orders have been placed.

3.3.7 Liens and Other Security Interests of Subcontractors and Material Suppliers.

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

3.3.8 Title to Materials.

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

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

3.4 WARRANTY

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

3.4.1.1 In addition to any other warranties and guaranties provided elsewhere, Contractor shall, and hereby does, warrant all Work after the date of Notice of Completion of Work by District and shall repair or replace any or all such work, together with any other work, which may be displaced in so doing that may prove defective in workmanship or materials within a one (1) year period from date of completion as defined in Public Contract Code Section 7107(c) without expense whatsoever to District, ordinary wear and tear, unusual abuse or neglect excepted. District will give notice of observed defects with reasonable promptness. Contractor shall notify District upon completion of repairs.

3.4.1.2 In the event of failure of Contractor to comply with above mentioned conditions within one week after being notified in writing, District is hereby authorized to proceed to have defects repaired and made good at expense of Contractor who hereby agrees to pay costs and charges therefore immediately on demand.

3.4.1.3 If, in the opinion of the District, defective Work creates a dangerous condition or requires immediate correction or attention to prevent further loss to the District, the District will attempt to give the notice required by this Article. If the Contractor cannot be contacted or does not comply with the District’s requirements for correction within a reasonable time as determined by the District, the District may, notwithstanding the provisions of this article, proceed to make such correction or attention which shall be charged against Contractor. Such action by the District will not relieve the Contractor of the guarantee provided in this Article or elsewhere in this Contract.

3.4.1.4 This Article does not in any way limit the guarantee on any items for which a longer warranty or guaranty is specified or on any items for which a manufacturer gives a guarantee for a longer period. Contractor shall furnish District all appropriate guaranty or warranty certificates upon completion of the project.
3.4.2 Format - All Warranties/Guaranties and shall include:

3.4.2.1 Contractor, subcontractor, and equipment supplier shall provide Warranties and Guaranties on their original company letterhead with original signature.

3.4.2.2 Contractor shall provide original Warranties and Guaranties. Photo copies, fax and e-mail copies are not acceptable.

3.4.3 Preparation

3.4.3.1 Contractor shall obtain warranties and guaranties, executed in duplicate by each applicable and/or responsible subcontractor(s), supplier(s), and manufacturer(s), within fifteen (15) days after Notice of Substantial Completion of the applicable Work or Phase of Work. Except for items put into use with District’s permission, Contractor shall leave date of beginning of time of warranty or guaranty blank until the date of completion is determined by District.

3.4.3.2 Contractor’s Response to Construction Warranty and Guaranty Service Requirements: Following oral or written notification by the District, respond to construction warranty and guaranty service requirements within 24 hours, or earlier in case of emergency.

3.4.4 Warranty and/or Guaranty Tags.

At the time of installation of mechanical equipment or other major system elements, tag each warranted or guaranteed item with a durable, oil and water resistant tag approved by the District. Attached each tag with a copper wire and spray with a silicone waterproof coating. The date of Substantial Completion and the Contractor Authorized signature must remain blank until the date the District makes a determination of Substantial Completion. Show the following information on the tag:

WARRANTY/GUARANTY INFORMATION – [insert project number and name on actual tag]

a. Type of product/material___________________________.
b. Model number_____________________________________.
c. Serial number_______________________________________.
d. Contract number____________________________________.
e. Warranty/Guaranty period _____ (months) from_________ to_______________.
f. Inspector’s signature__________________________________.
g. Construction Contractor_______________________________.
   Address_______________________________________________.
   Telephone number______________________________________.
h. Warranty or Guaranty contact___________________________.
   Address_______________________________________________.
   Telephone number_______________________________________.
i. WARNING - PROJECT PERSONNEL TO PERFORM ONLY OPERATIONAL MAINTENANCE DURING THE WARRANTY PERIOD.

3.5 TAXES

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

3.6 PERMITS, FEES AND NOTICES

3.6.1 Payment.

The Contractor shall secure and pay for all permits and governmental fees, licenses, and inspections necessary for proper execution and completion of the Work which are necessary after execution of the Contract and are legally required by any authority having jurisdiction over the Project, except those required by the Division of the State Architect (DSA). District shall be responsible for all testing and inspection as required by the DSA on-site or within the distance limitations set forth in Paragraph 13.5.2, unless a different mileage range is specified in the Special Conditions.

3.6.2 Compliance.

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

3.6.3 Responsibility.

The Contractor shall perform all Work in conformance with every applicable law, statute, ordinance, building code, rule or regulation. The Contractor shall assume full responsibility for such Work and shall bear the attributable cost of correction or project delay.

3.7 NOT USED.

3.8 CONTRACTOR'S CONSTRUCTION SCHEDULES

3.8.1 Requirements.

(a) Within ten (10) calendar days after being awarded the contract, Contractor shall submit a schedule for District’s approval using Microsoft Project 2013, or Oracle Primavera P6 software. Contractor shall provide digital schedule files in the software native format (MS Project or Oracle P6) to District on CD/USB for this schedule, and all subsequent progress schedules required by the District. The schedule shall not exceed time limits set forth in the Contract Documents and shall comply with all of the scheduling requirements as set forth in the Specifications. Failure to submit a schedule or submittal of a schedule which shows completion of the Work beyond the specified completion date shall be deemed a material breach by the Contractor. The schedule must indicate the beginning and completion of all phases of construction and shall use the “critical path method” (commonly called CPM) for the value reporting, planning and scheduling, of all Work required under the Contract Documents. The scheduling is necessary for the District’s adequate monitoring of the progress of the Work and shall be prepared in accordance with the time frame described in Article 8 of the General Conditions. The District may disapprove of any schedule or require modification to it if, in the opinion of the District, adherence to the progress schedule will not cause the Work to be completed in accordance with the Agreement.
(b) Contractor shall not submit a schedule showing early completion without indicating float time through the date set for Project completion by District. Contractor’s schedule shall account for all days past early completion as float which belongs to both District and Contractor. Usage of float shall not entitle Contractor to any delay claim or damages due to delay.

(c) Contractor shall not be granted an extension of time for failure to obtain necessary approvals for deferral 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 and shop drawings in its progress schedule. If Contractor fails to include deferred approval items and shop drawings in its schedule which results in a critical path delay, then Contractor shall be subject to the assessment of liquidated damages.

(d) In addition to providing a schedule update every thirty (30) days, the Contractor, if requested by the Architect or District, shall provide revised schedules within ten (10) days if, at any time, the Architect or District, consider the completion date to be in jeopardy because of “activities behind schedule.” The additional schedule shall include a new arrow or precedence diagram and schedule reports conforming to the requirements above, designed to show how the Contractor intends to accomplish the Work to meet the completion date. The form and method employed by the Contractor shall be the same as for the original construction schedule accepted by the District. The Contractor shall modify any portions of the schedule that become infeasible because of “activities behind schedule” or for any other valid reason. An activity that cannot be completed by its original latest completion date shall be deemed to be behind schedule. If Contractor submits a revised schedule showing an earlier completion date for the Project, District’s acceptance of this revised schedule shall not entitle Contractor to any delay claim or damages due to any such revised schedule.

(e) Contractor shall include in the schedule all shop drawings, and deferred submittals. Include activities for the submittal, District/Architect’s review (minimum duration of 14 calendar days), procurement (or fabrication as applicable); and link the finish of the procurement/fabrication activity to the start of the related field activity at the Site.

3.8.2 Failure to Meet Requirements.

Failure of the Contractor to provide proper schedules as required by this Article and Article 9 is a material breach of the contract and grounds for termination pursuant to Article 14. The District, at its sole discretion, may choose, instead, to withhold, in whole or in part, any progress payments or retention amounts otherwise payable to the Contractor.

3.9 NOT USED.

3.10 DOCUMENTS AND SAMPLES AT THE SITE

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

3.11 **SHOP DRAWINGS, PRODUCT DATA, SAMPLES, AND SUBSTITUTIONS**

3.11.1 Submittals defined.

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

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

3.11.1.3 *Contractor's Responsibilities.* Contractor shall obtain and shall submit all required shop drawings, samples, etc., required by the Specifications with such promptness as to cause no delay in its own Work. or in that of any other contractor or subcontractor but in no event later than ten (10) days after the award of the Contract. No extensions of time will be granted to Contractor or any Subcontractor because of its failure to have shop drawings and samples submitted in accordance with the Schedule. Each Subcontractor shall submit all shop drawings, samples, and manufacturer’s descriptive data for the review of the District, the Contractor, and the Architect through the Contractor. By submitting shop drawings, product data, samples, etc., the Contractor represents that it has determined and verified all materials, field measurements, catalog numbers, related field construction criteria, and other relevant data in connection with each such submission, and that it has checked, verified, and coordinated the information contained within such submittals with the requirements of the Work and of the Contract Documents, including the construction schedule. The submission of the shop drawings, product data, samples, etc., shall not deviate from the requirements of the Contract Documents including detailing and design intent which is specifically outlined in Contract Documents except as specifically authorized by the District/Architect or through an accepted substitution pursuant
to Paragraph 3.10.4. All deviations from the Contract Documents shall be narratively described in a transmittal accompanying the shop drawings. However, shop drawings shall not be used as a means of requesting a substitution, the procedure for which is defined in Paragraph 3.10.4, "Substitutions." Review by District and Architect shall not relieve the Contractor or any Subcontractor from its responsibility in preparing and submitting proper shop drawings in accordance with the Contract Documents. Any submission, which in District/Architect’s opinion is incomplete, contains errors, or has been checked superficially will be returned un-reviewed by the District/Architect for resubmission by the Contractor. Contractor shall stamp, sign, and date each submittal indicating its representation that the submittal meets all of the requirements of the Contract Documents and evidence Contractor’s review through execution of the following stamp to be placed on each shop drawings:

"The contractor has reviewed and approved the field dimensions and the construction criteria, and has also made written notation regarding any information in the shop drawings that does not conform to the contract documents. This shop drawing has been coordinated with all other shop drawings received to date by contractor and this duty of coordination has not been delegated to subcontractors, material suppliers, the Architect, or the engineers on this project.

Signature of Contractor and date"

3.11.1.4 Extent of Review. In reviewing shop drawings, the District nor the Architect will not verify dimensions and field conditions. The Architect will review and approve shop drawings, product data, samples, etc., for aesthetics and for conformance with the design concept of the Work and the information in the Contract Documents. The District nor the Architect’s review shall neither be construed as a complete check which relieves the Contractor, Subcontractor, manufacturer, fabricator, or supplier from responsibility for any deficiency that may exist or from any departures or deviations from the requirements of the Contract Documents unless the Contractor has, in writing, called the District’s/Architect’s attention to the deviations at the time of submission. The District’s or Architect’s review shall not relieve the Contractor or Subcontractors from responsibility for errors of any sort in shop drawings or schedules, for proper fitting of the Work, coordination of the differing subcontractor trades and shop drawings and Work which is not indicated on the shop drawings at the time of submission of shop drawings. Contractor and Subcontractors shall be solely responsible for any quantities which may be shown on the submittals or Contract Documents.

3.11.2 Drawing Submission Procedure.

3.11.2.1 Transmittal Letter and Other Requirements. All shop drawings must be properly identified with the name of the Project and dated, and each lot submitted must be accompanied by a letter of transmittal referring to the name of the Project and to the Specification section number for identification of each item clearly stating in narrative form, as well as “clouding” on the submissions, all qualifications, departures, or deviations from the Contract Documents. Shop drawings, for each section of the Work shall be numbered consecutively and the numbering system shall be retained throughout all revisions. All Subcontractor submissions shall be made through the Contractor. Each drawing shall have a clear space for the stamps of Architect and Contractor.

3.11.2.2 Copies Required. Unless otherwise approved by the District, each submittal shall include six (6) legible prints of each drawing or schedule, table, cut sheet, etc., including fabrication, erection, layout and setting drawings, and such other drawings as required under the various sections of the Specifications, until final acceptance thereof is obtained. Subcontractor shall
submit copies, in an amount as requested by the Contractor, of: (1) manufacturers' descriptive data for materials, equipment, and fixtures, including catalog sheets showing dimensions, performance, characteristics, and capacities; (2) wiring diagrams and controls; (3) schedules; (4) all seismic calculations and other calculations; and (5) other pertinent information as required by the District or Architect.

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

3.11.2.4 Approval Prior to Commencement of Work. No portion of the Work requiring a shop drawing or sample submission or other submittal shall be commenced until the submission has been reviewed by Contractor and Architect and approved by Architect unless specifically directed in writing by the District. All such portions of the Work shall be in accordance with approved shop drawings and samples.

3.11.3 Sample Submissions Procedure.

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

3.11.3.2 Labels and Instructions. All samples of materials shall be supplied with the manufacturer's descriptive labels and application instructions.

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

3.11.4 Substitutions.

3.11.4.1 One Product Specified. Unless the Specifications state that no substitution is permitted, whenever the Contract Documents indicate any specific material, product, thing or service,
or any specific name, make, trade name, or catalog number, with or without the words "or equal," such specification shall be deemed to be used for the purpose of facilitating description of the material, product, thing or service desired and shall be deemed to be followed by the words "or equal" unless the Contract Documents specify "no substitution allowed", "no equal", "no equivalent", or other language with similar meaning, in which case no substitutions will be allowed. Pursuant to Paragraph 3.11.4.3, the Contractor may, unless otherwise stated, within three (3) work days after the bid opening, submit a substitution request for any material, product, thing or service, which shall be materially equal or better in every respect to that so indicated or specified ("Specified Item") and will completely accomplish the purpose of the Contract Documents.

(a) Products Specified Which are Commercially Unavailable. If the Contractor fails to make a request for substitutions for products, within three (3) work days after bid opening, and such products subsequently become commercially unavailable, the Contractor may request a substitution for such commercially unavailable item. The decision to grant this request is solely at the District's discretion. The written approval of the District, consistent with the procedure for Change Orders, shall be required for the use of a proposed substitute material. The District may condition its approval of the substitution upon the delivery to District of an extended warranty or guaranty or other assurances of adequate performance of the substitution as well as an equitable deduction in the contract sum should the substituted item cost less than the Specified Item. All risks of delay due the approval of a requested substitution by the District, DSA, or any other governmental agency having jurisdiction, shall be on the requesting party. All additional costs, all procurement and construction delays, and all costs for review by the Architect or its consultants shall be the responsibility of the Contractor and will be deducted from Contractor's pay request.

3.11.4.2 Substitution Request Form. Requests for substitutions of materials, products, things or services in place of a Specified Item must be submitted to the District in writing on the District’s Substitution Request Form ("Request Form") within three (3) work days after bid opening, except as provided for in Paragraph 3.11.4.1.

The Request Form must be accompanied by evidence as to whether the proposed substitution:

1. Is equal in quality/service/ability to the Specified Item;
2. Will entail no changes in detail, construction, and scheduling of related work;
3. Will be acceptable in consideration of the required design and artistic effect;
4. Will provide no cost disadvantage to the District;
5. Will require no excessive or more expensive maintenance, including adequacy and availability of replacement parts; and
6. Will required no change of the construction schedule.

3.11.4.3 In completing the Request Form, the bidder shall state, with respect to each requested substitution, that the bidder will agree to provide the Specified Item in the event that the District denies the bidder’s request for such requested substitution. In the event the District denies the bidder’s requested substitution for a Specified Item, the bidder shall provide the Specified Item without any additional cost or charge to the District, and waives all rights to submit a claim.

3.11.4.4 After bids are opened, the apparent lowest bidder shall provide, within three (3) days of opening such bids, any and all Drawing, Specifications, samples, performance data, calculations, and other information, as may be required to assist the Architect and the District in determining
whether the proposed substitution is acceptable. The burden of establishing these facts shall be upon the bidder.

3.11.4.5 After the District's receipt of such evidence by the bidder, the District will make its final decision as to whether the bidder's request for substitution for any Specified Items will be granted. The decision as to whether a proposed request for substitution is equal to a Specified Item shall be at the sole discretion of the District. Any request for substitution that is granted by the District shall be documented and processed through a Change Order. The District may condition its approval of any substitution upon delivery to the District of an extended warranty or guaranty or other assurances of adequate performance of the substitution. Any and all risks of delay due to approval by the District, DSA or any other governmental agency having jurisdiction shall be on the bidder.

3.11.4.6 If the Architect and District accept a proposed substitution, the Contractor agrees to pay for all District expenses, including but not limited to Division of the State Architect fees, engineering and design services, compensation to the Architect and affected engineers for their required time to process such substitution through the Division of the State Architect, if required, and to make all changes and adjustments in materials or the work of all trades directly or indirectly affected by the substituted item or items at no cost to the District.

3.12 INTEGRATION OF WORK

3.12.1 Scope.

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

3.12.2 Structural Members.

New or existing structural members and elements, including reinforcing bars and seismic bracing, shall not be cut, bored, or drilled except by written authority of the Architect. Work done contrary to such authority is at the Contractor's risk and subject to replacement at its own expense without reimbursement under the Contract. Schedule delays resulting from Agency approvals for unauthorized work shall be the Contractor's responsibility.

3.12.3 Subsequent Removal.

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

3.13.1 Contractor’s Responsibility.

Contractor at all times shall keep premises free from debris such as waste, dust, excess water, storm water runoffs, rubbish, and excess materials and equipment. Contractor shall not leave debris under, in, or about the premises, but shall promptly remove same from the premises and dispose of it in a lawful manner. Disposal receipts or dump tickets shall be furnished to the Architect within five (5) days of request. Upon completion of Work, Contractor shall clean interior and exterior of buildings, including fixtures, equipment, walls, floors, ceilings, roofs, window sills and ledges, horizontal projections, and any areas where debris has collected, so surfaces are free from foreign material or discoloration; Contractor shall clean and polish all glass, plumbing fixtures, equipment, finish hardware and similar finish surfaces. Upon completion of the Work, Contractor shall also remove temporary utilities, fencing, barricades, planking, sanitary facilities and similar temporary facilities from Site.

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

3.13.1.1 In addition to the general cleaning, the following special cleaning shall be done at the completion of the work in accordance with the specifications including, but not limited to:

(a) Remove putty stains from glazing, then wash and polish glazing.
(b) Remove marks, stains, fingerprints and other soil or dirt from painted, stained or decorated work.
(c) Remove temporary protection and clean and polish floors and waxed surfaces.
(d) Clean and polish hardware and plumbing trim; remove stains, dust, dirt, plaster and paint.
(e) Remove spots, soil, plaster and paint from tile work, and wash tile.
(f) Clean all fixtures and equipment, remove excess lubrication, clean light fixtures and lamps, polish metal surfaces.
(g) Vacuum-clean carpeted surfaces.
(h) Remove debris from roofs, down spout and drainage system.

3.13.2 Failure to Cleanup.

If the Contractor fails to clean up as provided in the Contract Documents, the District may do so, and the cost thereof shall be the responsibility of the Contractor and deducted from the next progress payment.

3.14 ACCESS TO WORK

The Contractor shall provide the District, the Architect, Engineers and the Inspector of Record, access to the Work in preparation and progress wherever located. Contractor shall provide safe and proper facilities for such access so that District’s representatives may perform their functions.
CONTRACTOR IS AWARE THAT THIS CONTRACT MAY BE SPLIT INTO SEVERAL PHASES AS ADDRESSED IN ARTICLE 6.

3.15 ROYALTIES AND PATENTS

3.15.1 Payment and indemnity for infringement.

Contractor shall hold and save the District and its officers, agents, and employees, the Architect, and the Architect's consultants harmless from liability of any nature or kind, including cost and expense, for or on account of any patented or unpatented invention, process, article, or appliance manufactured or used in the performance of the contract, including its use by the District, unless otherwise specifically provided in the contract documents, and unless such liability arises from the sole negligence, or active negligence, or willful misconduct of the District, the Architect, or the Architect's consultants.

3.15.2 Review.

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

3.16 INDEMNIFICATION

3.16.1 Contractor.

Contractor shall defend, indemnify and hold harmless District, Architect, Inspector, the State of California and their officers, employees, agents and independent contractors from all liabilities, claims, actions, liens, judgments, demands, damages, losses, costs or expenses of any kind arising from death, personal injury, property damage or other cause based or asserted upon any act, omission, or breach connected with or arising from the progress of Work or performance of service under this Agreement or the Contract Documents. As part of this indemnity, Contractor shall protect and defend, at its own expense, District, Architect, Inspector, the State of California and their officers, employees, agents and independent contractors from any legal action including attorney's fees or other proceeding based upon such act, omission, or breach.

Furthermore, Contractor agrees to and does hereby defend, indemnify and hold harmless District, Architect, Inspector, the State of California and their officers, employees, agents and independent contractors from every claim or demand made, and every liability, loss, damage, expense or attorney's fees of any nature whatsoever, which may be incurred by reason of:

(a) Liability for (1) death or bodily injury to persons; (2) damage or injury to, loss (including theft), or loss of use of, any property; (3) any failure or alleged failure to comply with any provision of law or the Contract Documents; or (4) any other loss, damage or expense, sustained by any person, firm or corporation in connection with the Work called for in this Agreement or the Contract Documents, except for liability resulting from the sole or active negligence, or the willful misconduct of the District.

(b) Any bodily injury to or death of persons or damage to property caused by any act, omission or breach of Contractor or any person, firm or corporation employed by Contractor, either directly or by independent contract, including all damages or injury
to, loss (including theft), or loss of use of, any property, sustained by any person, firm or corporation, including District, arising out of or in any way connected with Work covered by this Agreement or the Contract Documents, whether said injury or damage occurs either on or off District property, but not for any loss, injury, death or damages caused by the sole or active negligence or willful misconduct of the District.

(c) Any dispute between Contractor and Contractor’s subcontractors/supplies/sureties, including, but not limited to, any failure or alleged failure of the Contractor (or any person hired or employed directly or indirectly by the Contractor) to pay any Subcontractor or Materialman of any tier or any other person employed in connection with the Work and/or filing of any stop notice or mechanic’s lien claims.

Contractor, at Contractor’s own expense, cost, and risk, shall defend any and all claims, actions, suits, or other proceedings that may be brought or instituted against the District, its officers, agents or employees, on or founded upon any cause, damage, or injury identified herein Section 3.16.1 and shall pay or satisfy any judgment that may be rendered against the District, its officers, agents or employees in any action, suit or other proceedings as a result thereof.

Contractor shall ensure that its contract with each of its subcontractors contains provisions requiring the subcontractors to defend, indemnify and hold harmless the District, Architect, Inspector, the State of California to a minimum level as set forth in this Article and consistent with the language of 3.16.1.

The Contractor’s and Subcontractors’ obligation to defend, indemnify and hold harmless the District, Architect, Inspector, the State of California and their officers, employees, agents and independent contractors hereunder shall include, without limitation, any and all claims, damages, and costs for the following: (1) any damages or injury to or death of any person, and damage or injury to, loss (including theft), or loss of use of, any property; (2) breach of any warranty or guaranty, express or implied; (3) failure of the Contractor or Subcontractors to comply with any applicable governmental law, rule, regulation, or other requirement; and (4) products installed in or used in connection with the Work.

3.17 SUBMISSION OF DAILY REPORTS

3.17.1 General.

At the close of each working day, the Contractor shall submit a daily report to the District and the Inspector, on forms approved by the District, together with applicable delivery tickets, listing all labor, materials, and equipment involved for that day. An attempt shall be made to reconcile the report daily, and it shall be signed by a District representative and the Contractor. In the event of disagreement, pertinent notes shall be entered by each party to explain points which cannot be resolved that day. Each party shall retain a signed copy of the report. Reports by subcontractors or others shall be submitted through the Contractor.

3.17.2 Labor.

The report required by Paragraph 3.17.1 shall show names of workers, classifications, hours worked.
3.17.3 Materials.

The report required by Paragraph 3.17.1 shall describe materials used.

3.17.4 Equipment.

The report required by Paragraph 3.17.1 shall show type of equipment, size, and hours of operation, including loading and transportation, if applicable.

3.18 EXECUTION OF THE WORK

3.18.1 Examination.

3.18.1.1 Acceptance of Conditions: Examine substrates, areas, and conditions, with Installer or Applicator present where indicated, for compliance with requirements for installation tolerances and other conditions affecting performance. Record all observations in writing.

3.18.1.2 Examine roughing-in for mechanical and electrical systems to verify actual locations of connections before equipment and fixture installation.

3.18.1.3 Examine walls, floors, and roofs for suitable conditions where products and systems are to be installed.

3.18.1.4 Proceed with installation only after unsatisfactory conditions have been corrected. Proceeding with the Work indicates acceptance of surfaces and conditions.

3.18.2 Existing Site and/or Building Conditions.

The existence and location of site improvements, utilities, and other construction indicated as existing are not guaranteed. Before beginning Work, investigate and verify the existence and location of mechanical and electrical systems and other construction affecting the Work.

Before construction, verify the location and points of connection of all utility services for the entire Project.

3.18.3 Existing Utilities.

The existence and location of underground and other utilities and construction indicated in the Contract Documents as existing are not guaranteed. Prior to beginning the Work investigate and verify the existence and location of all underground utilities and/or other improvements affecting the Work.

3.18.3.1 Before construction, verify the location and invert all elevations at points of connection of sanitary sewer, storm sewer, and water-service piping; and all underground electrical services.

3.18.3.2 Furnish location data for work related to Project that must be performed by public utilities serving Project site.
3.18.4 Preparation.

Review of Contract Documents and Field Conditions: Immediately on discovery of the need for clarification of the Contract Documents, submit a written request for information (RFI) to the District.

Existing Utility Information: Furnish information to the District and Architect that is necessary to adjust, move, or relocate existing utility structures, utility poles, lines, services, or other utility appurtenances located in or affected by construction. Contractor shall coordinate with authorities having jurisdiction.

Field Measurements: Take field measurements as required to fit the Work properly. Recheck measurements before installing each product. Where portions of the Work are indicated to fit to other construction, Contractor shall investigate and verify all dimensions of other construction by field measurements before fabrication. Contractor shall coordinate fabrication schedule with construction progress to avoid delaying the Work.

Space Requirements: Verify space requirements and dimensions of items shown diagrammatically on Contract Documents. Contractor shall be responsible for all coordination and measurements including means and methods of Construction.

3.18.5 Construction Layout.

Verification: Before proceeding to lay out the Work, Contractor shall verify layout information and Field condition in relation to the Contract documents. Notify District and Architect immediately of any discrepancies.

3.18.6 Installation.

General Contractor shall locate the Work and components of the Work accurately, in correct alignment and elevation, as indicated.

3.18.6.1 Make vertical work plumb and make horizontal work level.

3.18.6.2 Where space is limited, install components to maximize space available for maintenance and ease of removal for replacement.

3.18.6.3 Conceal pipes, ducts, and wiring in furnished areas, unless otherwise indicated.

3.18.6.4 Maintain minimum headroom clearance of eight feet in spaces without a suspended ceiling.

3.18.7 Contractor shall comply with manufacturer’s written instructions and recommendations for installing products in applications indicated.

3.18.8 Contractor shall install products at the time and under conditions that will ensure the best possible results. Maintain conditions required for performance until accepted by District.

3.18.9 Contractor shall conduct construction operations so no part of the Work is subjected to damage or loading in excess of that expected during normal conditions of occupancy.
3.18.10 Anchors and Fasteners: Provide anchors and fasteners as required to anchor each component securely in place, accurately located and aligned with other portions of the Work.

3.18.11 Mounting Heights: Where mounting heights are not indicated, mount components at heights directed by Architect.

3.18.12 Allow for building movement, including thermal expansion and contraction.

3.18.13 Coordinate installation of anchorages. Furnish setting drawings, templates, and directions for installing anchorages, including sleeves, concrete inserts, anchor bolts, and items with integral anchors, that are to be embedded in concrete or masonry. Deliver such items to Project site in time for installation.

3.18.14 Joints: Make joints of uniform width. Where joint locations in exposed work are not indicated, arrange joints for the best visual effect. Fit exposed connections together to form hairline joints.

3.18.15 Hazardous Materials: Use only products, cleaners, and installation materials that are not classified as or considered hazardous.

3.18.16 District-Installed Products

3.18.16.1 Site Access: Provide access to Project site for District’s construction forces.

3.18.16.2 Coordination: Coordinate construction and operations of the Work with work performed by District construction forces.

3.18.16.3 Construction Schedule: Inform District of Contractor’s preferred construction schedule for District’s portion of the Work. Adjust construction schedule based on a mutually agreeable timetable. Notify District and Architect if changes to schedule are required due to differences in actual construction progress.

3.18.16.4 Pre-installation Conferences: Include District’s construction forces at pre-installation conferences covering portions of the Work that are to receive District’s work. Attend pre-installation conferences conducted by District’s construction forces if portions of the Work depend on District’s construction forces.

3.19 DSA VERIFIED REPORTS AND CERTIFICATE OF COMPLIANCE

3.19.1 Contractor Actions.

The Contractor acknowledges and agrees that a material obligation of the Contractor under the Contract Documents is the completion by the Contractor of all actions and activities which by the Contract Documents or by operation of applicable law, code, rule or regulation are the responsibility of the Contractor relating to DSA reporting requirements pursuant to Education Code §81141 (including amendments thereto) and issuance of DSA’s Certificate of Compliance for the Project pursuant to Education Code §81147 (including amendments thereto) upon completion of Project construction. The
foregoing shall include without limitation, the timely preparation, completion and filing of Verified Reports during Project construction and the filing of the Final Verified Report with DSA within ten (10) days of the determination of Project Final Completion. The Contractor shall provide the Project Inspector, Architect, Construction Manager retained by the District for the Project and the District with copies of all Verified Reports completed by the Contractor and submitted to DSA; such copies shall be provided to the Project Inspector, Architect, the Construction Manager and the District concurrently with the Contractor’s submission thereof to DSA.


Notwithstanding any provision of the Contract Documents to the contrary, the completion and filing of the Final Verified Report with DSA by the Contractor is an express condition precedent to the District’s disbursement of Twelve Thousand Dollars ($12,000) of the Contract Sum due the Contractor under this Agreement (“the Final Verified Report Value”). The Final Verified Report Value is in addition to, and not in lieu of, retention withheld and retained by the District from Progress Payments disbursed to the Contractor during Project construction. The District’s disbursement of the Final Verified Report Value to the Contractor shall be made by the District within thirty (30) days of the presentation by the Contractor to the Project Inspector, Architect, Construction Manager and District of reasonably satisfactory written evidence that the Contractor has filed the Contractor’s Final Verified Report with DSA in accordance with the preceding and the submission of a billing statement by the Contractor to the District for payment of the Final Verified Report Value. If the Contractor fails to file the Final Verified Report with DSA within ten (10) days of the determination of Project Final Completion, notwithstanding the preparation or filing of such Final Verified Report by the Contractor thereafter, the District may in the sole and exclusive discretion of the District retain and withhold from disbursement to the Contractor all or any part of the Final Verified Report Value as damages for the failure of the Contractor to have timely discharged its obligations hereunder.

3.20 NOISE CONTROL

The Contractor shall be responsible for the installation and maintenance of noise reducing devices on construction equipment. Contractor shall comply with the requirements of the city and county having jurisdiction with regard to noise ordinances governing construction sites and activities. Construction equipment noise is subject to the control of the Environmental Protection Agency’s Noise Control Program (Part 204 of Title 40, Code of Federal Regulations). If classes are in session at any point during the progress of the Project, and, in the District’s reasonable discretion, the noise from such Work disrupts or disturbs the students or faculty or the normal operation of the college, at the District’s request, the Contractor shall schedule the performance of all such Work around normal campus hours or make other arrangements so that the Work does not cause such disruption or disturbance. In no event shall Contractor have a right to receive additional compensation or an extension to the contract time as a result of any such rescheduling or the making of such arrangements. These controls shall be implemented during site preparation and construction.
ARTICLE 4

ADMINISTRATION OF THE CONTRACT

4.1 ARCHITECT

4.1.1 Replacement of Architect.

In the case of the termination of the Architect, the District may appoint an architect or another construction professional or may perform such functions with its own licensed professional personnel. The status of the replacement Architect under the Contract Documents shall be the same as that of the former architect.

4.2 ARCHITECT’S ADMINISTRATION OF THE CONTRACT

4.2.1 Status.

Pursuant to Titles 24 and 21 of the California Code of Regulations and as required pursuant to the Field Act, Education Code 81130 et. seq. the Architect will provide administration of the Contract Documents and the Work, and will be a District representative during construction, as well as during the one (1) year period following the commencement of any warranties or guaranties. The Architect will have authority to act on behalf of the District only to the extent provided in the Contract Documents.

4.2.2 Site Visits.

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

4.2.3 Limitations of Construction Responsibility.

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

4.2.4 Communications Facilitating Contract Administration.

Except as otherwise provided in the Contract Documents the Contractor shall communicate through the District representative. The District representative shall be promptly informed, and shall receive copies of all written communications. Contractor shall not rely upon any communications from
the District that is not from the District’s representative. Communications by and with the Architect’s consultants shall be through the Architect. Communications by and with Subcontractors and material or equipment suppliers shall be through the Contractor.

4.2.5 Payment Applications.

The Architect will review and make recommendations to the District regarding the amounts due the Contractor on the Certificates for Payment pursuant to Article 9 and subject to the Inspector’s approval and Architect’s observation.

4.2.6 Rejection of Work.

In addition to the rights, duties, and obligations of the Inspector under this Article, the Architect may recommend to the District that the District reject Work which does not conform to the Contract Documents. Whenever the Architect considers it necessary or advisable to achieve the intent of the Contract Documents, the Architect may recommend to the District that the District require additional inspection or testing of the Work in accordance with Paragraph 13.5, whether or not such Work is fabricated, installed, or completed. However, neither this authority of the Architect nor a decision made in good faith either to exercise or not to exercise such authority shall give rise to a duty or responsibility of the Architect to the Contractor, Subcontractors, material and equipment suppliers, their agents or employees, or other persons performing portions of the Work.

4.2.7 Warranties and Guaranties Upon Completion.

The Architect, in conjunction with the District and Inspector will conduct field reviews of the Work to determine the date of completion, shall receive and forward to the District for the District’s review and records written warranties, guaranties, and related documents required by the Contract and assembled by the Contractor, and will issue a final Certificate for Payment when the Architect believes the Work has been completed in compliance with the requirements of the Contract Documents. The handling by the Architect of such warranties, guaranties, maintenance manuals, or similar documents shall not diminish or transfer to the Architect any responsibilities or liabilities required by the Contract Documents of the Contractor or other entities, parties, or persons performing or supplying the Work.

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

4.2.8 Interpretation.

The Architect will interpret and decide matters concerning performance and requirements of the Contract Documents.

4.2.9 Additional Instructions.

4.2.9.1 Typical Parts and Sections. Whenever typical parts or sections of the Work are completely detailed on the Drawings, and other parts or sections which are essentially of the same construction are shown in outline only, the complete details shall apply to the Work which is shown in outline.
4.2.9.2 Dimensions. Dimensions of Work shall not be determined by scale or rule. Figured dimensions shall be followed at all times. If figured dimensions are lacking on Drawings, Architect shall supply them on request. The Architect’s decisions on matters relating to aesthetic effect will be final.

4.3 INSPECTOR OF RECORD

4.3.1 General.

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

4.3.2 Inspector’s Duties.

All Work shall be under the observation of the Inspector. The Inspector shall have free access to any or all parts of the Work at any time. The Contractor shall furnish the Inspector such information as may be necessary to keep the Inspector fully informed regarding progress and manner of Work and character of materials. Such observations shall not, in any way, relieve the Contractor from responsibility for full compliance with all terms and conditions of the Contract, or be construed to lessen to any degree the Contractor’s responsibility for providing efficient and capable superintendence. The Inspector is not authorized to make changes in the drawings or specifications nor shall the Inspector’s approval of the Work and methods relieve the Contractor of responsibility for the correction of subsequently discovered defects, or from its obligation to comply with the Contract Documents.

4.3.3 Inspector’s Authority to Reject or Stop Work.

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

4.3.4 Inspector’s Facilities.

Within seven (7) days after notice to proceed, the Contractor shall provide the Inspector with the temporary facilities as required under Division 1 of the Specifications.

4.3.5 Testing Times.

The District will provide inspection and testing at its cost during the normal eight (8) hour day Monday through Friday (except holidays). Work by the Contractor outside of the normal eight (8) hour day shall constitute an authorization from the Contractor to the District to provide inspection and testing as required outside of the normal eight (8) hour day. Contractor shall reimburse District for any additional costs associated with inspection and testing (including re-inspection and re-testing) outside the normal eight-hour day and for any retests caused by the Contractor.
4.4 RESPONSIBILITY FOR ADDITIONAL CHARGES INCURRED BY THE DISTRICT FOR PROFESSIONAL SERVICES

If at any time prior to the completion of the requirements under the Contract Documents, the District is required to provide or secure additional professional services for any reason by any act of the Contractor, the Contractor shall be invoiced by the District for any costs incurred for any such additional services, which costs shall be deducted from the next progress payment. Such invoicing shall be independent from any other District remedies and shall not be considered a waiver of any District rights or remedies. If payments then or thereafter due to the Contractor are not sufficient to cover such amounts, the Contractor shall pay the difference to the District. Additional services shall include, but shall not be limited to, the following:

(a) Services made necessary by the default of the Contractor.
(b) Services made necessary due to the defects or deficiencies in the Work of the Contractor.
(c) Services required by failure of the Contractor to perform according to any provision of the Contract Documents.
(d) Services in connection with evaluating substitutions of products, materials, equipment, Subcontractors’ proposed by the Contractor, and making subsequent revisions to drawings, specifications, and providing other documentation required (except for the situation where the specified item is no longer manufactured or available).
(e) Services for evaluating and processing claims submitted by the Contractor in connection with the Work outside the established Change Order process.
(f) Services required by the failure of the Contractor to prosecute the Work in a timely manner in compliance within the specified time of completion.
(g) Services in conjunction with the testing, adjusting, balancing and start-up of equipment other than the normal amount customarily associated for the type of Work involved.
(h) Services in conjunction with more than one (1) re-review of submittals of shop drawings, product data, samples, etc.

4.5 DISPUTES

4.5.1 Decision of Architect.

Disputes between District and Contractor involving money or time, including those alleging an error or omission by the Architect, shall be referred initially to the Architect for action as provided in Paragraph 4.5.2. A decision by the Architect, as provided in Paragraph 4.5.5, shall be required as a condition precedent to proceeding with remedies set forth in Paragraph 4.5.6 as to all such matters arising prior to the date final payment is due, regardless of whether such matters relate to execution and progress of the Work, or the extent to which the Work has been completed. The decision by the Architect in response to a Claim shall not be a condition precedent to the remedies under Paragraph 4.5.2 through 4.5.5 in the event: (1) the position of Architect is vacant; (2) the Architect has not received evidence or has failed to render a decision within agreed time limit; (3) the Architect has failed to take action required under Paragraph 4.6.4 within thirty (30) days after the Claim is made, forty-five (45) days have passed after the Claim has been referred to the Architect; or (4) the Claim relates to a
Stop Notice Claim not arising from any extra change order or Construction Change Directive for which approval has not been provided.

4.5.2 Architect's Review.

The Architect will review Claims and take one or more of the following preliminary actions within ten (10) days of receipt of a Claim: (1) request additional supporting data from the Claimant; (2) submit a schedule to the parties indicating when the Architect expects to take action; (3) reject the Claim in whole or in part, stating reasons for rejection; (4) recommend approval of the Claim; or (5) suggest a compromise. The Architect may also, but is not obligated to, notify the surety, if any, of the nature and amount of the Claim.

4.5.3 Documentation if Resolved.

If a Claim has been resolved, the Architect will prepare or obtain appropriate documentation.

4.5.4 Actions if Not Resolved.

If a Claim has not been resolved and all documentation requested pursuant to Paragraph 4.5.2 has been provided, the party making the Claim shall, within ten (10) days after the Architect’s preliminary response, take one or more of the following actions: (1) modify the initial Claim; (2) notify the Architect that the initial Claim stands; or (3) supplement with additional supporting data.

4.5.5 Architect's Written Decision.

If a Claim has not been resolved after consideration of the foregoing and of other evidence presented by the parties or requested by the Architect, the Architect will notify the parties in writing that the Architect’s decision will be made within twenty (20) days. Upon expiration of such time period, the Architect will render to the parties its written decision relative to the Claim, including any change in the Contract Sum or Contract Time or both. The Architect may, but is not obligated to, notify the surety and request the surety’s assistance in resolving the controversy.

4.5.6 Continuing Contract Performance.

Pending final resolution of a Claim, including, negotiation, mediation, arbitration, or litigation, the Contractor shall proceed diligently with performance of the Contract, and the District shall continue to make any undisputed payments in accordance with the Contract. If the dispute is not resolved, Contractor agrees it will neither rescind the contract nor stop the progress of the work, but Contractor’s sole remedy shall be to submit such controversy to determination by a court of competent jurisdiction in the county where the project is located, after the project has been completed, and not before. At the District’s sole option, the District may submit individual disputes for binding arbitration and Contractor agrees to the resolution determined for each individual dispute by Arbitrator, including resolution of time and delays. If binding arbitration is utilized for individual disputes, such resolution is full and final as to that particular Claim.
4.5.7 Claims for Concealed Trenches or Excavations Greater Than Four Feet Below the Surface.

When any excavation or trenching extends greater than four feet below the surface or if any condition involving hazardous substances are encountered:

(a) Immediately upon discovery, The Contractor shall promptly, and before the following conditions are disturbed, notify the District, by telephone and in writing, of the condition except:

1. If such condition is a hazardous waste condition, and Contractor’s bid includes removal or disposal of hazardous substances. Material that the Contractor believes may be a material that is hazardous waste, as defined in Section 25117 of the Health and Safety Code, that is required to be removed to a Class I, Class II, or Class III disposal site in accordance with the provisions of existing law. In such case, the notice bulletin procedures of Article 7 apply.

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 the Contract.

(b) The District shall investigate the conditions, and if District finds that the conditions do materially so differ, do involve hazardous waste, and cause a decrease or increase in the Contractor’s cost of, or the time required for, performance of any part of the Work shall issue a change order or construction change directive under the procedures described in the Contract.

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

4.5.8 Claims for Extension of Time.

If Contractor and District cannot agree upon an extension of time, whether compensable or not, then Contractor must have first completed the procedures set forth in Paragraph 8.4. Upon completion of the procedures set forth under Paragraph 8.4, Contractor must then comply with the requirements in this Article including those set forth under Paragraph 4.5.9.

4.5.9 Claims Procedures.

4.5.9.1 Procedure applicable to all Claims:

(a) Definition of Claim: A “Claim” means a separate demand by the Contractor for (1) time extension, (2) payment of money or damages arising from Work done by or on behalf of
the Contractor pursuant to the Contract and payment of which is not otherwise expressly provided for or the Claimant is not otherwise entitled to, or (3) and amount the payment of which is disputed by the District.

(b) Filing Claim is Not Basis To Discontinue Work: The Contractor shall promptly comply with Work under the Contract or Work requested by the District even though a written Claim has been filed. The Contractor and the District shall make good faith efforts to resolve any and all Claims that may arise during the performance of the Work covered by this contract.

(c) Claim Notification: The Contractor shall within seven (7) calendar days after the Claim arises, submit a notification, in writing, with the District stating clearly the basis for the Claim. If the notification is not submitted within seven (7) days after the Claim arises, the Contractor shall be deemed to have waived all right to assert the Claim, and the Claim shall be denied. Claims submitted after the final payment date shall also be considered null and void by the District. All Claims shall be reviewed pursuant to Paragraph 4.5.1, 4.5.2, and 4.5.5. In order to qualify as a Claim, the written notice must state that it is a Claim submitted under this paragraph of these General Conditions.

(d) Formal Claim Appeal Submission: If the Contractor does not concur with the District’s decision regarding the Claim Notification, the Contractor will issue a formal Claim Appeal within fourteen (14) days of receipt of the District’s decision and all detailed information in support of the Claim Appeal within thirty (30) days. All appeals shall be submitted before final payment. If the Claim Appeal is not submitted within fourteen (14) calendar days and detailed information within thirty (30) days, the Contractor shall be deemed to have waived its right to assert the Claim and the Claim shall be denied. Contractor’s failure to submit any detailed information which is in the possession of Contractor shall render such information inadmissible by Contractor at trial or arbitration.

(e) Appeal Claim Format: The Contractor shall provide all written detailed documentation which supports the Claim, including but not limited to: arguments, justifications, cost, estimates, schedule analysis and detailed documentation. The format of the Claim Appeal shall be as follows:

1. Cover letter.

2. Summary of factual basis of Claim and amount of Claim.

3. Summary of the basis of the Claim, including the specific clause and section under the Contract under which the Claim is made.

4. Documents relating to the Claim, including:
   a. Specifications
   b. Drawings
   c. Clarifications (RFI’s)
   d. Other relevant information
   e. Analysis of claim merit.
   f. Analysis of claim cost.
   g. For Claims relating to time extensions, an analysis and supporting
documentation evidencing any effect upon the critical path.

h. Certification.
i. Chronology of events and related correspondence.
j. Daily reports and logs.

(f) Certification: The Contractor (and subcontractors, if applicable) shall submit with the Claim a certification under penalty of perjury:

1. That the Contractor has reviewed the Claim and that such Claim is made in good faith;

2. Supporting data are accurate and complete to the best of the Contractor’s knowledge and belief;

3. The amount requested accurately reflects the amount of compensation for which the Contractor believes the District is liable.

4. That the Contractor is familiar with Government Code Sections 12650 et seq. and Penal Code Section 72 and that false Claims can lead to substantial fines and/or imprisonment.

(g) Signature of Certification: If the Contractor is not an individual, the certification shall be executed by an officer or general partner of the Contractor having overall responsibility for the conduct of the Contractor’s affairs.

(h) Mandatory Claim Appeal Procedure: The Contractor’s Claim Appeal shall be denied if it fails to provide the written basis of the Claim and certification as set forth herein.

(i) District May Request Additional Information: Within thirty (30) days of receipt of the Claim Appeal and the information under this Article, the District may request in writing any additional documentation supporting the Claim or documentation relating to defenses to the Claim which the District may assert.

4.5.9.2 Binding Arbitration of Individual Claim Issues. At the District’s sole option, the District may submit individual disputes, or Claims, to binding arbitration and Contractor agrees to the resolution determined for each individual dispute by Arbitrator, including resolution of time and delays. If binding arbitration is utilized, such resolution is a full and final resolution of the particular Claim or dispute. Under no circumstances may the Contractor stop work, rescind its contract or otherwise slow the progress of Work during resolution of individual Claims in binding Arbitration.

4.5.9.3 Resolution of Disputes in Court of Competent Jurisdiction. If Claims are not resolved under the procedure set forth and pursuant to Article 4.5.9.2, such Claim or controversy shall be submitted to a court in the county of competent jurisdiction after the Project has been completed, and not before.

4.5.9.4 Warranties, Guaranties and Obligations. The duties and obligations imposed by these General Conditions and the rights and remedies available hereunder to the parties hereto, and, in particular but without limitation, the warranties, guaranties and obligations imposed upon Contractor by the General Conditions and amendments thereto; and all of the rights and remedies available to District and Architect thereunder, are in addition to, and are not to be construed in any way as a
limitation of, any rights and remedies available to any or all of them which are otherwise imposed or available by laws or regulations by special warranty or guaranty or by other provisions of the Contract Documents, and the provisions of this Paragraph will be as effective as if repeated specifically in the Contract Documents in connection with each particular duty, obligation, right and remedy to which they apply.

ARTICLE 5

SUBCONTRACTORS

5.1 DEFINITIONS

5.1.1 Subcontractual Relations

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

5.1.2 Subcontractor Licenses.

All subcontractors shall be properly licensed by the California State Licensing Board.

5.1.3 Substitution of Subcontractor

Substitution of Subcontractors shall be permitted only as authorized under Public Contract Code §§ 4107 et. Seq. Any substitutions of Subcontractors shall not result in any increase in the Contract Price or result in the granting of any extension of time for the completion of the Project.

5.1.4 Contingent Assignment of Subcontracts and Other Contracts

Each subcontract and other contract or agreement for any portion of the Work is hereby assigned by the Contractor to the District provided that:

(a) Such assignment is effective only after termination of this contract with the Contractor by the District as provided herein and only for those subcontracts and other contracts and agreements that the District accepts by notifying the Subcontractor or Materialman (as may be applicable) in writing; and
(b) Such assignment is subject to the prior rights of the Surety(ies) obligated under the Payment Bond and Performance Bond.

The Contractor shall include adequate provisions for this contingent assignment of subcontracts and other contracts and agreements in each such document.

ARTICLE 6

CONSTRUCTION BY DISTRICT OR BY SEPARATE CONTRACTORS

6.1 DISTRICT’S RIGHT TO PERFORM CONSTRUCTION AND TO AWARD SEPARATE CONTRACTS

6.1.1 Separate Contracts.

(a) District reserves the right to let other contracts in connection with this Work. Contractor shall afford other contractors reasonable opportunity for (1) introduction and storage of their materials; (2) access to the Work; and (3) execution of their work. Contractor shall properly connect and coordinate its work with that of other Contractors.

(b) If any part of Contractor’s Work depends on proper execution or results of any other contractor, the Contractor shall inspect and within seven (7) days or less, report to Architect, in writing, any defects in such work that render it unsuitable for proper execution of Contractor’s work. Contractor will be held accountable for damages to District for that work which it failed to inspect or should have inspected. Contractor’s failure to inspect and report shall constitute its acceptance of other contractors’ work as fit and proper for reception of its work, except as to defects which may develop in other contractors’ work after execution of Contractor’s work.

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

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

(e) Nothing herein contained shall be interpreted as granting to Contractor the exclusive occupancy at the site of Project. Contractor shall not cause any unnecessary hindrance or delay to any other contractor working on the Project Site. If execution of any contract by the District is likely to cause interference with Contractor’s performance of its contract, District shall decide which contractor shall cease work temporarily and which contractor shall continue, or whether work can be coordinated so that contractors may proceed simultaneously.

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

CONTRACTOR IS AWARE THAT THIS CONTRACT MAY BE SPLIT INTO SEVERAL PHASES. IF THE CONTRACT IS SPLIT INTO PHASES THEN CONTRACTOR HAS MADE ALLOWANCE
FOR ANY DELAYS OR DAMAGES WHICH MAY ARISE FROM COORDINATION WITH CONTRACTORS FOR OTHER PHASES. IF ANY DELAYS SHOULD ARISE FROM ANOTHER CONTRACTOR WORKING ON A DIFFERENT PHASE, CONTRACTOR'S SOLE REMEDY FOR DAMAGES, INCLUDING DELAY DAMAGES, SHALL BE AGAINST THE CONTRACTOR WHO CAUSED SUCH DAMAGE AND NOT THE DISTRICT. CONTRACTOR SHALL PROVIDE ACCESS TO OTHER CONTRACTORS FOR OTHER PHASES AS NECESSARY TO PREVENT DELAYS AND DAMAGES TO OTHER CONTRACTORS WORKING ON OTHER PHASES OF CONSTRUCTION.

6.1.2 District's Right to Carry Out the Work.

See Paragraph 2.2.

6.1.3 Designation as Contractor.

When separate contracts are awarded to contractors on the Project Site, the term “Contractor” in the Contract Documents in each case shall mean the Contractor who executes each separate District/Contractor Agreement.

6.1.4 Contractor Duties.

The Contractor shall have overall responsibility to reasonably coordinate and schedule Contractor’s activities with the activities of the District’s own forces and of each separate contractor with the Work of the Contractor, who shall cooperate with them. The Contractor shall participate with other separate contractors and the District in reviewing their construction schedules when directed to do so. The Contractor shall make any revisions to the construction schedule and Contract Sum deemed necessary after a joint review and mutual agreement. The construction schedules shall then constitute the schedules to be used by the Contractor, separate contractors, and the District until subsequently revised. Additionally, Contractor shall coordinate with Architect and District inspector to ensure timely and proper progress of work.

6.2 CONSTRUCTIVE OWNERSHIP OF PROJECT SITE AND MATERIAL

Upon commencement of Work, the Contractor becomes the constructive owner of the entire site, improvements, material and equipment on Project site. Contractor must ensure proper safety and storage of all materials and assumes responsibility as if Contractor was the owner of the Project site. All risk of loss or damage shall be borne by Contractor during the Work until the date of Completion. As construction owner, Contractor must carry adequate insurance in case of calamity and is not entitled to rely on the insurance requirements as set forth in this agreement as being adequate coverage in case of calamity.

6.3 DISTRICT’S RIGHT TO CLEAN UP

If a dispute arises among the Contractor, separate contractors, and the District as to the responsibility under their respective contracts for maintaining the premises and surrounding area free from waste materials and rubbish as described in Paragraph 3.12, the District may clean up and allocate the cost among those it deems responsible.
ARTICLE 7

CHANGES IN THE WORK

7.1 CHANGES

7.1.1 No Changes Without Authorization.

There shall be no change whatsoever in the drawings, specifications, or in the Work without an executed Change Order, Construction Change Directive, or order by the Architect for a minor change in the Work as herein provided. District shall not be liable for the cost of any extra work or any substitutions, changes, additions, omissions, or deviations from the Drawings and Specifications unless the District’s Governing Board has authorized the same and the cost thereof approved in writing by Change Order or executed Construction Change Directive. No extension of time for performance of the Work shall be allowed hereunder unless claim for such extension is made at the time changes in the Work are ordered, and such time duly adjusted in writing in the Change Order. The provisions of the Contract Documents shall apply to all such changes, additions, and omissions with the same effect as if originally embodied in the Drawings and Specifications. Notwithstanding anything to the contrary in this Article 7, all Change Orders shall be prepared and issued by the District and shall become effective when executed by the District’s Governing Board, the Architect, and the Contractor.

Should any Change Order result in an increase in the Contract Sum, the cost of such Change Order shall be agreed to, in writing, in advance by Contractor and District and be subject to the monetary limitations set forth in Public Contract Code Section 20659. In the event that Contractor proceeds with any change in Work without first notifying District and obtaining the Architect’s and District’s consent to a Change Order, Contractor waives any claim of additional compensation for such additional work.

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

7.1.2 Architect Authority.

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

7.2 CHANGE ORDERS ("CO")

A CO is a written instrument prepared by the Architect and signed by the District (as authorized by the District’s Governing Board), the Contractor, the Architect, stating their agreement upon all of the following:

(a) A description of a change in the Work;
(b) The amount of the adjustment in the Contract Sum, if any; and
(c) The extent of the adjustment in the Contract Time, if any.

7.3 CONSTRUCTION CHANGE DIRECTIVE

7.3.1 Definition.

A Construction Change Directive is a written order prepared by the Architect and signed by the District and the Architect, directing a change in the Work and stating a proposed basis for adjustment, if any, in the Contract Sum or Contract Time, or both. The District may by Construction Change Directive, without invalidating the Contract, order changes in the Work within the general scope of the Contract consisting of additions, deletions, or other revisions within. If applicable, the Contract Sum and Contract Time will be adjusted accordingly. In the case of a Construction Change Directive being issued, Contractor must commence Work immediately or delays from failure to perform Construction Change Directive shall be the responsibility of Contractor. Any dispute as to the sum of Construction Change Directive or timing of payment, shall be resolved pursuant to Paragraph 4.5.

7.3.2 Use to Direct Change

A Construction Change Directive shall be used in the absence of agreement on the terms of a CO. A copy of a proposed form is provided at the end of this Article.

7.4 REQUEST FOR INFORMATION (“RFI”)

7.4.1 Definition.

An RFI is a written request prepared by the Contractor requesting the District to provide additional information necessary to clarify or amplify an item which the Contractor believes is not clearly shown or called for in the drawings or specifications, or to address problems which have arisen under field conditions.

7.4.2 Scope.

The RFI shall reference all the applicable Contract Documents including specification section, detail, page numbers, drawing numbers, and sheet numbers, etc. The Contractor shall make suggestions and interpretations of the issue raised by the RFI. An RFI cannot modify the Contract Sum, Contract Time, or the Contract Documents.

7.4.3 Response Time.

The Architect must respond to a RFI within a reasonable time after receiving such request. If the Architect’s response results in a change in the Work, then such change shall be effected by a written CO or Construction Change Directive, if appropriate. If the Architect cannot respond to the RFI within a reasonable time, the Architect shall notify the Contractor, with a copy to the Inspector and the District, of the amount of time that will be required to respond.
7.4.4 Costs Incurred.

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

7.5 REQUEST FOR PROPOSAL ("RFP")

7.5.1 Definition.

An RFP is a written request prepared by the Architect requesting the Contractor to submit to the District and the Architect an estimate of the effect of a proposed change on the Contract Sum and the Contract Time.

7.5.2 Scope.

An RFP shall contain adequate information, including any necessary drawings and specifications, to enable Contractor to provide the cost breakdowns required by Paragraph 7.7. The Contractor shall not be entitled to any Additional Compensation for preparing a response to an RFP, whether ultimately accepted or not.

7.6 CHANGE ORDER REQUEST ("COR")

7.6.1 Definition.

A COR is a written request prepared by the Contractor requesting that the District and the Architect issue a CO based upon a proposed change called for in an RFP or a claim pursuant to Paragraph 4.5.

7.6.2 Changes in Sum.

A COR shall include breakdowns per Paragraph 7.7 to validate any change in Contract Sum due to proposed change or claim.

7.6.3 Changes in Time.

A COR shall also include any additional time required to complete the Project. Any additional time requested shall not be the number of days to make the proposed change, but must be based upon the impact to the Project Schedule as defined in Paragraph 3.8 of the General Contract. If contractor fails to request a time extension in a COR, then the Contractor is thereafter precluded from requesting or claiming a delay.

7.7 COST OF CHANGE ORDERS

7.7.1 Scope.

Within ten (10) days after a request is made for a change that impacts the Contract Sum as defined in Paragraph 9.1, the critical path, or the Contract Time as defined in Paragraph 8.4.2, the
Contractor shall provide the District and the Architect, with a written estimate of the effect of the proposed CO upon the Contract Sum and the actual cost of construction, which shall include a complete itemized cost breakdown of all labor and material showing actual quantities, hours, unit prices, and wage rates required for the change, and the effect upon the Contract Time of such CO. Changes may be made by District by an appropriate written CO, or, at the District’s option, such changes shall be implemented immediately upon the Contractor’s receipt of an appropriate written Construction Change Directive.

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

7.7.2 Determination of Cost.

The amount of the increase or decrease in the Contract Price from a CO, if any, shall be determined in one or more of the following ways as applicable to a specific situation:

(a) Mutual acceptance of a lump sum properly itemized and supported by sufficient substantiating data to permit evaluation. If an agreement cannot be reached within fifteen (15) days after submission and negotiation of Contractor’s proposal, Contractor may submit pursuant to Paragraph 7.7.3. Submission of sums which have no basis in fact are at the sole risk of Contractor and may be a violation of the False Claims Act set forth under Government Code Section 12650 et. seq.);

(b) By unit prices contained in Contractor’s original bid and incorporated in the Project documents or fixed by subsequent agreement between District and Contractor;

(c) Cost to be determined in a manner agreed upon by the parties and a mutually acceptable fixed or percentage fee. However, in the case of disagreement, Contractor must utilize the procedure under section 7.7.3; or

(d) By cost of material and labor and percentage of overhead and profit. If the value is determined by this method the following requirements shall apply:

1. Basis for Establishing Costs.

   a. Labor will be the actual cost for wages prevailing locally for each craft or type of workers at the time the extra Work is done, plus employer payments of payroll taxes and insurance, health and welfare, pension, vacation, apprenticeship funds, and other direct costs resulting from Federal, State, or local laws, as well as assessments or benefits required by lawful collective bargaining agreements. The use of a labor classification which would increase the extra Work cost will not be permitted unless the Contractor establishes the necessity for such additional costs. Labor costs for equipment operators and helpers shall be reported only when such costs are not included in the invoice for equipment rental.
b. Materials shall be at invoice or lowest current price at which such materials are locally available and delivered to the Site in the quantities involved, plus sales tax, freight, and delivery.

The District reserves the right to approve materials and sources of supply or to supply materials to the Contractor if necessary for the progress of the Work. No markup shall be applied to any material provided by the District.

c. Tool and Equipment Rental. No payment will be made for the use of tools which have a replacement value of $250 or less.

Regardless of ownership, the rates to be used in determining equipment rental costs shall not exceed listed rates prevailing locally at equipment rental agencies or distributors at the time the Work is performed.

The rental rates paid shall include the cost of fuel, oil, lubrication, supplies, small tools, necessary attachments, repairs and maintenance of any kind, depreciation, storage, insurance, and all incidentals.

Necessary loading and transportation costs for equipment used on the extra Work shall be included. If equipment is used intermittently and, when not in use, could be returned to its rental source at less expense to the District than holding it at the Work Site, it shall be returned unless the Contractor elects to keep it at the Work Site at no expense to the District.

All equipment shall be acceptable to the Inspector, in good working condition, and suitable for the purpose for which it is to be used. Manufacturer's ratings and modifications shall be used to classify equipment, and equipment shall be powered by a unit of at least the minimum rating recommended by the manufacturer.

d. Other Items. The District may authorize other items which may be required on the extra work. Such items include labor, services, material, and equipment which are different in their nature from those required by the Work, and which are of a type not ordinarily available from the Contractor or any of the Subcontractors. Invoices covering all such items in detail shall be submitted with the request for payment.

e. Invoices. Vendors’ invoices for material, equipment rental, and other expenditures shall be submitted with the COR. If the request for payment is not substantiated by invoices or other documentation, the District may establish the cost of the item involved at the lowest price which was current at the time of the Daily Report.

f. Overhead. Overhead, including direct and indirect costs, shall be submitted with the COR and include: home office overhead, off-site supervision, CO preparation/negotiation/research, time delays, project interference and disruption, additional guaranty and warranty durations, on-site supervision, additional temporary protection, additional temporary utilities, additional material handling costs, and additional safety equipment costs.
7.7.3 Format for Proposed Cost Change.

The following format shall be used as applicable by the District and the Contractor to communicate proposed additions and deductions to the Contract. A copy of a proposed Construction Change Directive form is provided at the end of this Article.

(a) Material (attach itemized quantity and unit cost plus sales tax)  
(b) Labor (attach itemized hours and rates)  
(c) Equipment (attach invoices)  
(d) Subtotal  
(e) If Subcontractor performed Work, add Subcontractor’s overhead and profit to portions performed by Sub-contractor, not to exceed fifteen percent (15%) of item (d).  
(f) Liability and Property Damage Insurance, Worker’s, Compensation Insurance, Social Security, and Unemployment Taxes, not to exceed as follows: FICA @ 6.2% - with a wage ceiling of $84,900; Medicare @ 1.45% - no wage ceiling; FUTA @ .8% - with a wage ceiling of $7,000; ETT and SUI @ 2.3% - with a wage ceiling of $7,000; Workers’ Compensation @ 5.94%; Liability and Property Damage @ 2.5%. Total not-to-exceed is 19.19%. (Note: Modifications to these percentages will be evaluated and possibly modified only on a case-by-case basis and only after proper proof of alternate percentages are documented and approved in advance. In addition, as wage ceilings are met, those corresponding percentages must drop from the “burden” calculations).  
(g) Subtotal
(h) General Contractor’s Overhead and Profit:
Not to exceed fifteen percent (15%) of Item (g) if Contractor performed the work. No more than five percent (5%) of Item (g) if Subcontractor performed the work. If work was performed by Contractor and Subcontractors, portions performed by Contractor shall not exceed fifteen percent (15%) if Item (g), and portions performed by Subcontractor shall not exceed five percent (5%) of Item (g)

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(i) Subtotal

(j) Bond not to exceed one percent (1%) of Item (g)

(k) TOTAL

(l) Time

The undersigned Contractor approves the foregoing Construction Change Directive as to the changes, if any, and the contract price specified for each item and as to the extension of time allowed, if any, for completion of the entire work on account of said Construction Change Directive, and agrees to furnish all labor, materials and service and perform all work necessary to complete any additional work specified therein, for the consideration stated herein. It is understood that said Construction Change Directive shall be effective when approved by the Governing Board of the District.

It is expressly understood that the value of such extra Work or changes, as determined by any of the aforementioned methods, expressly includes any and all of the Contractor’s costs and expenses, both direct and indirect, resulting from additional time required on the Project or resulting from delay to the Project. Any costs, expenses, damages or time extensions not included are deemed waived.

The Contractor expressly acknowledges and agrees that any change in the Work performed shall not be deemed to constitute a delay or other basis for claiming additional compensation based on theories including, but not limited to, acceleration, suspension or disruption to the Project.

7.7.4 Net Deductive Change Orders

All net deductive Change Order(s) must be prepared pursuant to Paragraph 7.7.3. Contractor will be allowed a maximum of 5% total profit and overhead. If subcontractor work is involved, subcontractors shall be entitled to a maximum of 5% profit and overhead on the deducted work. Any deviation from this Article shall not be allowed.

7.7.5 Discounts, Rebates, and Refunds.

For purposes of determining the cost, if any, of any change, addition, or omission to the Work hereunder, all trade discounts, rebates, refunds, and all returns from the sale of surplus materials and

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equipment shall accrue and be credited to the Contractor, and the Contractor shall make provisions so that such discounts, rebates, refunds, and returns may be secured, and the amount thereof shall be allowed as a reduction of the Contractor's cost in determining the actual cost of construction for purposes of any change, addition, or omissions in the Work as provided herein.

7.7.6 Accounting Records.

With respect to portions of the Work performed by COs and Construction Change Directives on a time-and-materials, unit-cost, or similar basis, the Contractor shall keep and maintain cost-accounting records satisfactory to the District, which shall be available to the District on the same terms as any other books and records the Contractor is required to maintain under the Contract Documents.

7.7.7 Notice Required.

If the Contractor desires to make a claim for an increase in the Contract Price, or any extension in the Contract Time for completion, it shall notify the District pursuant to Paragraph 4.5 and this Article. No claim shall be considered unless made in accordance with this subparagraph. Contractor shall proceed to execute the Work even though the adjustment may not have been agreed upon. Any change in the Contract Price or extension of the Contract Time resulting from such claim shall be authorized by a CO.

7.7.8 Applicability to Subcontractors.

Any requirements under this Article 7 shall be equally applicable to COs or Construction Change Directives issued to Subcontractors by the Contractor to the same extent required by the Contractor.

7.7.9 Alteration to Change Order Language.

Contractor shall not alter Change Orders or reserve time in Construction Change Directives. Contractor shall execute finalized Change Orders and proceed under Paragraph 7.7.7 and Paragraph 4.5 with proper notice. If Contractor intends to reserve time, without an approved CPM schedule prepared pursuant to Paragraph 3.8 then Contractor may be prosecuted pursuant to the False Claim Act.
ARTICLE 8

TIME

8.1 DEFINITIONS

8.1.1 Contract Time.

Unless otherwise provided, Contract Time is the period of time, in calendar days, including authorized adjustments, allotted in the Contract Documents for Completion of the Work.

8.1.2 Notice to Proceed.

District may give a notice to proceed within three (3) months of the award of the bid by District. Once Contractor has received the notice to proceed, Contractor shall complete the Work in the period of time referenced in the Contract Documents.

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

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

8.1.3 Computation of Time.

The term “day” as used in the Contract Documents shall mean calendar day unless otherwise specifically defined.

The Contractor will only be allowed a time extension for unusually severe weather if it results in precipitation or other conditions which in the amount, frequency, or duration is in excess of the norm at the location and time of year in question as established by National Oceanic and Atmospheric Administration (NOAA) weather data. No less than three work days allocated equally across the Contract Time will be identified as non-working weather days in the contractor’s schedule for the entire contract period of performance. The weather days shall be shown on the schedule and if not used will become float for the Project’s use. A day-for-day extension will only be allowed for those days in excess of the norm. The Contractor is expected to work seven (7) days per week (if necessary, irrespective of inclement weather), to maintain access, and to protect the Work under construction from the effects of inclement weather.

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

8.2 HOURS OF WORK.

8.2.1 Sufficient Forces.

Contractors and Subcontractors shall continuously furnish sufficient forces to ensure the prosecution of the Work in accordance with the Construction Schedule.

8.2.2 Performance During Working Hours.

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

8.2.3 Costs for After Hours Inspections.

If the Contract Documents require Work to be done outside the Inspector’s regular working hours, the costs of any after hour inspections, shall be borne by the District.

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

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

8.3 PROGRESS AND COMPLETION.

8.3.1 Time of the Essence.

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

8.4 EXTENSIONS OF TIME – LIQUIDATED DAMAGES

8.4.1 Liquidated Damages.

Contractor and District hereby agree that the exact amount of damages for failure to complete the Work within the time specified is extremely difficult or impossible to determine. If the Work is not completed within the time specified in the Contract Documents, it is understood that the District will suffer damage. It being impractical and unfeasible to determine the amount of actual damage, it is
agreed the Contractor shall pay to District as fixed and liquidated damages, and not as a penalty, the amount specified in the Construction Agreement for each calendar day of delay in completion. Any liquidated damages recovered by the District shall not, however, limit the District’s right to separately recover any actual out-of-pocket damages it suffers due to Contractor’s delay. Contractor and his surety shall be liable for the amount thereof pursuant to Government Code section 53069.85.

8.4.2 Excusable Delay.

Contractor shall not be charged for liquidated damages because of any delays in completion of Work which are not the fault or negligence of Contractor or its subcontractors, including acts of God, as defined in Public Contract Code Section 7107, acts of enemy, epidemics and quarantine restrictions. Contractor shall within five (5) calendar days of beginning of any such delay notify District in writing of causes of delay; thereupon District shall ascertain the facts and extent of delay and grant extension of time for completing Work when, in its judgment, the findings of fact justify such an extension. Extensions of time shall apply only to that portion of Work affected by delay, and shall not apply to other portions of Work not so affected. An extension of time may only be granted after proper compliance with Paragraph 3.8 requiring preparation and submission of a properly prepared CPM schedule.

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

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

In the event the Contractor requests an extension of Contract time for unavoidable delay, such request shall be submitted in accordance with the provisions in the Contract Documents governing changes in work. When requesting time, i.e., extensions, for proposed Change Orders, they must be submitted with the proposed Change Order with full justification and documentation. If the Contractor fails to submit justification with the proposed Change Order it waives its right to a time extension at a later date. Such justification must be based on the District accepted construction schedule as updated at the time of occurrence of the delay or execution of Work related to any changes to the scope of work. The justification must include, but is not limited to, the following information:

(a) The duration of the activity relating to the changes in the Work and the resources (manpower, equipment, material, etc.) required to perform these activities within the stated duration.

(b) Logical ties to the District accepted construction schedule for the proposed changes and/or delay showing the activity/activities in the schedule whose start or completion dates are affected by the change and/or delay. (A fragment of any delay of over ten (10) days must be provided.)

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

8.4.3 Notice by Contractor Required.

The Contractor shall within five (5) calendar days of beginning of any such delay notify the District in writing of causes of delay with justification and supporting documentation. District will then ascertain the facts and extent of the delay and grant an extension of time for completing the Work when, in its judgment, the findings of fact justify such an extension. Extensions of time shall apply only to that portion of the Work affected by the delay and shall not apply to other portions of the Work not so affected. The sole remedy of Contractor for extensions of time under Paragraph 8.4.2 shall be an extension of the Contract Time at no cost to the District.

Claims relating to time extensions shall be made in accordance with applicable provisions of Article 7.

8.4.4 No Additional Compensation for Delays within Contractor’s Control

CONTRACTOR IS AWARE THAT GOVERNMENTAL AGENCIES, SUCH AS THE DEPARTMENT OF GENERAL SERVICES, GAS COMPANIES, ELECTRICAL UTILITY COMPANIES, WATER DISTRICTS AND OTHER AGENCIES MAY HAVE TO APPROVE CONTRACTOR PREPARED DRAWINGS OR APPROVE A PROPOSED INSTALLATION. CONTRACTOR HAS INCLUDED DELAYS AND DAMAGES WHICH MAY BE CAUSED BY SUCH AGENCIES IN CONTRACTOR’S BID. THUS, CONTRACTOR IS NOT ENTITLED TO MAKE CLAIM UPON THE DISTRICT FOR DAMAGES OR DELAYS ARISING FROM THE DELAYS CAUSED BY SUCH AGENCIES. FURTHERMORE, THE CONTRACTOR HAS SCHEDULED FOR SUCH DELAYS AND IS NOT ENTITLED TO AN EXTENSION OF TIME FOR DELAYS CAUSED BY GOVERNMENTAL AGENCIES WHICH CONTRACTOR MUST OBTAIN APPROVALS FROM AND, THUS, CONTRACTOR IS NOT ENTITLED TO AN EXTENSION OF TIME.

CONTRACTOR SHALL ONLY BE ENTITLED TO COMPENSATION FOR DELAY WHEN THE FOLLOWING CONDITIONS ARE MET: (1) THE DISTRICT IS RESPONSIBLE FOR THE DELAY; (2) THE DELAY IS UNREASONABLE UNDER THE CIRCUMSTANCES INVOLVED; AND (3) THE DELAY WAS NOT WITHIN THE CONTEMPLATION OF DISTRICT AND CONTRACTOR.
ARTICLE 9

PAYMENTS AND COMPLETION

9.1 CONTRACT SUM

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

9.2 COST BREAKDOWN

9.2.1 Required Information.

On forms or software programs (e.g., Microsoft Project, Primavera or Excel) approved by the District, the Contractor shall furnish the following:

(a) Within ten (10) days of the award of the Contract, a detailed breakdown of the Contract Sum (hereinafter “Schedule of Values” or “SOV”) for each Project or Site;

(b) Within ten (10) days of the award of the Contract, a schedule of estimated monthly payment requests due the Contractor showing the values and construction time of the various portions of the Work to be performed by it and by its Subcontractors or material and equipment suppliers containing such supporting evidence as to its correctness as the District may require;

(c) Within ten (10) days of the award of the Contract, the name, address, telephone number, teletypewriter number, California State Contractors License number, classification and monetary value of all Subcontracts for parties furnishing labor, material, or equipment for completion of the Project.

9.2.2 District Approval Required.

The District shall review all submissions received pursuant to Paragraph 9.2.1 in a timely manner. All submissions must be approved by the District before becoming the basis of any payment. Contractor may request to District representation, prior to submission, to submit information required by paragraph 9.2.1 in a spreadsheet (Microsoft Excel) format. Approval of an alternate format is entirely at District’s discretion.

9.3 PROGRESS PAYMENTS

9.3.1 Payments to Contractor.

Within thirty (30) days after approval of the Request for Payment, Contractor shall be paid a sum equal to ninety-five percent (95%) of the value of the Work performed (as certified by Architect and Inspector and verified by Contractor) up to the last day of the previous month, less the aggregate of previous payments. The value of the Work completed shall be Contractor’s best estimate. No inaccuracy or error in said estimate shall operate to release the Contractor, or any surety upon any bond, from damages arising from such Work, or from the District’s enforcement of each and every
provision of this Contract, and the District shall have the right subsequently to correct any error made in any estimate for payment.

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

The SOV items of Work shall include a prorated portion of Contractor’s home office and field office overhead, profit, insurance, (except to the extent expressly identified in a Proposal Item) and/or other financing, as well as General Conditions costs, (e.g., routine time related Site cleanup and maintenance,., temporary power and lighting, security, temporary trailer rental, temporary fence rentals, and the like). The SOV shall also not include separate line items to prepare submittals, or other Work items not at the Project Site, unless expressly identified in these Contract Documents as specific exceptions.

Costs for each item of Work at the Project site shall be indicated on a single line that breaks out labor, materials, and equipment for that item of Work, with all items noted in the paragraph above prorated into each line. Unless otherwise allowed, the SOV shall reflect that the District shall only pay for installed items of Work at the Project site. All other costs shall be prorated through all activities and all Phases of the Project so that the sum of all Schedule of Values line items equals the total Contract Sum.

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

(a) No payment shall be made for materials stored off-site without the written approval of the District to be given or withheld in the District’s sole discretion;

(b) Title to such materials shall be vested in the District as evidenced by documentation satisfactory in form and substance to the District, including, without limitation, recorded financing statements, UCC filings and UCC searches;

(c) With each Contractor Request for Payment, the Contractor shall submit to the District a written list identifying each location where materials are stored off-site (which must be a bonded warehouse) and the value of the materials at each location. The Contractor shall procure insurance satisfactory to the District (in its reasonable discretion) for materials stored off-site in an amount not less than the total value thereof;

(d) The consent of any Surety shall be obtained to the extent required prior to payment for any materials stored off-site;

(e) Representatives of the District shall have the right to make inspections of the storage areas at any time; and

(f) Such materials shall be (1) protected from diversion, destruction, theft and damage to the reasonable satisfaction of the District; (2) specifically marked for use on the Project; and (3) segregated from other materials at the storage facility.
9.3.2 Purchase of Materials and Equipment.

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

9.3.3 No Waiver.

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

9.3.4 Issuance of Certificate of Payment.

The Architect shall, within seven (7) days after receipt of the Contractor’s Application for Payment, either approve such payment or notify the Contractor in writing of the Architect’s reasons for withholding approval in whole or in part as provided in Paragraph 9.6. The review of the Contractor’s Application for Payment by the Architect is based on the Architect’s observations at the Site and the data comprising the Application for Payment that the Work has progressed to the point indicated and that, to the best of the Architect’s knowledge, information, and belief, the quality of the Work is in accordance with the Contract Documents. The foregoing representations are subject to (1) an evaluation of the Work for conformance with the Contract Documents, (2) results of subsequent tests and inspections, (3) minor deviations from the Contract Documents correctable prior to completion, and (4) specific qualifications expressed by the Architect. The issuance of a Certificate for Payment will further constitute a representation that the Contractor is entitled to payment in the amount certified.

9.4 APPLICATIONS FOR PROGRESS PAYMENTS

9.4.1 Procedure.

9.4.1.1 Application for Progress. On or before the fifth (5th) day of each calendar month during the progress of the Work, Contractor shall submit to the Architect an itemized Application for Progress Payment for operations completed in accordance with the Schedule of Values. Such application shall be notarized, if required, and supported by the following or such portion thereof as Architect requires:

(a) The amount paid to the date of the Application to the Contractor, to all its Subcontractors, and all others furnishing labor, material, or equipment for its Contract;

(b) The amount being requested under the Application for Payment by the Contractor on its own behalf and separately stating the amount requested on behalf of each of the Subcontractors and all others furnishing labor, material, and equipment under the Contract;

(c) The balance that will be due to each of such entities after said payment is made;

(d) A certification that the Record Drawings and Annotated Specifications are current;

(e) Itemized breakdown of work done for the purpose of requesting partial payment;

(f) An updated construction schedule in conformance with Paragraph 3.8;
(g) The additions to and subtractions from the Contract Sum and Contract Time;
(h) A summary of the retentions held;
(i) Material invoices, evidence of equipment purchases, rentals, and other support and details of cost as the District may require from time to time;
(j) The percentage of completion of the Contractor's Work by line item; and
(k) An updated Schedule of Values from the preceding Application for Payment.

9.4.2 Prerequisites for Progress Payments.

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

(a) Installation of the Project sign;
(b) Receipt by Architect of submittals;
(c) Installation of field office;
(d) Installation of temporary facilities and fencing;
(e) Submission of documents listed in the Paragraph 9.2 relating to Cost Breakdown;
(f) Contractor's Construction Schedule (Schedule to be CPM based in conformance with Paragraph 3.8);
(g) Schedule of unit prices;
(h) Submittal Schedule;
(i) Copies of necessary permits;
(j) Copies of authorizations and licenses from governing authorities;
(k) Initial progress report;
(l) Surveyor qualifications;
(m) Written acceptance of District’s survey of rough grading;
(n) List of all subcontractors, with names, license numbers, telephone numbers, and scope of work;
(o) All bonds and insurance endorsements; and
(p) Resumes of General Contractor’s Project Manager and superintendent.

9.4.2.2 All Payment Requests. No payment requests will be processed unless Contractor has submitted copies of the Certified Payroll records for the Work which correlates to the payment request and a proper CPM schedule pursuant to Paragraph 3.8 is submitted.

9.4.2.3 Any payments made to Contractor where criteria set forth in Paragraph 9.4.2.1 or 9.4.2.2 have not been met shall not constitute a waiver of said criteria by District. Instead, such payment shall be construed as a good faith effort by District to resolve differences so Contractor may pay its Subcontractors and suppliers and that Contractor agrees that failure to submit such items may constitute a breach of contract by Contractor and may subject Contractor to termination.
9.5 **WARRANTY OF TITLE**

The Contractor warrants title to all work. The Contractor further warrants that all work is free and clear of liens, claims, security interests, or encumbrances in favor of the Contractor, Subcontractors, material and equipment suppliers, or other persons or entities making a claim by reason of having provided labor, materials, and equipment relating to the Work. Failure to keep work free of liens, claims, security interests or encumbrances is grounds to make a claim against Contractor's payment and performance bond to immediately remedy and defend.

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

If the Contractor fails to furnish to the District within ten (10) calendar days after demand by the District, satisfactory evidence that a lien or stop notice has been so released, discharged, or secured, then District may discharge such indebtedness and deduct the amount required therefor, together with any and all losses, costs, damages, and attorney's fees and expense incurred or suffered by District from any sum payable to Contractor under the Contract.

9.6 **DECISIONS TO WITHHOLD PAYMENT**

9.6.1 **Reasons to Withhold Payment.**

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

(a) Defective Work not remedied;
(b) Stop Notices served upon the District;
(c) Liquidated damages assessed against the Contractor;
(d) The cost of completion of the Contract if there exists reasonable doubt that the Work can be completed for the unpaid balance of any Contract Sum or by the completion date;
(e) Damage to the District or other contractor;
(f) Unsatisfactory prosecution of the Work by the Contractor;
(g) Failure to store and properly secure materials;
(h) Failure of the Contractor to submit on a timely basis, proper and sufficient documentation required by the Contract Documents, including, without limitation, acceptable monthly progress schedules, shop drawings, submittal schedules, schedule of values, product data and samples, proposed product lists, executed Construction Change Directives, and verified reports;
(i) Failure of the Contractor to maintain record drawings;
(j) Erroneous estimates by the Contractor of the value of the Work performed, or other false statements in an Application for Payment;

(k) Unauthorized deviations from the Contract Documents;

(l) Failure of the Contractor to prosecute the Work in a timely manner in compliance with established progress schedules and completion dates.

(m) Failure to properly pay prevailing wages as defined in Labor Code section 1720, et seq.;

(n) Failure to properly maintain or clean up the Site;

(o) Payments to indemnify, defend, or hold harmless the District;

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

(q) Failure to submit an acceptable schedule in accordance with Paragraph 3.8; or

(r) Failure to pay Subcontractor or suppliers as required by Paragraph 9.8.1.

9.6.2 Reallocation of Withheld Amounts.

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

If Contractor defaults or neglects to carry out the Work in accordance with the contract documents or fails to perform any provision thereof, District may, after ten (10) calendar days written notice to the Contractor and without prejudice to any other remedy make good such deficiencies. The District shall adjust the total Contract price by reducing the amount thereof by the cost of making good such deficiencies. If District deems it inexpedient to correct Work which is damaged, defective, or not done in accordance with Contract provisions, an equitable reduction in the Contract price (of at least 150% of the estimated reasonable value of the nonconforming work) shall be made therefor.

9.6.3 Payment After Cure.

When the grounds for declining approval are removed, payment shall be made for amounts withheld because of them. No interest shall be paid on any retainage or amounts withheld due to the failure of the Contractor to perform in accordance with the terms and conditions of the Contract Documents.

9.7 NONCONFORMING WORK

Contractor shall promptly remove from premises all Work identified by District as failing to conform to the Contract whether incorporated or not. Contractor shall promptly replace and re-execute its own Work to comply with the Contract without additional expense to District and shall bear the expense of making good all work of other contractors destroyed or damaged by such removal or replacement.
If Contractor does not remove such Work which has been identified by District as failing to conform to the Contract Documents within a reasonable time, fixed by written notice, District may remove it and may store the material at Contractor’s expense. If Contractor does not pay expenses of such removal within ten (10) calendar days’ time thereafter, District may, upon ten (10) calendar days’ written notice, sell such materials at auction or at private sale and shall account for net proceeds thereof, after deducting all costs and expenses that should have been borne by Contractor.

9.8 SUBCONTRACTOR PAYMENTS

9.8.1 Payments to Subcontractors.

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

9.8.2 No Obligation of District for Subcontractor Payment.

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

9.8.3 Payment Not Constituting Approval or Acceptance.

An approved Request for Payment, a progress payment, or partial or entire use or occupancy of the Project by the District shall not constitute acceptance of Work not in accordance with the Contract Documents.

9.8.4 Joint Checks.

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

9.9 PROJECT RECORD DOCUMENTS

This section includes administrative and procedural requirements for Project Record Documents, including but not limited to the following where applicable:

9.9.1 Record Drawings
9.9.2 Record Specifications
9.9.3 Record Product Data
9.9.4 Record MEP & Structural coordination documents
9.9.5 Project Record Documents include, but are not limited to, the following:

9.9.5.1 Marked-up copies of Drawings
9.9.5.2 Marked up copy of the Project Specifications
9.9.5.3 Marked-up copies of Shop Drawings
9.9.5.4 Newly prepared Drawings and Specifications
9.9.5.5 Marked-up Product Data submittals
9.9.5.6 Field records, such as photographs, for variable and concealed conditions
9.9.5.7 Record information for Work that is only schematically shown
9.9.5.8 Maintenance forms for equipment

Contractor shall dedicate one complete full size set of the Contract Drawings and one complete Project Manual for use in recording as-built conditions.

Contractor shall submit to District in hard copy one original and two copies of all Project Record Documents. In addition, one electronic copy in electronic media format shall be submitted to District. District reserves the right to require resubmittal in accordance with these General Conditions if the documents are inaccurate or incomplete, or otherwise fail to meet the requirements of these Contract Documents.

9.9.6 Project Record Drawings

Mark-up Procedure: During the construction period, maintain a complete, current set of full size blackline prints of Contract Drawings and Shop Drawings for Project Record Documents purposes. Label each document (on first sheet or format page) "Project Record" in 2-inch high printed letters. Keep all record documents current.

A reference by number to a Change Order, CCD, RFI, RFQ, RFP, Field Order or other such document is not acceptable as sufficient record information on any record document. Do not conceal any Work until required record information has been recorded.

Contractor shall mark Record Drawings to indicate the actual installation where the installation varies appreciably from the installation shown originally. Give particular attention to information on concealed elements that would be difficult to identify or measure and record later. Items required to be marked include, but are not limited to:

9.9.6.1 Dimensional changes to the Contract Drawings (horizontal and/or vertical)
9.9.6.2 Revisions or any modification to details shown on the Contract Drawings
9.9.6.3 Depths of various elements of foundations in relation to main floor level or survey datum.
9.9.6.4 Horizontal and vertical location of underground utilities and appurtenances referenced to permanent surface improvements.
9.9.6.5 Location of internal utilities and appurtenances concealed in construction referenced to visible and accessible features of structure.

9.9.6.6 Locations of underground work, points of connection with existing utilities, changes in direction, valves, manholes, catch basins, capped stub outs, invert elevations and similar items.

9.9.6.7 Final, actual numbering of each electrical circuit.

9.9.6.8 Revisions to routing of piping and conduits.

9.9.6.9 Revisions to electrical circuitry.

9.9.6.10 Actual equipment locations.

9.9.6.11 Duct size and routing.

9.9.6.12 Changes made by Change Order, CCD, ASI, or any other directive.

9.9.6.13 Details not on original Contract Drawings.

Contractor shall mark completely and accurately Project Record Drawing prints of Contract Drawings or Shop Drawings, whichever is the most capable of showing actual physical conditions. Where Shop Drawings are marked, show cross-reference on Contract Drawings location.

Contractor shall mark Project Record Drawing sets with red, erasable colored pencil; use other colors to distinguish between changes for different categories of the Work at the same location.

Contractor shall be responsible for Mark-up: Where feasible, the individual or entity who obtained Project Record Drawing data, whether the individual or entity is the installer, Subcontractor or similar entity, is required to prepare the mark-up on Project Record Drawings. Contractor shall prepare Record Drawings: Immediately prior to inspection for Certification of Substantial Completion of the Work, review completed marked-up Project Record Drawings with District, Project Inspector, Construction Manager, and Architect to ensure accuracy of information. Once accuracy of information is confirmed, prepare and submit a full set of as-built Contract Drawings and Shop Drawings.

Incorporate changes and additional information previously marked on print sets. Delete, redraw, and/or add details and notations where applicable. Identify and date each Drawing; include the printed designation "PROJECT RECORD DRAWING" and the date prepared in a prominent location on each Drawing.

Distribution: Whether or not changes and additional information were recorded, organize and bind original marked-up set of prints that were maintained during the construction period into manageable sets. Bind the set with durable paper cover sheets, with appropriate identification, including titles, dates and other information on cover sheets and submit to District.

9.9.7 Project Record Specification

Contractor shall, during the construction period, maintain one copy of the Project Specifications, including all addenda and all other modifications issued for Project Record Documents purposes.
Contractor shall mark the Project Record specifications to indicate the actual installation where the installation varies substantially from that indicated in Specifications and/or modifications issued. Note related Project Record Drawing information, where applicable. Give particular attention to substitutions, selection of product options, Change Order and Construction Change Directive Work, and information on concealed installation that would be difficult to identify, measure, and record later.

9.9.8 Project Record Product Data

Contractor shall, during the construction period, maintain one copy of each Project Record Product Data submittal for "Project Record Document" purposes.

Contractor shall arrange Project Record Product Data by Specification Section number, and provide names, addresses, fax numbers, emails addresses, and telephone number of Subcontractors and suppliers. Information to be provided includes:

9.9.8.1 Trade Names
9.9.8.2 Model or type numbers
9.9.8.3 Assembly diagrams
9.9.8.4 Operating instructions
9.9.8.5 Cleaning instructions
9.9.8.6 Maintenance instructions
9.9.8.7 Recommended spare parts
9.9.8.8 Product data

9.9.9 Miscellaneous Project Record Submittals

Refer to other Specification Sections for miscellaneous record keeping requirements and submittals. Immediately prior to Substantial Completion of the Work complete miscellaneous records and place in good order, properly identified, ready for use and reference. Submit to the District for District's records, in Adobe PDF format.

9.10.10 Electronic Media Format

Electronic Media Format: Electronic media format for all Project Record Documents shall be Adobe PDF, with chapter markers and/or bookmarks inserted in place of the equivalent hard copy section tabs. Electronic copy shall include all tables, charts, drawings, codes and all other matters reflected in hard copies. Electronic media files shall be delivered on a unique CD-ROM or flash drive.

9.10 COMPLETION OF THE WORK

9.10.1 Contract Closeout Submittals include, but are not limited to:

9.10.1.1 Electronic Media of All Project Record Documents described in Article 9.9.10 above.
9.10.1.2 Record Samples
9.10.1.3 Field records for variable and concealed conditions
9.10.1.4 Operating and maintenance manuals and data
9.10.1.5 Warranties, guaranties, and bonds
9.10.1.6 Warranty Tags
9.10.1.7 Spare Parts Data
9.10.1.8 Service and maintenance contracts
9.10.1.9 Certified and approved fire inspection documents, when required

9.10.2 Initial Punch List and Inspection

When Contractor considers Work to be Substantially Complete, submit written notice to District's Representative requesting an Initial Inspection and listing items remaining to be completed or corrected listed by room number and item number (hereinafter "Initial Punch List"). The Contractor and/or its Subcontractors shall proceed promptly to complete and correct items on the list without waiting for District review of the Initial Punch List and inspection of the Work. 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.

The Contractor shall not submit a notice requesting an Initial Inspection unless the Work is Substantially Complete.

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

a. The Work has been completed.
b. All life safety items are completed and in working order.
c. Mechanical and electrical Work complete, fixtures in place, connected and ready for tryout and test.
d. Electrical circuits scheduled in panels and disconnect switches labeled.
e. Painting and special finishes complete.
f. Doors complete with hardware, cleaned of protective film relieved of sticking or binding and in working order.
g. Tops and bottoms of doors sealed.
h. Floors waxed and polished as specified.
i. Broken glass replaced and glass cleaned.
j. Grounds cleared of Contractor’s equipment, raked clean of debris, and trash removed from Site.
k. Work cleaned, free of stains, scratches, and other foreign matter, replacement of damaged and broken material.
l. Finished and decorative work shall have marks, dirt and superfluous labels removed.
m. Final cleanup.
9.10.2.2 Furnish a letter to District stating that a responsible representative of District [give name and position] has been instructed in working characteristics of mechanical and electrical equipment.

Should District’s Representatives determine that Work is not Substantially Complete, the Architect or Construction Manager will promptly notify Contractor in writing, listing Work that must be completed prior to Substantial Completion. Any inspection list that is submitted to the District that does not result in a District determination of Substantial Completion will not be considered an accepted Initial Punch List. If the Work or Phase of Work is determined to not be Substantially Complete, Contractor shall complete all Work as directed prior to requesting an additional Initial Inspection by the District to determine Substantial Completion per this Specification Section.

Upon receipt of the Contractor’s Initial Punch List, and not before, the Architect, Construction Manager, and Inspector will make an Initial Inspection to determine whether the Work, or Phase of Work, is Substantially Complete.

9.10.2.3 All fire and life safety items, manufactured units, equipment and systems that require startup must have been started, run, tested, and operational for periods prescribed by the Contract Documents before a request for Initial Inspection is accepted by the District.

9.10.2.4 If additional Initial Inspections are required to review Initial Punch List items due to incompleteness of the Work by Contractor, Contractor will reimburse District for all costs associated with these inspections if additional services fees by District consultants are required. The costs of such District additional service fees will be deducted from the Contract Sum by Change Order.

9.10.3 Substantial Completion

When District determines that the Work is Substantially Complete, District will issue a Certificate of Substantial Completion, accompanied by Final Punch List of items to be completed or corrected as verified and/or appended by Architect and District.

When the Work is Substantially Complete, the District will file a Notice of Completion.

9.10.3.1 Warranties required by the Contract Documents shall commence on the date of Substantial Completion of the Work unless otherwise provided in the Notice of Completion.

9.10.3.2 The Notice of Completion shall be submitted to the Contractor for their written acceptance of responsibilities assigned to them in such Notice prior to District filing the Notice of Completion for purposes of initiating the release of Retention for the Work or Phase of Work.

9.10.3.3 The District shall withhold from Contractor payment the value of remaining Work, Work to be corrected, incomplete Work, and an amount identified for Punch List Work, and as otherwise identified in Public Contract Code.
The Contractor shall complete the items listed in the Final Punch List within ten (10) working days of the Certificate of Substantial Completion. The Contractor shall execute the Work such that the District can occupy the Work within seven (7) calendar days of the date of the Certificate of Substantial Completion.

9.10.4 Final Inspection

When Contractor considers the items listed in the Final Punch List to be complete the Contractor shall submit written notice to District’s Representative requesting a Final Inspection.

Operations and Maintenance Manuals and Warranty and Guaranty documents. At least ten (10) days prior to final inspection, three (3) copies of complete operations and maintenance manuals, repair parts lists, service instructions for all electrical and mechanical equipment, and equipment warranties shall be submitted. All installation, operating, and maintenance information and drawings shall be bound in 8½” x 11” binders. Provide a table of contents in front and all items shall be indexed with tabs. Each manual shall also contain a list of subcontractors, with their addresses and the names of persons to contact in cases of emergency. Identifying labels shall provide names of manufacturers, their addresses, ratings, and capacities of equipment and machinery. Additional requirements for Operations and Maintenance manuals may be found in other Specifications and Sections of the Contract Documents.

Upon receipt of the Contractor’s request for Final Inspection, and not before, the Contractor, Architect, and Construction Manager, shall meet to go over the Contract Documents to identify the administrative requirements for contract close-out.

9.10.4.1 The Construction Manager will prepare a list of requirements remaining for administrative close-out and shall provide the list to the Contractor. This list may be general in nature, and shall not serve to relieve the Contractor from any of the administrative requirements of the Contract.

9.10.4.2 The Contractor shall complete all items on the administrative close-out list within twenty-one (21) days

Subsequent to the meeting to identify administrative close-out requirements, Architect, Construction Manager, Campus Representatives, and Inspector will inspect the Work to determine whether the Work identified on the Final Punch List is complete.

If additional Final Inspections are required to review the Final Punch List items due to incompleteness of the Work by Contractor, Contractor will reimburse District for all costs associated with these inspections if additional services fees by District consultants are required. The costs of such District additional service fees will be deducted from the Contract Sum by Change Order.

When the Architect determines that all final punch list items have been completed, a final Project Inspection Report will be issued. Any outstanding administrative close-out requirements will be identified and a value for withholding from Progress Payment or Final Payment will be assigned.

The Project Inspector (JOR), the Construction Manager, and the Contractor shall, at all times, be together during all inspections. The Contractor shall give 24-hour notice to the District for such inspections.
9.10.5 Final Completion

Final Completion occurs when all Work meets all requirements of the Contract Documents. When Contractor considers all Work complete and all close-out requirements have been performed, submitted, and accepted, submit written certification to District that:

9.10.5.1 Contractor has inspected Work for compliance with Contract Documents, and all requirements for Final Acceptance have been met.

9.10.5.2 Except for Contractor maintenance and Deferred or Seasonal Testing, after Final Acceptance, all Work has been completed in accordance with Contract Documents and deficiencies listed with any Certificate of Substantial Completion have been corrected. Equipment and systems have been tested in the presence of Architect, Project Inspector (IOR), Construction Manager, and District Representatives and are operative.

Should District determine that the Work is incomplete or defective or that administrative requirements have not been completed:

9.10.5.3 District’s Representative promptly will so notify Contractor, in writing, listing the incomplete or defective items.

9.10.5.4 Contractor shall promptly remedy all incomplete and/or defective Work and notify the District when it is ready for re-inspection. District’s Representatives will then re-inspect the Work. If deficiencies previously noted are found not to be corrected, Contractor shall pay all District costs for the re-inspection.

9.10.5.5 When District determines that all Work and requirements are complete under the Contract Documents, District or Construction Manager will request Contractor to make a request for Final Payment.

9.11 PARTIAL OCCUPANCY OR USE

9.11.1 District’s Rights.

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

9.11.2 Inspection Prior to Occupancy or Use.

Immediately prior to such partial occupancy or use, the District, the Contractor, and the Architect shall jointly inspect the area to be occupied or portion of the Work to be used in order to determine and record the condition of the Work.
9.11.3 No Waiver.

Unless otherwise agreed upon, partial occupancy or use of a portion or portions of the Work shall not constitute acceptance of the Work not complying with the requirements of the Contract Documents.

9.12 COMPLETION AND FINAL PAYMENT

9.12.1 Final Inspection.

Contractor shall comply with all Punch List and Inspection procedures under Paragraph 9.10

Upon receipt and approval of such final Application for Payment as required in Article 9.10.5.5 and elsewhere, the Architect shall issue a final Certificate of Payment stating that to the best of its knowledge, information, and belief, and on the basis of its observations, inspections, and all other data accumulated or received by the Architect in connection with the Work, such Work has been completed in accordance with the Contract Documents. The District shall thereupon inspect such Work and either accept the Work as complete or notify the Architect and the Contractor in writing of reasons why the Work is not complete. Upon acceptance of the Work of the Contractor as fully complete (which, absent unusual circumstances, will occur when the Punch List items have been satisfactorily completed), the District shall record a Notice of Completion with the County Recorder, and the Contractor shall, upon receipt of payment from the District, pay the amounts due Subcontractors.

9.12.2 Retainage.

The retainage, less any amounts disputed by the District or which the District has the right to withhold Pursuant to Paragraph 9.6, shall be paid after approval of the District by the Architect’s Certificate of Payment, after the satisfaction of the conditions set forth in Article 9, and after thirty-five (35) days after the acceptance of the Work and recording of the Notice of Completion by District. No interest shall be paid on any retainage, or on any amounts withheld due to a failure of the Contractor to perform, in accordance with the terms and conditions of the Contract Documents, except as provided to the contrary in any Escrow Agreement between the District and the Contractor pursuant to Public Contract Code § 22300.

9.12.3 Procedures for Application for Final Payment.

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

(a) A full and final waiver or release of all Stop Notices in connection with the Work shall be submitted by Contractor, including a release of Stop Notice in recordable form, together with (to the extent permitted by law) a copy of the full and final release of all Stop Notice rights.

(b) The Contractor shall have made all corrections to the Work which are required to remedy any defects therein, to obtain compliance with the Contract Documents or any requirements of applicable codes and ordinances, or to fulfill any of the orders or directions of District required under the Contract Documents.
(c) Each Subcontractor shall have delivered to the Contractor all written guarantees, warranties, applications, and bonds required by the Contract Documents for its portion of the Work.

(d) Contractor must have completed all requirements set forth in Paragraph 9.9.1.2.

(e) Architect shall have issued a Final Certificate of Payment.

(f) The Contractor shall have delivered to the District all manuals and materials required by the Contract Documents.

(g) The Contractor shall have completed final clean up as required by Paragraph 3.12.

9.13 **SUBSTITUTION OF SECURITIES**

The District will permit the substitution of securities in accordance with the provisions of Public Contract Code section 22300.
ARTICLE 10

PROTECTION OF PERSONS AND PROPERTY

10.1 SAFETY PRECAUTIONS AND PROGRAMS

10.1.1 Contractor Responsibility.

The Contractor is constructive owner of Project site. The Contractor shall be responsible for all damages to persons or property that occur as a result of its fault or negligence in connection with the prosecution of this Contract and shall take all necessary measures and be responsible for the proper care and protection of all materials delivered and work performed until completion and final acceptance by the District. All work shall be solely at the Contractor’s risk, with the exception of damage to the work caused by “acts of God” as defined in Public Contract Code Section 7105(b)(2).

Contractor shall take, and require subcontractor to take, all necessary precautions for safety of workers on the Work and shall comply with all applicable federal, state, local and other safety laws, standards, orders, rules, regulations, and building codes to prevent accidents or injury to persons on, about, or adjacent to premises where Work is being performed and to provide a safe and healthful place of employment. In addition to meeting all requirements of OSHA, Cal-OSHA, state, and local codes, Contractor shall furnish, erect and properly maintain at all times, as directed by District or Architect or required by conditions and progress of work, all necessary safety devices, safeguards, construction canopies, signs, audible devices for protection of the blind, safety rails, belts and nets, barriers, lights, and watchmen for protection of workers and the public, and shall post danger signs warning against hazards created by such features in the course of construction. Contractor shall designate a responsible member of its organization on the Work, whose duty shall be to post information regarding protection and obligations of workers and other notices required under occupational safety and health laws, to comply with reporting and other occupational safety requirements, and to protect the life, safety and health of workers. The name and position of person so designated shall be reported to District by Contractor. Contractor shall correct any violations of safety laws, rules, orders, standards, or regulations. Upon the issuance of a citation or notice of violation by the Division of Occupational Safety and Health, such violation shall be corrected promptly.

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

10.1.2 Subcontractor Responsibility.

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

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

10.1.4 Accident Reports.

Subcontractors shall immediately, within two (2) days, report in writing to the Contractor all accidents whatsoever arising out of, or in connection with, the performance of the Work, whether on or off the Site, which caused death, personal injury, or property damage, giving full details and statements of witnesses. In addition, if death or serious injuries or serious damages are caused, the accident shall be reported within four (4) days by telephone or messenger. Contractor shall thereafter immediately, within two (2) days, report the facts in writing to the District and the Architect giving full details of the accident.

10.1.5 First-Aid Supplies at Site.

The Contractor will provide and maintain at the Site first-aid supplies which complies with the current Occupational Safety and Health Regulations.

10.1.6 Material Safety Data Sheets and Compliance with Proposition 65.

(a) Contractor is required to have material safety data sheets available in a readily accessible place at the job site for any material requiring a material safety data sheet per the Federal “hazard communication” standard, or employees’ “right-to-know law.” The Contractor is also required to properly label any substance brought into the job site, and require that any person working with the material, or within the general area of the material, is informed of the hazards of the substance and follows proper handling and protection procedures.

Contractor is required to comply with the provisions of California Health and Safety Code section 25249, et seq., which requires the posting and giving of notice to persons who may be exposed to any chemical known to the State of California to cause cancer. The Contractor agrees to familiarize itself with the provisions of this section, and to comply fully with its requirements.

10.1.7 Non-Utilization of Asbestos Material.

NO ASBESTOS OR ASBESTOS-CONTAINING PRODUCTS SHALL BE USED IN THIS CONSTRUCTION OR IN ANY TOOLS, DEVICES, CLOTHING, OR EQUIPMENT USED TO EFFECT THIS CONSTRUCTION.

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

Any or all material containing greater than one-tenth of one percent (>0.1%) asbestos shall be defined as asbestos-containing material.
All Work or materials found to contain asbestos or Work or material installed with asbestos-containing equipment will be immediately rejected and this Work will be removed at no additional cost to the District.

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

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 sole discretion and final determination in this matter.

The asbestos consultant shall be chosen and approved by the District, 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.

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

10.2 SAFETY OF PERSONS AND PROPERTY

10.2.1 The Contractor.

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

(a) Employees on the Work and other persons who may be affected thereby;

(b) The Work, material, and equipment to be incorporated therein, whether in storage on or off the Site, under the care, custody, or control of the Contractor or the Contractor's Subcontractors or Sub-subcontractors; and

(c) Other property at the Site or adjacent thereto such as trees, shrubs, lawns, walks, pavement, roadways, structures, and utilities not designated for removal, relocation, or replacement in the course of construction.

Contractor is constructive owner of Project site as more fully discussed in Paragraph 6.2.

10.2.2 Contractor Notices.

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

The Contractor shall erect and maintain, as required by existing conditions and performance of the Contract, reasonable safeguards for safety and protection, including posting danger signs and other warnings against hazards, promulgating safety regulations, and notifying owners and users of adjacent sites and utilities.

10.2.4 Use or Storage of Hazardous Material.

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

10.2.5 Protection of Work.

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

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

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

10.2.6 Requirements for Existing Sites.

Contractor shall (unless waived by the District in writing):

(a) When performing construction on existing sites, become informed and take into specific account the maturity of the students on the Site; and perform Work which may interfere with campus routine before or after campus hours, enclose working area with a substantial barricade, and arrange Work to cause a minimum amount of inconvenience and danger to students and faculty in their regular campus activities. The Contractor shall comply with specifications and directives of the District regarding the timing of certain construction activities in order to avoid unnecessary interference with the campus’ functions.

(b) Provide substantial barricades around any shrubs or trees indicated to be preserved.

(c) Deliver materials to building area over route designated by Architect.

(d) Take preventive measures to eliminate objectionable dust, noise, or other disturbances.
(e) Confine apparatus, the storage of materials, and the operations of workers to limits indicated by law, ordinances, permits or directions of Architect; and not interfere with the Work or unreasonably encumber premises or overload any structure with materials; and enforce all instructions of District and Architect regarding signs, advertising, fires, and smoking and require that all workers comply with all regulations while on the Project site.

(f) Take care to prevent disturbing or covering any survey markers, monuments, or other devices marking property boundaries or corners. If such markers are disturbed by accident, they shall be replaced by an approved land surveyor or civil engineer and all maps and records required therefrom shall be filed with county and local authorities, at no cost to the District. All filing and plan check fees shall be paid by Contractor.

(g) Provide District on request with Contractor’s written safety program and safety plan for each site.

10.2.7 Shoring and Structural Loading.

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

10.2.8 Conformance Within Established Limits.

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

10.2.9 Subcontractor Enforcement of Rules.

Subcontractors shall enforce the District’s and the Contractor’s instructions, laws, and regulations regarding signs, advertisements, fires, smoking, the presence of liquor, and the presence of firearms by any person at the Site.

10.2.10 Site Access.

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

10.3 **EMERGENCIES**

10.3.1 Emergency Action.

In an emergency affecting the safety of persons or property, the Contractor shall take any action necessary, at the Contractor’s discretion, to prevent threatened damage, injury, or loss. Additional compensation or extension of time claimed by the Contractor on account of an emergency shall be determined as provided in Article 7.

10.3.2 Accident Reports.

The Contractor shall promptly report in writing to the District all accidents arising out of or in connection with the Work, which caused death, personal injury, or property damage, giving full details and statements of any witnesses in conformance with Article 10.1.4. In addition, if death, serious personal injuries, or serious property damages are caused, the accident shall be reported in accordance with Paragraph 10.1.4, immediately by telephone or messenger to the District.

10.4 **HAZARDOUS MATERIALS**

10.4.1 Discovery of Hazardous Materials.

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

If hazardous materials are encountered, they shall be handled in accordance with applicable local, state and federal regulation which may include: (1) CCR Title 8, Division 4, Chapter 4, Sections 5163 through 5167 and 5192 (Hazardous Waste Operations and Emergency Response); (2) CCR Title 22, Division 4.5, Chapters 10 through 13 and 18 (Environmental Health Standards for Management of Hazardous Waste); and (3) CCR Title 23, Division 3, Chapter 15 (Discharges of Hazardous Waste to Land).

Should the discovery of contaminants cause delay to Contractor’s operation, extension of Contract Time will be granted by District in accordance with these General Conditions. Contractor may not be entitled to damages or additional payment due to such delays. District may, if it believes appropriate in its sole discretion, grant an extension of Contract Time.

The Contractor shall take all measures to avoid and/or mitigate delays due to Hazardous Materials/Waste finds such as; avoiding the area of the find and proceeding with other work on the
project; developing “work around” plans; and documenting his best efforts to avoid and/or mitigate delays.

10.4.2 Hazardous Material Work Limitations.

In the event that the presence of hazardous materials is suspected or discovered on the Site (except in cases where asbestos and other hazardous material work in the Contractor’s responsibility), the District shall retain an independent testing laboratory to determine the nature of the material encountered and whether corrective measures or remedial action is required. The Contractor shall not be required pursuant to Article 7 to perform without consent any Work in the affected area of the Site relating to asbestos, polychlorinated biphenyl (PCB), or other hazardous material, until any known or suspected hazardous material has been removed, or rendered harmless, or determined to be harmless by District, as certified by an independent testing laboratory and approved by the appropriate government agency.

10.4.3 Indemnification by Contractor for Hazardous Material Caused by Contractor.

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

10.4.4 Terms of Hazardous Material Provision.

The terms of this Hazardous Material provision shall survive the completion of the Work and/or any termination of this Contract.
ARTICLE 11

INSURANCE AND BONDS

11.1 NOT USED

11.2 NOT USED

11.3 NOT USED

11.4 NOT USED

11.5 OTHER INSURANCE

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

11.6 PROOF OF INSURANCE

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

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

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

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

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

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

11.7 COMPLIANCE

In the event of the failure of any contractor to furnish and maintain any insurance required by this Article 11, or in Section 00600, Construction Agreement, the Contractor shall be in default under the Contract. Compliance by Contractor with the requirement to carry insurance and furnish certificates or policies evidencing the same shall not relieve the Contractor from liability assumed under any provision of the Contract Documents, including, without limitation, the obligation to defend and indemnify the District and the Architect.
11.8 WAIVER OF SUBROGATION

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

The provisions of this section are intended to restrict each party to recovery against insurance carriers only to the extent of such coverage and waive fully and for the benefit of each, any rights and/or claims which might give rise to a right of subrogation in any insurance carrier. The District and the Contractor shall each obtain in all policies of insurance carried by either of them, a waiver by the insurance companies thereunder of all rights of recovery by way of subrogation for any damages or claims covered by the insurance.
ARTICLE 12
UNCOVERING AND CORRECTION OF WORK

12.1 UNCOVERING OF WORK

12.1.1 Uncovering Work for Required Inspections.

If a portion of the Work is covered without Inspector or Architect approval or not in compliance with the Contract Documents, it must, if required in writing by the Inspector or the Architect, be uncovered for the Inspector’s or the Architect’s observation and be replaced at the Contractor’s expense without change in the Contract Sum or Time.

12.1.2 Costs for Inspections not Required.

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

12.2 CORRECTION OF WORK

12.2.1 Correction of Rejected Work.

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

12.2.2 One-Year Warranty or Guaranty Corrections.

If, within one (1) years after the date of Completion of the Work or a designated portion thereof, or after the date for commencement of warranties and guaranties established under this Contract, or by the terms of an applicable special warranty or guaranty required by the Contract Documents, any of the Work is found to be not in accordance with the requirements of the Contract Documents, the Contractor shall correct it promptly after receipt of written notice from the District to do so unless the District has previously given the Contractor a written acceptance of such condition. This period of one (1) years shall be extended with respect to portions of the Work first performed after Completion by the period of time between Completion and the actual performance of the Work. This obligation under this Paragraph 12.2.2 shall survive acceptance of the Work under the Contract and termination of the Contract. The District shall give such notice promptly after discovery of the condition.
12.2.3 District’s Rights if Contractor Fails to Correct.

If the Contractor fails to correct nonconforming Work within a reasonable time, the District may correct it, pursuant to Article 9.
ARTICLE 13

MISCELLANEOUS PROVISIONS

13.1 GOVERNING LAW AND REGULATIONS

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

13.1.1 Specific reference in the Specifications to codes and regulations or requirements of regulatory agencies shall mean the latest printed edition of each adopted by the regulatory agency in effect at the time of the opening of Proposals, except as may be otherwise specifically stated in the Contract Documents.

13.1.2 No change order shall be considered for any change in any applicable federal, state or local code or regulation if similar language existed in an alternate applicable regulation in force at the time of opening of Bids.

13.1.3 Contractor shall not allow design or construction of any conditions wherein the finished Work will not comply with current applicable codes. No change order shall be considered by District for the Work correction of any Work not complying with code.

13.1.4 This section shall cover the general requirements for regulatory requirements pertaining to the Work and is supplementary to all other regulatory requirements mentioned or referenced elsewhere in the Contract Documents.

13.1.5 Code, laws, ordinances, rules and regulations referred to shall have full force and effect as though printed in full in these Specifications. Code, laws, ordinances, rules and regulations are not furnished to Contractor because Contractor is assumed to be and shall be familiar with these requirements, including readily available access to these requirements. The listing of applicable codes, laws, and regulations for hazardous waste abatement Work in the Contract Documents is supplied to Contractor as a courtesy and shall not limit Contractor’s responsibility for complying with all applicable laws, regulations or ordinances having application to the Work. Where conflict among the requirements or with these Specifications occurs, the most stringent requirements shall be used with no change in Contract Sum or Contract Time.

13.1.6 Contractor shall conform to all applicable federal, state, and local codes, laws, ordinances, rules and regulations, whether or not referenced in the Contract Documents.

13.1.7 Precedence:

13.1.7.1 Where specified requirements differ from the requirements of applicable codes, ordinances and standards, the more stringent requirements shall take precedence.

13.1.7.2 Where Contract Documents require or describe products or execution of better quality, higher standard or greater size than required by applicable
codes, ordinances and standards, Contract Documents shall take precedence so long as such increase is legal.

13.1.7.3 Where no requirements are identified on Contract Documents, comply with all requirements of applicable codes, ordinances and standards of governing authorities have jurisdiction.

13.1.7.4 If compliance with two or more standards is specified and the standards establish different or conflicting requirements for minimum quantities or quality levels, comply with the most stringent requirement. Refer uncertainties and requirements that are different, but apparently equal, to District for a decision before proceeding.

13.2 SUCCESSORS AND ASSIGNS

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

13.3 WRITTEN NOTICE

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

13.4 RIGHTS AND REMEDIES

13.4.1 Duties and Obligations Cumulative.

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

13.4.2 No Waiver.

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

13.5.1 Compliance.

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

13.5.2 Independent Testing Laboratory.

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

13.5.3 Contractor Responsibilities

13.5.3.1 All sampling shall be done by the laboratory exclusively. Samples shall be selected by laboratory personnel. Allow proper time for selecting samples, and making tests or considerations.

13.5.3.2 Cooperate with laboratory personnel, and provide access to work and to manufacturer’s facilities.

13.5.3.3 Provide incidental labor and facilities to provide access to work to be tested, as selected by laboratory personnel at the site or at source of products to be tested, to facilitate tests and inspections, and for storage and curing of test samples.

13.5.3.4 Schedule all tests and inspections with the testing and inspections firm and to notify Construction Manager and Project Inspector a minimum of 3 working days prior to expected time for operations requiring inspection and testing services. Do not allow work to be covered prior to inspection and testing.

13.5.3.5 Cooperate fully with the testing laboratory’s personnel and with special inspectors in inspection any part of the construction and in taking any samples of materials required to be tested. Provide access to the work.

13.5.3.6 Alert the testing laboratory 3 working days in advance as to the times and location of the required sampling, tests and inspections so as to not delay the work of the project, and make sure that the required sampling, tests inspections are promptly completed.

13.5.4 Contractor Paid Test/Inspection Reports: Contractor paid non-DSA test/inspection reports.

13.5.4.1 Reports will comply with Section 4-335(d), Part 1, Title 24, CCR.
13.5.4.2 Include every test and inspection made regardless of whether such tests and inspections indicate that the material and procedures are satisfactory or unsatisfactory.

13.5.4.3 Include records of special sampling operations as required.

13.5.4.4 Indicate that materials were sampled and tested in accordance with requirements of CCR regulations and Construction Documents.

13.5.4.5 Indicate specified design strength of materials such as masonry, concrete and steel.

13.5.4.6 State whether or not materials and procedures comply with requirements of the Construction Documents.

13.5.4.7 Submit copies of reports to DSA, Construction Manager, District, Architect, Project Inspector, Structural Engineer, Civil Engineer, Soils Engineer and Contractor within 14 days of tests. Submit copies of reports of non-complying materials and procedures immediately.

13.5.5 Advance Notice to Inspector.

The Contractor shall notify the Inspector a sufficient time in advance of its readiness for required observation or inspection so that the Inspector may arrange for same, but no less than 2 work days. The Contractor shall notify the Inspector a sufficient time in advance, but no less than 2 work days, of the manufacture of material to be supplied under the Contract Documents which must, by terms of the Contract Documents, be tested in order that the Inspector may arrange for the testing of the material at the source of supply.

13.5.6 Testing Off-Site.

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

13.5.7 Additional Testing or Inspection.

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

13.5.8 Costs for Retesting.

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

Re-examination of previously tested and inspected work may be ordered by the District, Architect, or by the Project Inspector. The Contractor shall uncover such work if retesting is ordered. If work is found in accordance with Contract Documents, the District will pay costs of uncovering, removing, retesting and replacing. If work is found not in accordance with Contract Documents, the District will deduct the cost of retesting from the Contract Sum by Change Order and the Contractor will bear the costs of uncovering, removing and replacing work.

13.5.10 Costs for Premature Test.

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

13.6 TRENCH EXCAVATION

13.6.1 Trenches Greater Than Five Feet.

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

13.6.2 Excavation Safety.

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

13.6.3 No Tort Liability of District.

Pursuant to Labor Code § 6705, nothing in this Article shall impose tort liability upon the District or any of its employees.

13.6.4 No Excavation Without Permits.

The Contractor shall not commence any excavation Work until it has secured all necessary permits including the required CAL OSHA excavation/shoring permit. Any permits shall be prominently displayed on the Site prior to the commencement of any excavation.
13.7 **WAGE RATES, TRAVEL, AND SUBSISTENCE**

13.7.1 **Wage Rates.**

Pursuant to the provisions of Article 2 (commencing at § 1720), Chapter 1, Part 7, Division 2, of the Labor Code, the District has obtained the general prevailing rate of per diem wages and the general prevailing rate for holiday and overtime work in the locality in which this public works project is to be performed for each craft, classification, or type of worker needed for this Project from the Director of the Department of Industrial Relations (“Director”). These rates are on file at the administrative office of the DISTRICT and are also available from the Director of the Department of Industrial Relations. Copies will be made available to any interested party on request. The Contractor shall post a copy of such wage rates at appropriate, conspicuous, weatherproof points at the Site.

Any worker employed to perform work on the Project, but such work is not covered by any classification listed in the published general prevailing wage rate determinations or per diem wages determined by the Director of the Department of Industrial Relations, shall be paid not less than the minimum rate of wages specified therein for the classification which most nearly corresponds to the employment of such person in such classification.

13.7.2 **Holiday and Overtime Pay.**

Holiday and overtime work, when permitted by law, shall be paid for at the rate set forth in the prevailing wage rate determinations issued by the Director or at least one and one-half (1½) times the specified basic rate of per diem wages, plus employer payments, unless otherwise specified in the contract documents or authorized by law.

13.7.3 **Wage Rates Not Affected by Subcontracts.**

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

13.7.4 **Per Diem Wages.**

The Contractor shall pay and shall cause to be paid to each worker needed to execute the Work on the Project per diem wages including, but not limited to, employer payments for health and welfare, pensions, vacation, travel time and subsistence pay as provided for in Labor Code §1773.1.

13.7.5 **Forfeiture and Payments.**

Pursuant to Labor Code §1775 and the District’s Labor Compliance Program, the Contractor shall forfeit to the District, not more than Fifty Dollars ($50.00) for each calendar day, or portion thereof, for each worker paid less than the prevailing wages rates as determined by the Director of the Department of Industrial Relations, for the work or craft in which the worker is employed for any Work done under the Agreement by the Contractor or by any Subcontractor under it. The amount of the penalty shall be determined by the Labor Commissioner and shall be based on consideration of: (1) whether the Contractor or Subcontractor’s failure to pay the correct rate of per diem wages was a good faith mistake and, if so, the error was promptly and voluntarily correct upon being brought to the attention of the
Contractor or Subcontractor; and (2) whether the Contractor or Subcontractor has a prior record of failing to meet its prevailing wage obligations. Further details regarding the enforcement of paying prevailing wage rates, reporting violations, withholding contract payments, forfeitures and hearing to review withholding of contract payments are set forth in the District’s Labor Compliance Program.

### 13.8 RECORDS OF WAGES PAID

#### 13.8.1 Payroll Records.

(a) Pursuant to §1776 of the Labor Code, each Contractor and Subcontractor shall keep an accurate payroll record showing the name, address, social security number, work classification and straight time and overtime hours worked each day and week, and the actual per diem wages paid to each journeyman, apprentice, worker or other employee employed in connection with the Project.

(b) All payroll records shall be certified and submitted to the District with each application for payment, but shall not be submitted less than once per month. All payroll records shall be available for inspection at all reasonable hours at the principal office of the Contractor on the following basis:

(1) A certified copy of an employee’s payroll record shall be made available for inspection or furnished to the employee or their authorized representative on request.

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

(3) A certified copy of all payroll records shall be made available upon request by the public for inspection or for copies thereof. However, a request by the public shall be made through 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) above, the requesting party shall, prior to being provided the records, reimburse the costs, according to law for the preparation by the Contractor, Subcontractor(s), and the entity through which the request was made. The public shall not be given access to such records at the principal office of the Contractor.

(c) The certified payroll records shall be on forms provided by the Division of Labor Standards Enforcement or shall contain the same information as the forms provided by the Division of Labor Standards Enforcement.

(d) The Contractor or Subcontractor(s) shall file a certified copy of all payroll records with the entity that requested such records within 10 calendar days after receipt of a written request.

(e) Any copy of records made available for inspection as copies and furnished upon request to the public or any public agency by the District, the Division of Apprenticeship Standards or the Division of Labor Standards Enforcement shall be marked or
obliterated to prevent disclosure of an individual’s name, address and social security number. The name and address of the Contractor awarded the Contract or the Subcontractor(s) performing the Contract shall not be marked or obliterated. Any copy of records made available for inspection by, or furnished to, a joint labor-management committee established pursuant to the federal Labor Management Cooperation Act of 1978 (Section 175a of Title 29 of the United States Code) shall be marked or obliterated only to prevent disclosure of an individual’s name and social security number.

(f) The Contractor shall inform the District of the location of all payroll records, including the street address, city and county, and shall, within five working days, provide a notice of a change of location and address.

(g) The Contractor or Subcontractor(s) shall have 10 calendar days in which to comply subsequent to receipt of a written notice requesting payroll records. In the event that the Contractor or Subcontractor(s) fails to comply within the 10-day period, the Contractor or Subcontractor(s) shall, as a penalty to the District, forfeit Twenty-Five Dollars ($25.00) 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.

Responsibility for compliance with this Article and the District’s Labor Compliance Program shall rest upon the Contractor.

13.8.2 Withholding of Contract Payments & Penalties.

The District may withhold or delay contract payments to the Contractor and/or any Subcontractor if:

(a) The required prevailing rate of per diem wages determined by the Director of the Department of Industrial Relations is not paid to all workers employed on the Project;

(b) The Contractor or Subcontractor(s) fail to submit all required certified payroll records with each application for payment, but not less than once per month; or

(c) The Contractor or Subcontractor(s) submit incomplete or inadequate payroll records;

(d) The Contractor or Subcontractor(s) fail to comply with the Labor Code requirements concerning apprentices; or

(e) The Contractor or Subcontractor(s) fail to comply with the District’s Labor Compliance Program;

(f) The Contractor or Subcontractor(s) fail to comply with any applicable state laws governing labor on public works projects.

Any withholding of contract payments and penalties are set forth in the District’s Labor Compliance Program.
13.9 APPRENTICES

13.9.1 Apprentice Wages and Definitions.

All apprentices employed by the Contractor to perform services under the Contract shall be paid the standard wage paid to apprentices under the regulations of the craft or trade for which he or she is employed, and as determined by the Director of the Department of Industrial Relations, and shall be employed only at the Work of the craft or trade to which he or she is registered. Only apprentices, as defined in §3077 of the Labor Code, who are in training under apprenticeship standards that have been approved by the Chief of the Division of Apprenticeship Standards and who are parties to written apprenticeship agreements under Chapter 4 (commencing with §3070) of Division 3, are eligible to be employed under this Contract. The employment and training of each apprentice shall be in accordance with the apprenticeship standards and apprentice agreements under which he or she is training, or in accordance with the rules and regulations of the California Apprenticeship Council.

13.9.2 Employment of Apprentices.

Contractor agrees to comply with the requirements of Labor Code §1777.5. The Contractor awarded the Project, or any Subcontractor under him or her, when performing any of the Work under the Contract or subcontract, employs workers in any apprenticeable craft or trade, the Contractor and Subcontractor shall employ apprentices in the ratio set forth in Labor Code §1777.5. The Contractor or any Subcontractor must apply to any apprenticeship program in the craft or trade that can provide apprentices to the Project site for a certificate approving the Contractor or Subcontractor under the apprenticeship standards for the employment and training of apprentices in the area or industry affected. However, the decision of the apprenticeship program to approve or deny a certificate shall be subject to review by the Administrator of Apprenticeship. The apprenticeship program or programs, upon approving the Contractor or Subcontractor, shall arrange for the dispatch of apprentices to the Contractor or Subcontractor. The Contractor or Subcontractor covered by an apprenticeship program's standards shall not be required to submit any additional application in order to include additional public works contracts under that program. "Apprenticeable craft or trade" as used in this Article means a craft or trade determined as an apprenticeable occupation in accordance with the rules and regulations prescribed by the California Apprenticeship Council. The ratio of work performed by apprentices to journeyman employed in a particular craft or trade on the Project shall be in accordance with Labor Code §1777.5.

13.9.3 Submission of Contract Information.

Prior to commencing work on the Project, the Contractor and Subcontractors shall submit contract award information to the applicable apprenticeship program(s) that can supply apprentices to the Project and make the request for the dispatch of apprentices in accordance with the Labor Code. The information submitted shall include an estimate of journeyman hours to be performed under the Contract, the number of apprentices proposed to be employed, and the approximate dates the apprentices would be employed. A copy of this information shall also be submitted to the District. Within 60 days after concluding work on the Project, the Contractor and Subcontractors shall submit to the District, if requested, and to the apprenticeship program a verified statement of the journeyman and apprentice hours performed on the Project.
13.9.4 Apprentice Fund.

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

13.9.5 Prime Contractor Compliance.

The responsibility of compliance with Article 13 and §1777.5 of the Labor Code for all apprenticeable occupations is with the Prime Contractor. Any Contractor or Subcontractor that knowingly violates the provisions of this Article or Labor Code §1777.5 shall be subject to the penalties set forth in Labor Code §1777.7 and the District’s Labor Compliance Program.

13.10 ASSIGNMENT OF ANTITRUST CLAIMS

13.10.1 Application.

Pursuant to Government Code § 4551, in entering into a public works contract or a subcontract to supply goods, services, or materials pursuant to a public works contract, the Contractor or Subcontractor offers and agrees to assign to the District all rights, title, and interest in and to all causes of action it may have under Section 4 of the Clayton Act, (15 U.S.C. § 15) or under the Cartwright Act (Chapter 2 [commencing with § 16700] of Part 2 of Division 7 of the Business and Professions Code), arising from the purchase of goods, services, or materials pursuant to the public works contract or the subcontract. This assignment shall be made and become effective at the time the awarding body tenders final payment to the Contractor, without further acknowledgment by the parties. If the District receives, either through judgment or settlement, a monetary recovery for a cause of action assigned pursuant to this Article if the assignor has been or may have been injured by the violation of law for which the cause of action arose and the District has not been injured thereby or the District declines to file a court action for the cause of action.

13.10.2 Assignment of Claim.

Upon demand in writing by the assignor, the District shall, within one (1) year from such demand, reassign the cause of action assigned pursuant to this Article if the assignor has been or may have been injured by the violation of law for which the cause of action arose and the District has not been injured thereby or the District declines to file a court action for the cause of action.

13.11 STATE AUDIT

Pursuant to and in accordance with the provisions of Government Code § 10532, or any amendments thereto, all books, records, and files of the District, the Contractor, or any Subcontractor connected with the performance of this Contract involving the expenditure of state funds in excess of...
Ten Thousand Dollars ($10,000.00), including, but not limited to, the administration thereof, shall be subject to the examination and audit of the Office of the Auditor General of the State of California for a period of three (3) years after final payment is made under this Contract. Contractor shall preserve and cause to be preserved such books, records, and files for the audit period.

13.12 **NOT USED**

13.13 **INDUSTRY STANDARDS**

13.13.1 Applicability of Standards.

Unless the Contract Documents specify more stringent requirements, applicable construction industry standards have the same force and effect as if bound or copied directly into the Contract Documents to the extent referenced. Such standards are made a part of the Contract Documents by reference.

13.13.2 Publication Dates.

Comply with standards in effect as of date of the Contract Documents, unless otherwise indicated.

13.13.3 Minimum Quantity or Quality Levels.

The quantity or quality level shown or specified shall be the minimum provided or performed. The actual installation may comply exactly with the minimum quantity or quality specified, or it may exceed the minimum within reasonable limits. To comply with these requirements, indicated numeric values are minimum or maximum, as appropriate, for the context of requirements. Refer uncertainties to Architect for a decision before proceeding.

13.13.4 Copies of Standards.

Each entity engaged in construction on Project must be familiar with industry standards applicable to its construction activity. Copies of applicable standards are not contained within the Contract Documents. Where copies of standards are needed to perform a required construction activity, obtain copies directly from publication source and make them available on request.

13.13.5 Abbreviations and Acronyms for Industry Organizations.

Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the entities indicated in Gale Research's "Encyclopedia of Associations" or in Columbia Books' "National Trade & Professional Associations of the U.S."

13.14 **PRODUCTS**

13.14.1 All products are to be new and not previously incorporated into or used in any other project or facility. Products salvaged or recycled from other projects are not considered new products and are not permitted.

13.14.2 The term product, as used in the Contract Documents, includes materials, equipment, systems, and like terms of similar intent.
13.14.3 Products include materials, machinery, components, equipment, fixtures and systems forming the Work and purchased for incorporation into the Work.

13.14.4 Do not reuse materials and/or equipment removed from existing premises except as specifically permitted by the Contract Documents.

13.14.5 Provide interchangeable components of the same manufacturer, for similar components.

13.14.6 Named products are items identified in the Contract Documents by manufacturer’s product name, including make or model number or other designation shown or listed in manufacturer’s published product literature that is current as of date of the Contract Documents.

13.14.7 TRANSPORTATION AND HANDLING

13.14.7.1 Transport and handle products in accordance with manufacturer’s instructions.

13.14.7.2 Promptly inspect shipments to assure that products comply with requirements, quantities are correct, and products are undamaged.

13.14.8 SHIPPING REQUIREMENTS

13.14.8.1 Preparation for Shipment: All equipment shall be suitably packaged to facilitate handling and to protect against damage during transit and storage. All equipment shall be protected from exposure to the elements and shall be kept dry at all times.

13.14.8.2 Painted and coated surfaces shall be protected against impact, abrasion, discoloration, and other damage. Painted and coated surfaces which are damaged prior to acceptance of equipment shall be repainted to the satisfaction of District at the expense of Contractor.

13.14.9 PRODUCT DELIVERY, STORAGE, AND HANDLING

13.14.9.1 Store products only in staging area per provisions of the Contract Documents.

13.14.9.2 Handle, store, and protect products in accordance with manufacturer’s instructions, with seals and labels intact and legible. Store sensitive products in weather-tight, climate-controlled enclosures.

13.14.9.3 For exterior storage of fabricated products, place on appropriate supports, above ground.

13.14.9.4 Cover products subject to deterioration with impervious sheet covering. Provide ventilation to avoid condensation.

13.14.9.5 Deliver, store and handle products using means and methods that will prevent damage, deterioration, and loss, including theft. Comply with manufacturer’s written instructions.
13.14.9.6 Contractor shall comply with the following without limitation:

(a) Contractor shall bear the responsibility for delivery of equipment, spare parts, special tools, and materials to the Site and shall comply with the requirements specified herein and provide required information concerning the shipment and delivery of the materials specified in the Contract Documents.

(b) Electrical equipment and all equipment with antifriction or sleeve bearings shall be stored in weather-tight structures maintained at a temperature above 60 degree Fahrenheit. Electrical equipment controls and insulation shall be protected against moisture and water damage. All space heaters furnished in or with equipment shall be connected and operated continuously or according to manufacturer’s requirements.

(c) Equipment and materials shall not have any pitting, rust, decay, or other deleterious effects of storage when installed in the Work.

(d) Store products to allow for inspection, measurement, and/or counting of units.

(e) Store materials in a manner that will not endanger adjacent Work.

(f) Store products that are subject to damage by the elements, under cover in a weather-tight enclosure above ground, with ventilation adequate to prevent condensation.

(g) Store cementitious products and materials on elevated platforms.

(h) Comply with product manufacturer’s written instructions for temperature, humidity, ventilation, and weather-protection requirements for storage.
ARTICLE 14

TERMINATION OR SUSPENSION OF THE CONTRACT

14.1 TERMINATION BY THE CONTRACTOR FOR CAUSE

14.1.1 Grounds for Termination.

The Contractor may terminate the Contract if the Work is stopped for a period of thirty (30) consecutive days through no act or fault of the Contractor, a Subcontractor, a Sub-subcontractor, their agents or employees, or any other persons performing portions of the Work for whom the Contractor is contractually responsible, for only the following reasons:

(a) Issuance of an order of a court or other public authority having jurisdiction; or
(b) An act of government, such as a declaration of national emergency.

14.1.2 Notice of Termination.

If one of the above reasons exists, the Contractor may, upon written notice of seven (7) additional days to the District, terminate the Contract and recover from the District payment for Work executed and for reasonable costs verified by the Architect with respect to materials, equipment, tools, construction equipment, and machinery, including reasonable overhead, profit, and damages.

14.2 TERMINATION BY THE DISTRICT FOR CAUSE

14.2.1 Grounds for Termination.

The District may terminate the Contractor and/or this Contract for the following reasons:

(a) Persistently or repeatedly refuses or fails to supply enough properly skilled workers or proper materials;
(b) Persistently or repeatedly is absent, without excuse, from the job site;
(c) Fails to make payment to Subcontractors, suppliers, materialmen, etc.;
(d) Persistently disregards laws, ordinances, rules, regulations, or orders of a public authority having jurisdiction; or
(e) Becomes bankrupt or insolvent, including the filing of a general assignment for the benefit of creditors; or
(e) Otherwise is in substantial breach of a provision of the Contract Documents.

14.2.2 Notification of Termination.

When any of the above reasons exist, the District may, without prejudice to any other rights or remedies of the District and after giving the Contractor and the Contractor's surety, if any, written notice of seven (7) days, except in the event of an emergency or critical path delay to the schedule in which case the District may give written notice of forty-eight (48) hours, terminate the Contract and may, subject to any prior rights of the surety:
(a) Take possession of the Project and of all material, equipment, tools, and construction equipment and machinery thereon owned by the Contractor;

(b) Accept assignment of Subcontracts. Contractor acknowledges and agrees that if the District (in its sole and absolute discretion) decides to takeover completion of the Project, the Contractor agrees to immediately assign all subcontracts to the District which the District has chosen to accept; and

(c) Complete the Work by any reasonable method the District may deem expedient, including contracting with a replacement contractor or contractors.

14.2.3 Payments Withheld.

If the District terminates the Contract for one of the reasons stated in Paragraph 14.2.1, the Contractor shall not be entitled to receive further payment until the Work is complete. All costs associated with the termination and completion of the Project shall be the responsibility of the Contractor and/or its surety.

14.2.4 Payments Upon Completion.

If the unpaid balance of the Contract Sum exceeds costs of completing the Work, including compensation for professional services and expenses made necessary thereby, such excess shall be paid to the Contractor. If such costs exceed the unpaid balance, the Contractor shall pay the difference to the District. The amount to be paid to the Contractor, or District, as the case may be, shall be certified by the Architect upon application. This payment obligation shall survive completion of the Contract.

14.3 TERMINATION OF CONTRACT BY DISTRICT (CONTRACTOR NOT AT FAULT)

14.3.1 Termination for Convenience.

District may terminate the Contract upon fifteen (15) calendar days of written notice to the Contractor and use any reasonable method the District deems expedient to complete the project, including contracting with replacement contractor or contractors, if it is found that reasons beyond the control of either the District or Contractor make it impossible or against the District’s interest to complete the work. In such a case, the Contractor shall have no claims against the District except: (1) the actual cost for labor, materials, and services performed which may be documented through timesheets, invoices, receipts, or otherwise, and (2) ten percent (10%) profit and overhead, and (3) five percent (5%) termination cost of the total of items (1) and (2). Contractor acknowledges and agrees that if the District (in its sole and absolute discretion) decides to takeover completion of the Project, the Contractor agrees to immediately assign all subcontracts to the District which the District has chosen to accept.

14.3.2 Non-Appropriation of Funds/ Insufficient Funds.

In the event that sufficient funds are not appropriated to complete the Project or the DISTRICT determines that sufficient funds are not available to complete the Project, DISTRICT may terminate or suspend the completion of the Project at any time by giving written notice to the Contractor. In the event that the DISTRICT exercises this option, the DISTRICT shall pay for any and all work and materials completed or delivered onto the site for which value is received, and the value of any and all work then in progress and orders actually placed which cannot be canceled up to the date of notice of termination.
The value of work and materials paid for shall include a factor of fifteen percent (15%) for the Contractor’s overhead and profit and there shall be no other costs or expenses paid to Contractor. All work, materials and orders paid for pursuant to this provision shall become the property of the DISTRICT. DISTRICT may, without cause, order Contractor in writing to suspend, delay or interrupt the Project in whole or in part for such period of time as DISTRICT may determine. Adjustment shall be made for increases in the cost of performance of the Agreement caused by suspense, delay or interruption.

14.4 REMEDIES OTHER THAN TERMINATION

If a default occurs, the District may, without prejudice to any other right or remedy, including, without limitation, its right to terminate the Contract pursuant to Article 14.2, do any of the following:

(a) Permit the Contractor to continue under this Contract, but make good such deficiencies or complete the Contract by whatever method the District may deem expedient, and the cost and expense thereof shall be deducted from the Contract Price or paid by the Contractor to the District on demand;

(b) If the workmanship performed by the Contractor is faulty or defective materials are provided, erected or installed, then the District may order the Contractor to remove the faulty workmanship or defective materials and to replace the same with work or materials that conform to the Contract Documents, in which event the Contractor, at its sole costs and expense, shall proceed in accordance with the District’s order and complete the same within the time period given by the District in its notice to the Contractor; or

(c) Initiate procedures to declare the Contractor a non-responsible bidder for a period of two to five years thereafter.

All amounts expended by the District in connection with the exercise of its rights hereunder shall accrue interest from the date expended until paid to the District at the maximum legal rate. The District may retain or withhold any such amounts from the Contract Price. If the Contractor is ordered to replace any faulty workmanship or defective materials pursuant to Paragraph (b) above, the Contractor shall replace the same with new work or materials approved by the Architect and the District, and, at its own cost, shall repair or replace, in a manner and to the extent the Architect and the District shall direct, all work or material that is damaged, injured or destroyed by the removal of said faulty workmanship or defective material, or by the replacement of the same with acceptable work or materials. In no event shall anything in this Paragraph be deemed to constitute a waiver by the District of any other rights or remedies that it may have at law or in equity, it being acknowledged and agreed by the Contractor that the remedies set forth in this Paragraph are in addition to, and not in lieu of, any other rights or remedies that the District may have at law or in equity.

END OF SECTION 00700
PART 1 - GENERAL

1.1 RELATED DOCUMENTS
A. All Contract Documents shall be reviewed for applicable provisions related to the provisions in this document, and provisions in the General Conditions and other Specification Sections shall apply to this Section without limitation.

1.2 WORK DESCRIPTIONS WITHOUT FORCE
A. All general descriptions and/or general summaries of the work noted in this section, or elsewhere within the Contract Documents, are without force and effect on the Contract Work described and indicated in detail the Contract Documents. These general descriptions and summaries are for general reference and descriptive purposes only and in no way offer the complete and concise description of all the Work required by the Contract Documents.

1.3 WORK COVERED BY CONTRACT DOCUMENTS
A. The intent of the Contract Documents includes but is not limited to: In general, the Work consists of interior improvements and modifications to existing computer labs and ancillary spaces, construction of two (2) new classrooms within the existing Media Center area, and various ADA-related site improvements. Other Work includes, but is not limited to, hazardous materials abatement and demolition in preparation for improvements.

1.4 CONTRACTS
A. Perform the work under a single, fixed-price Contract.

1.5 WORK SEQUENCE
A. During construction operations, various adjoining areas will be occupied and their functions maintained. Temporary construction separations such as walls for sound and dust control, as well as pathway barricades, signage and clearly marked temporary pedestrian path of travel detours will be required and provided by the Contractor.

B. Scheduling of Contractor’s use of the areas and times involved shall be determined in cooperation with the District. Notify the District a minimum of 10-days prior to commencement of work.

C. Construction activities shall be performed between the hours of 7AM and 5PM, Monday through Friday, unless otherwise required. No Work shall be performed outside the above hours without prior written authorization from the Construction Manager.
1.6 ADDITIONAL WORK SCHEDULE REQUIREMENTS: See Section 01140, Work Restrictions.

1.7 CAMPUS HOLIDAYS
A. The College is closed with no classes held on the following holidays: Labor Day; Native American Day; Veteran’s Day; Thanksgiving; Winter Recess; Martin Luther King Day; President’s Day; Spring Recess. The Contractor may work on these days with prior approval by the District.

1.8 USE OF PREMISES
A. Contractor shall only use the premises for work, storage, staging areas, and vehicular parking as designated in the Contract Documents, and as approved by District.

1.9 EXISTING AREA CONDITION SURVEY
A. Prior to commencement of work, jointly survey the existing area to be remodeled with the District and Architect, noting and recording existing damage such as cracks, sags, and other damage (on Site Plan/Floor Plans).
B. This record shall serve as a basis for determination of subsequent damage to these items due to settlement, movement, demolition, or Contractor’s operations.
C. Existing damage observed shall be marked and the official record of existing damage shall be signed by the parties making the survey.
D. Cracks, sags, and damage to the area and other items not noted in the original survey but subsequently observed shall be reported immediately to the Architect.
E. Contractor shall take photographs or video recordings and submit these to the District for review of adequacy and approval in order to comply with this requirement.

1.10 PROTECTION OF EXISTING STRUCTURES AND UTILITIES
A. The Drawings may not show all existing water, gas, electrical, and hot water lines, and other items known or suspected to exist in the area of the work.
B. Contractor shall locate these installations before proceeding with demolition or other operations which may cause damage, maintain them in service where appropriate, and repair damage caused by the performance of the Work, at no increase in the Contract Sum.
C. In addition to notification, if a structure or utility is damaged, take appropriate action as specified in the General Conditions.

1.12 USE AND OCCUPANCY OF WORK PRIOR TO ACCEPTANCE BY DISTRICT
A. The District may use and occupy the building before formal acceptance under the following conditions:
1. A Certificate of Substantial Completion shall be prepared and executed as provided in the Contract Documents. The Certificate of Substantial Completion shall be accompanied by a written endorsement of the Contractor’s insurance carrier and surety permitting occupancy by the District during the remaining period of the work.
2. Occupancy by the District shall not be construed as being an acceptance of that part of the Work occupied.
3. The Contractor will not be held responsible for damage to the occupied part of the Work resulting from the District’s occupancy.

4. Occupancy by the District shall not be deemed to constitute a waiver of existing claims the District or Contractor may have against each other.

5. Comply with Warranties/Guaranties, and Contract Closeout Procedures for the Work included in Section 00700, General Conditions.

6. The District will pay for utility costs associated with occupancy during construction.

1.13 PROTECTION OF EXISTING IMPROVEMENTS
   A. Provide barricades, coverings, or other types of protection necessary to prevent damage to existing improvements indicated to remain in place.
   B. Protect improvements on adjoining properties as well as those on the District’s property.
   C. Protect existing trees and other vegetation indicated to remain in place, against unnecessary cutting, breaking or skinning of roots, skinning and bruising of bark, smothering of trees by stockpiling construction materials or excavated materials within drip line, excess foot or vehicular traffic, or parking of vehicles within drip line.
   D. Restore any improvements damaged by this work to their original condition as acceptable to the District or other parties or authorities having jurisdiction.

1.14 HAZARDOUS MATERIALS
   A. Comply with all requirements included in other sections of Contract Documents.

1.15 MISCELLANEOUS PROVISIONS
   A. Items shown, described or scheduled to be salvaged will remain the property of the District. Store as directed by the Construction Manager.

PART 2 - PRODUCTS
Not Used.

PART 3 - EXECUTION
Not Used.

END OF SECTION 01010
SECTION 01015

ADDITIONAL REQUIREMENTS FOR DSA-APPROVED PROJECTS

PART 1 - GENERAL

1.01 GENERAL

The following additional requirements apply to this Project that is being reviewed by the Division of the State Architect (DSA).

1.02 ADDITIONAL REQUIREMENTS

A. In addition to the duties specified in the Contract Documents, the duties of the Contractor shall be in accordance with the requirements specified in, Title 24, California Code of Regulations (CCR).

B. 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 Part 1, Title 24, CCR.

C. DSA is not subject to arbitration proceedings.

D. Notify DSA at start of construction in accordance in Part 1, Title 24, CCR.

E. Changes: DSA defines all addenda and change orders as Construction Change Documents (CCD.) All CCD shall be submitted for DSA approval. Do not begin any work under an CCD until DSA approval is obtained. CCDs shall be in accordance in Part 1, Title 24, CCR.
   1. Submit DSA 140 Form for Category A changes defined as construction changes to or affecting Structural Safety, Fire Life Safety or Accessibility.
   2. Submit DSA 141 Form for Category B changes defined as construction changes NOT affecting Structural Safety, Fire Life Safety or Accessibility.

F. Do not begin work under a written order until a CCD has been submitted to and approved by DSA in accordance with Part 1, Title 24, CCR. Substitutions effecting structural, fire/life/safety or access compliance shall be submitted as CCDs for DSA approval. The Contractor will be responsible for the additional architectural and engineering costs associated with the review and regulatory processing of these substitutions.

G. Unless otherwise indicated or specified, perform the work in conformance with the latest edition of applicable regulatory requirements. A copy of Part 1 and Part 2 of Title 24, CCR shall be available on the Project site. The codes adopted by the City, County, State and Federal agencies shall govern minimum requirements for this Project.

H. Contractor shall submit verified reports in accordance with Part 1, Title 24, CCR.

I. DSA may supervise construction, reconstruction, or repair in accordance with Part 1, Title 24, CCR.
J. Construction shall be observed by a full-time Project Inspector approved by DSA in accordance with Part 1, Title 24, CCR.

K. Testing requirements of the DSA approved District's Testing Laboratory shall be in accordance of Part 1, Title 24, CCR.

L. Special Inspection on masonry construction, glued laminated lumber, wood framing using timber connectors, ready-mixed concrete, gunite, prestressed concrete, high strength steel bolt installation, welding, pile driving, and mechanical and electrical work shall be as required by Part 1, Title 24, CCR. The costs of special inspection will be paid for by the District.

M. DSA Box: The Contractor shall submit DSA required documents via DSA Box.

N. DSA Box.com is a secure cloud based collaborative solution initiated by the DSA to allow greater transparency and communication between DSA field engineers and designated stakeholders.
   1. Forms which historically were mailed, processed and filed in a cabinet can now be posted on-line and viewed almost immediately.
   2. The Contractor shall receive authorization to access DSA Box via invitation by email from Box.com indicating that the Contractor are being invited to share or collaborate on a file or folder that relates to a specific project. Please check your email "junk folder," as your spam filter may not recognize the sender of the initial invitation.
   3. Additional instructions shall be provided during the course of the project.

PART 2 - PRODUCTS  (Not Used)

PART 3 - EXECUTION  (Not Used)

END OF SECTION 01015
SECTION 01050
FIELD ENGINEERING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS
A. All Contract Documents shall be reviewed for applicable provisions related to the provisions in this document, and provisions in the General Conditions and other Specification Sections shall apply to this Section without limitation.

1.2 SUBMITTALS
A. Contractor shall submit name and address of Surveyor and Professional Engineer to District for approval prior to their work on the Project.
B. On request of District and Architect, Contractor shall submit documentation to verify accuracy of field engineering work, at no additional cost to the District.
C. At completion of the Work, Contractor shall submit a certificate signed by a licensed engineer or surveyor certifying that all elevations and locations of improvements are in conformance with Contract Documents.

1.3 REQUIREMENTS
A. Contractor shall provide and pay for field engineering services by an engineer licensed in the State of California, required for the Project, including, without limitation:
   1. Survey work required in execution of the Project.
   2. Civil or other professional engineering services specified, or required to execute Contractor’s construction methods.

1.4 QUALIFICATIONS OF SURVEYOR OR ENGINEERS
A. Contractor shall only use a qualified licensed engineer or registered land surveyor, approved by the District, of the discipline required for specific service on Project, licensed in the State of California.
B. Submit evidence of Engineer’s errors and omissions insurance coverage to District, in the form of a current Insurance Certificate.

1.5 SURVEY REFERENCE POINTS
A. Existing basic horizontal and vertical control points for the project are those designated on the Drawings.
B. Contractor shall locate and protect control points prior to starting Site Work and preserve all permanent reference points during construction. In addition Contractor shall:
   1. Make no changes or relocation without prior written notice to District and Architect.
   2. Report to District and Architect when any reference point is lost or destroyed, or requires relocation because of necessary changes in grades or locations.
3. Require surveyor to replace project control points based on original survey control that may be lost or destroyed.

4. Contractor to locate and protect existing survey control and reference points.

5. Control datum for survey is that indicated on Drawings.

6. Protect survey control points prior to starting Site Work; preserve permanent reference points during construction.

7. Promptly report to Architect, District, and Project Inspector the loss or destruction of any reference point or relocation required because of changes in grades or other reasons.

8. Replace dislocated survey control points based on original survey control. Make no changes without prior written notice.

1.6 PROJECT RECORD DOCUMENTS
A. Maintain complete, accurate log of control and survey work as it progresses. Indicate dimensions, locations, angles, and elevations of construction and Site Work.
B. Submit Record Documents as required under provisions of these Contract Documents.

1.7 EXAMINATION
A. Verify locations of survey control points prior to starting Work. Promptly notify District and Architect of any discrepancies discovered.

1.8 SURVEY REQUIREMENTS
A. Provide field engineering services. Utilize recognized engineering survey practices.
B. Establish a minimum of two permanent bench marks on Site, referenced to established control points. Record locations, with horizontal and vertical data, on Project Record documents.
C. Establish lines and levels, locate and lay out by instrumentation and similar appropriate means:
   1. Site improvements including pavements; stakes for grading, fill and topsoil placement; utility locations, slopes, and invert elevations.
   2. Grid or axis for structures.
   3. Building foundation, column locations, and ground floor elevations.
D. Periodically verify layouts by same means.

PART 2 – PRODUCTS - Not Used

PART 3 – EXECUTION

3.1 Contractor is responsible for meeting all applicable codes, OSHA, and other safety and shoring requirements.

3.2 Contractor is responsible for any re-surveying required by correction of nonconforming work with no additional cost to the District or its representatives.

END OF SECTION 01050
SECTION 01140
WORK RESTRICTIONS

PART 1 – GENERAL

1.1 RELATED DOCUMENTS

A. All Contract Documents shall be reviewed for applicable provisions related to the provisions in this document, and provisions in the General Conditions and other Division 1 Specification Sections shall apply to this Section without limitation.

1.2 SUMMARY OF WORK RESTRICTION REQUIREMENTS

A. Prior to the start of Work, Contractor shall familiarize itself with the Work Restrictions as they relate to all Work required by the Contract Documents.

B. Work Restricted Activity Plan shall include:
   1. Full size drawing (36"x42") of site plan showing the proposed locations and dimensions of temporary facilities and Work Restricted Activities including but not limited to all proposed trailers, equipment and material storage areas on the Project site: safe and ADA complaint access (ingress/egress) for pedestrians and vehicles around the construction areas; proposed haul routes; all temporary construction and way-finding signage; temporary fenced area(s), noise barriers, and dust partitions; and temporary measures to maintain continuous and uninterrupted code compliant use of all occupied areas. Identify any areas that require temporary paving for stabilization or prevention of tracking of mud, and for ADA complaint ingress and egress. Indicate if the use of supplemental or other staging areas might be required. Also see Section 01500 for Temporary Facilities and Controls for additional requirements.
   2. Contractor shall submit 5 full-sized hard copies, and in Adobe PDF Format, via email, a color copy of the initial submittal of the Work Restricted Activity Plan, for review by the District, Architect, and by personnel from the Campus (e.g., Buildings & Grounds, Police Services, and other representatives).

C. Contractor shall construct dust partitions prior to the start of demolition and they must remain in place until the completion of that activity where required.

D. Contractor shall perform and complete all Work Restricted Activities to ensure the following:
   1. The continuous and uninterrupted use of all occupied areas, including but not limited to the applicable power, data, telephone, waterline, fire alarm system, fire sprinkler system mechanical, gas, storm, sewage, plumbing, and electrical systems serving these areas.
   2. Protection of students, staff, faculty and personnel in occupied areas from the hazards and dust associated with construction.
   3. The work areas, roads, parking lots, and streets are to be kept clear, clean, and free of loose debris, construction materials and partially installed work which would create a safety hazard or interfere with subcontractor and personnel duties and traffic. The Contractor shall sweep the areas clean at the end of each work day and make every effort to keep dust and noise to a minimum at all times.
4. Prior to starting work, the Contractor shall provide a proposed schedule of temporary interruptions or shutdown of any utility or electrical/mechanical systems to the District, Campus Buildings and Grounds Manager, and Project Inspector. The Contractor shall provide written request 5 (five) working days prior to the desired time for the proposed interruption(s). Work shall be performed at times other than the Campus’s normal hours of operation, or as directed by the District’s Construction Manager. Temporary interruptions shall be completed prior to the start of the next business day at the Campus to maintain continuous and uninterrupted use of Campus facilities.

1.3 SUMMARY OF WORK RESTRICTIONS

A. General: Work Restrictions are comprised of Work Restricted Activities included in the Work Restricted Activity Plan described above. All Work Restricted Activities must be completed within the timelines, work shift times, and the scheduled time period as required by the Contract Documents. Comply with the following:
   1. The Work Restricted Activity Plan shall be approved by the District prior to any Work starting on the Project site.
   2. Contractor shall have all temporary fencing, signage, ADA compliant pathways and other temporary measures described in Paragraph 1.4 above installed, operational and accepted by the District prior to starting staging, abatement, demolition or other Work as applicable.

B. Time Essential Work Restrictions. The Work Restricted Activities that are essential to protect the Campus community, and minimize disruption to the Campus’s daily operations include, but are not limited to: temporary construction fencing, temporary construction barriers, construction and way-finding signage, dust control and safe and ADA complaint access (ingress/egress) for pedestrians and vehicles around the construction areas.

C. Coordination and Time Sensitive Work Restrictions. Work Restricted Activities include the construction and installation of interim utilities; permanent utility/installation and other construction activities related to moving of vital infrastructure to keep portions of the Campus facilities operational during remodeling activities. Certain activities related to these Work Restrictions, which do not disrupt or impact occupied areas of the facility, may be completed during the normal business hours.

PART 2- PRODUCTS

2.1 MATERIALS

A. All labor, equipment, materials, and all other requirements shall be provided and will be the sole responsibility of the Contractor for execution of entire work including all Requirements of each Work Restricted Activity.

PART 3 - EXECUTION

3.1 MEANS AND METHODS OF CONSTRUCTION

A. Contractor to provide and shall be responsible for any and all means and methods that will be constructed, implemented and/or maintained on the site for all Work Restricted Activities.
SECTION 01311
PROJECT MANAGEMENT AND COORDINATION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS
A. All Contract Documents shall be reviewed for applicable provisions related to the provisions in this document, and provisions in the General Conditions and other Specification Sections shall apply to this Section without limitation.

1.2 SUMMARY
A. This Section specifies the administrative requirements and includes descriptions of required project coordination for the work including, but not limited to, the following:
   1. Coordination
   2. Coordination of Contract Closeout

1.3 COORDINATION
A. Coordinate scheduling, submittals, and Work of the various Sections of Specifications to assure efficient and orderly sequence of Work, with provisions for accommodating items to be installed later and for accommodating items to be installed by other District contractors.
B. Resolve differences or disputes concerning coordination, interference, or extent of Work of the various Sections of the Specifications.
C. Coordinate completion and cleanup of Work of separate Sections in preparation for Substantial Completion.
D. Coordinate requests for substitutions to assure compatibility of space, of operating elements, and effect on work of other sections.
E. Cooperate with District and District suppliers and/or contractors during move-in and occupancy of the completed Work.
F. Contractor shall coordinate construction operations and means and method of construction included in different Sections of the Specifications to ensure efficient and orderly installation of each part of the Work. Coordinate construction operations, included in different Sections that depend on each other for proper installation, connection, and operation.
   1. Coordinate structural, mechanical, and electrical elements prior to installation. All penetrations of structural elements must first receive approval of Architect and District pursuant to the submittal process described in Section 00700, General Conditions. Rerouting of ductwork, piping, or conduit and resulting changes to other work caused by failure to coordinate beforehand is the responsibility of the Contractor and shall not be considered justification for either additional cost or time.
   2. Schedule construction operations in sequence required to obtain the best constructed results where installation of one part of the Work depends on installation of other components, before or after its own installation.
   3. Coordinate installation of different components with other contractors or other trades to ensure maximum and appropriate accessibility for required maintenance, service,
and repair. Where availability of space is limited, coordinate installation of different components to ensure maximum and appropriate performance and accessibility for required maintenance, service, operations, and repair of all components, and building systems.

4. Make adequate provisions to accommodate items scheduled for later installation.

5. The manner in which the Specifications are divided into Divisions and Sections is not intended to indicate division of work between trades nor indicate trade union or jurisdictional agreements.
   a. Assign and subcontract construction activities, and employ workers in a manner that will not risk jurisdictional disputes that could result in conflicts, delays, claims, or losses.

1.4 ADMINISTRATIVE COORDINATION
   A. Coordinate scheduling and timing of required administrative procedures with other construction activities and activities of other contractors to avoid conflicts and to ensure orderly progress of the Work.

1.5 COORDINATION OF THE WORK
   A. Coordinate use of project space and sequence of installation of mechanical, electrical, structural, and other Work which is indicated diagrammatically on Drawings. Follow routings shown for pipes, ducts, and conduits as closely as practicable, with due allowance for available physical space; make runs parallel with lines of building. Utilize space efficiently for maximum and appropriate accessibility for other installations, for maintenance, service, operations, and for repairs.
   B. Contractor shall use large scale drawings, if their preparation is required as part of Work of these specifications, together with shop drawings if applicable and layout drawings of other affected sections of these specifications to check, to coordinate, and to integrate the Work of various sections to prevent interferences.
   C. Perform and complete checking and coordination before commencing construction in the affected areas.
   D. In finished areas, except as otherwise shown, conceal pipes, ducts, and wiring in the construction. Coordinate locations of plumbing, fixtures, electrical fixtures, and fixtures and outlets with finish elements.

1.6 CONSERVATION
   A. Contractor shall coordinate construction activities to ensure that operations are carried out with consideration given to conservation of energy, water, and materials.
      1. Salvage materials and equipment involved in performance of, but not actually incorporated into, the Work. Refer to other Sections of the Specifications for disposition of salvaged materials that are designated as District’s property.

1.7 MEANS AND METHODS
   A. Contractor is solely responsible for construction means, methods, techniques, sequences, and procedures for performing all Work.
1.8 ADMINISTRATIVE AND SUPERVISORY PERSONNEL
A. Contractor shall provide other administrative and supervisory personnel as required for proper performance of the Work.
   1. Include specific or dedicated personnel required for coordination of operations with other contractors.

1.9 COORDINATION WITH WORK BY DISTRICT
A. Coordinate service connections for District furnished and District installed equipment. Verify that service connections are correct sizes and in required locations.
B. Coordinate support and anchorage for equipment furnished and installed by the District. Provide blocking and backing as shown or directed to facilitate installation of equipment by others.

1.10 PERIODIC VERIFIED REPORTS
A. The Contractor shall complete and submit the Final Verified Report required by DSA when applicable. In addition to other conditions precedent to Final Payment, the Contractor’s completion and submission of the Final Verified Report is an express condition precedent to the District’s obligation to make the Final Payment. In addition to completion and submission of the Final Verified Report, as a material obligation under the Contract Documents, the Contractor shall comply all DSA requests for reports or other data relating to the Work, the status thereof or conformity of the Work to the Contract Documents.

PART 2 - PRODUCTS - Not Used.

PART 3 - EXECUTION - Not Used.

END OF SECTION 01311
PART 1 – GENERAL

1.1 RELATED DOCUMENTS

A. All Contract Documents shall be reviewed for applicable provisions related to the provisions in this document, and provisions in the General Conditions and Specification Sections shall apply to this Section without limitation.

1.2 SUMMARY

A. This Section specifies administrative requirements and provides descriptions of the required project meetings for the Work and all phases of the Project. These meetings include, but not limited to, the following:
   1. Preconstruction Conference
   2. Schedule Review Meetings
   3. Weekly Project Progress Meetings
   4. Construction Schedule and Application for Payment Meetings
   5. Special Meetings

1.3 PRECONSTRUCTION CONFERENCE

A. District will schedule and conduct the Preconstruction Conference at a time and place to be determined.

B. Contractor and all major subcontractors, as requested by the District, shall attend the Preconstruction Conference.

C. Meeting agenda will include, but is not limited to, discussion of the following items:
   1. Construction Schedules
   2. Personnel and vehicle permit procedures
   3. Use of premises
   4. Location of Contractor’s on-Site facilities
   5. Security
   6. Housekeeping
   7. Submittal and RFI procedures
   8. Inspection and testing procedures, on-Site and off-Site
   9. Utility shutdown procedures
   10. Control and reference point survey procedures
   11. Injury and Illness Prevention Program
   12. Schedule of Values
13. Schedule of Submittals
14. Project Directory
15. Emergency Contact List

1.4 SCHEDULE OF VALUES & CONSTRUCTION SCHEDULE MEETING

A. See Section 00700, General Conditions, for requirements. Meetings will be held as requested by the District, or as required by the District.

1.5 SHOP DRAWINGS & SUBMITTALS SCHEDULE MEETING

A. See Section 00700, General Conditions, for specific requirements. Meetings will be held as requested by the District, or as required by the District.

1.6 WEEKLY PROGRESS MEETINGS

A. Weekly Progress Meetings will be scheduled throughout duration of Work at a time acceptable to the District. Weekly Progress Meetings will be held weekly unless otherwise directed by District.

1. Meetings shall be held at Construction Manager’s on-site office, unless otherwise directed by the District.
2. The District’s Construction Manager will prepare an agenda, if needed.
3. The District or Architect will record meeting notes of the Weekly Progress Meetings. Within 3 working days after the meeting, the District or Architect will distribute minutes to attendees via e-mail, and to those affected by decisions made at the meeting. Attendees can either submit comments or additions to the minutes within 3 working days. The minutes will constitute a final documentation of the results of meeting.

B. Weekly Progress Meetings shall be attended by the Contractor’s project manager, project engineer, and job superintendent, District Construction Manager, Architect and Engineers, the Inspector of Record, and others as appropriate to agenda topics for each meeting.

C. Agenda will contain the following items, as appropriate:

1. Review, revise as necessary, and approve previous meeting minutes
2. Review Work progress since last meeting
3. Status of Construction Schedule, delivery schedules, adjustments
4. Submittal, RFI, and Change Order status
5. Review of the Contractor’s safety program activities and results, including report on any serious injury and/or damage accidents
6. Review of non-conforming Work (if any)
7. Other items relating to or affecting progress of Work
1.7 Special Meetings

A. District may call special meetings by notifying the desired participants. Special meetings may be held without advance notice in emergency situations.

B. At any time during the progress of Work, District shall have authority to require Contractor to attend a meeting with any or all of the subcontractors engaged in the Work, or in other work, and notice of such meeting shall be duly observed and complied with by Contractor.

C. Contractor shall schedule and conduct its own periodic coordination meetings as necessary to discharge coordination responsibilities.

D. Contractor shall give District 5 work days written notice of its coordination meetings. Contractors shall maintain and distribute minutes of coordination meetings to District. Attendees shall have 3 work days to submit comments or additions to minutes. Minutes will constitute final documentation of results of coordination meetings.

1.8 GUARANTEES/WARRANTIES, BONDS, AND SERVICE & MAINTENANCE CONTRACTS REVIEW MEETING

A. Ten Months following date of final acceptance, Contractor to hold a meeting to review guarantees/warranties, bonds, and service maintenance contracts for materials and equipment. Implement repair or replacement of defective items, and extend service and maintenance contracts, as desired by District.

B. Attending shall be:
   1. District Project Representatives
   2. Architect and Architect’s consultants, as appropriate
   3. Campus Buildings & Ground Representatives
   4. Contractor
   5. Subcontractors, as appropriate
   6. Others, as appropriate

PART 2 - PART 2 – PRODUCTS - Not Used

PART 3 - PART 3 – EXECUTION - Not Used

END OF SECTION 01312
PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. All Contract Documents shall be reviewed for applicable provisions related to the provisions in this document, and provisions in the General Conditions and other Specification Sections shall apply to this Section without limitation.

1.2 SUMMARY

A. This section specifies the information and format requirements for administrative forms and logs.

1.3 ADMINISTRATIVE FORMS & LOGS

A. The Contractor shall use District provided administrative forms for the Work. Administrative forms and logs include, but are not limited to, the following:

1. Transmittal Form
2. Submittal Transmittal Form
3. Request for Information Form
4. Substitution Request Form
5. 3-Week Projected Construction Schedule Form
6. 3-Week Testing & Inspection Schedule Form
7. Proposed Change Order Form*
8. Change Order Form*
9. Request for Information Log Form
10. Submittal Log Form
11. Proposed Change Order Log Form
12. Change Order Log Form
13. Contractor’s Proposal for Contract Modification Form* (includes sample numbers to demonstrate calculations only)
14. Contractor Production Report
15. Construction Directive Form

B. Forms generated by project management software may be substituted if substitution forms contain essentially the same information as shown in these contract documents. Allowance for the use of substitute forms is at the sole discretion of the District, and shall be requested and approved before use of the substitute form. Forms marked with an asterisk (*) may NOT be substituted under any condition.

C. Microsoft Excel files of these forms are available for Contractor use from the District.
1.4 FORMS INCORPORATED BY REFERENCE

A. Forms available from the California Department of General Services, Division of the State Architect, http://www.dgs.ca.gov/dsa/Forms.aspx, related to administration, construction, testing, and inspection of public work school facilities are hereby incorporated by reference into these Contract Documents.

1.5 CONTRACTOR RESPONSIBILITIES

A. Nothing in this Section, including, but not limited to, the above forms and log forms, shall be construed to limit, relieve, or release Contractor from liability to District for any damages sustained as a result of inaccurate or incorrect information supplied by the Contractor.

PART 2 – PRODUCTS - Not Used.

PART 3 – EXECUTION - Not Used.

END OF SECTION 01340
SECTION 01400
QUALITY CONTROL REQUIREMENTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS
A. All Contract Documents shall be reviewed for applicable provisions related to the provisions in this document, and provisions in the General Conditions and other Division 1 Specification Sections shall apply to this Section without limitation.

1.2 SUMMARY
A. This Section includes Administrative and Procedural Requirements for Quality Control and Quality Assurance Services includes, but not limited to, the followings:
   1. Quality assurance and control of installation.
   2. References.
   3. Inspection and testing laboratory services
   4. Manufacturers’ field services and reports
   5. Field sample
   6. DSA Project Inspector if applicable
   7. Inspection by the Division of the State Architect if applicable
   8. Conflicts

1.3 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’ written instructions, including each step in sequence.
C. When manufacturers’ instructions conflict with Contract Documents, request clarification from District’s Representative 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. All Work shall be performed 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. Contractor’s Line of Authority: Contractor shall provide one person who shall be both knowledgeable and responsible for all work to be performed on the Project at all times during normal work hours. In Contractor’s absence, Contractor’s 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 on the Project.
H. Shop and field work shall be performed only 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 Contract Documents, 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 District’s Representatives reserve the right to reject any materials and workmanship that are not considered to be of the highest standards of the trades involved. Any such inferior material or workmanship shall be removed and replaced at no additional cost or time impact to the District.

J. The specifications and recommendations of the manufacturer whose materials are used shall be strictly adhered to during the application or installation of materials. Manufacturer’s specifications, installation instructions, and testing and startup directions shall be available for inspection on Site.

K. Any additional work beyond that specified or illustrated in the Contract Documents, or any modification thereto, that is necessary to obtain the guarantees specified in the Contract Documents shall be provided by the Contractor without any additional cost or time impact to the District.

1.4 REFERENCES

A. Conform to reference standards in force on the most recent date of issue of the approved Contract Documents.

B. When specified reference standards conflict with Contract Documents, request clarification from District’s Representative 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 for all building codes involved for all trades under his direction.

E. Provide all work and materials in full in accordance with the latest applicable Rules and Regulations of the California Code of Regulations Title 24 Building Code Standards, the State Fire Marshal, Safety Orders of the Division of Industrial Safety, 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. American Society for Testing and Materials (ASTM):


1. 29 CFR 1910, Subpart A, Section 1910.7: Definitions and Requirements for a National Recognized Testing Laboratory.

H. NIST: National Institute of Standards and Technology.

I. Furnish all material and labor required to comply with these Rules and Regulations without any additional cost to District.
1.5 MANUFACTURERS’ FIELD SERVICES AND REPORTS

A. When specified in individual Specification Sections, require material or product suppliers or manufacturers to provide qualified staff personnel to observe site conditions, conditions of surfaces and installation, quality of workmanship, start-up of equipment, testing, adjusting, and balancing of equipment as applicable, and to provide instructions when necessary.

B. Provide four (4) sets of Manufacturer’s Field Representative report to District and Architect for review within 5 days of field observation.

C. Manufacturer’s Field Service: Where indicated, engage a factory-authorized service representative to inspect field-assembled components and equipment installation, including service connections.

1.6 FIELD SAMPLES

A. Install field samples at the site for District and Architect review as required by individual Specifications Sections.

B. Samples accepted by the Architect in writing represent the quality level required for the Work.

C. Where a field sample is specified in individual sections to be removed, clear area after field sample has been accepted by Architect.

1.7 PROJECT INSPECTOR

A. District will employ a Project Inspector in accordance with the regulations of the DSA and subject to the provision of Part 1, Title 24, CCR. Project Inspector’s authority, rights and duties shall be as set forth in Section 4-342, Part 1, Title, 24, CCR.

1.8 INSPECTION BY THE DIVISION OF THE STATE ARCHITECT

A. Work will be monitored and observed through periodic site visits by the Division of the State Architect Field Inspector according to Section 4-334, Part 1, Title 24, CCR.

1.9 CONFLICTS

A. Contractor shall comply with rules of documents interpretation as indicated in Contract General Conditions including, but not limited to the following items:

1. Contract Documents take precedence over statutory requirements or standard when requiring materials of higher quality or performance, or larger sizes or capacity, or greater protection, safety or quantity than required by said codes or standards.

2. This shall not operate to allow deviations from code requirements, prior approvals and other provisions as specified.

3. Modifications to published statutory requirements currently adopted or enforced by regulating agencies having jurisdiction shall take precedence over said published requirements.

B. Conflicts within Contract Documents and/or between Project Manual (including specifications) Drawings, Addenda: The more stringent requirement shall govern.

C. Subcontractor, supplier, and installer work may be called for in any section of the Contract Documents; Project Manual Specifications, Drawings and Addenda. Work by any one discipline
is not limited to any specification section of the Project Manual, Drawings, Addenda, and Contract Documents shall be bid in total and not in parts.

D. If compliance with two or more standards is specified and the standards establish different or conflicting requirements for minimum quantities or quality levels, comply with the most stringent requirement. Refer uncertainties and requirements that are different, but apparently equal, to Architect for a decision before proceeding. Contractor shall, within (15) working days, notify the Architect in writing for the context of requirements.

E. Minimum Quantity or Quality Levels: The quantity or quality level shown or specified shall be the minimum provided or performed. The actual installation may comply exactly with the minimum quantity or quality specified, or it may exceed the minimum within reasonable limits. To comply with these requirements, indicated numeric values are minimum or maximum, as appropriate, for the context of requirements. Contractor shall, within (15) working days, notify any uncertainties to the Architect and District for a decision before proceeding.

1.10 QUALITY CONTROL, GENERAL

A. District will provide inspections, tests, and similar quality control services required performed by the Division of the State Architect. All other tests are Contractor’s responsibility.

1. District will furnish Contractor with names, addresses, and telephone numbers of testing agencies engaged and description of types of testing and inspecting they are engaged to perform.

2. Costs for retesting and re-inspecting construction that replaces or is necessitated by work that failed to comply with the Contract Documents will be charged to Contractor, and the Contract Sum will be adjusted by Change Order.

3. See Section 00700, General Conditions, Article 13.5 for additional requirements.

1.11 QUALITY CONTROL: LABORATORY, TESTS, AND REPORTING REQUIREMENTS

A. Construction materials testing laboratories must be accredited by a laboratory accreditation authority and will be required to submit a copy of the Certificate of Accreditation and Scope of Accreditation.

1. The laboratory’s scope of accreditation must include the appropriate ASTM standards (E 329, C 1077, D 3666, D 3740, A 880, E 543) listed in the technical sections of the specifications.

B. Laboratories engaged in Hazardous Materials Testing shall meet the requirements of OSHA and EPA. The policy applies to the specific laboratory performing the actual testing, not just the Corporate Office.

C. Laboratory Accreditation Authorities: Laboratory Accreditation Authorities include the National Voluntary Laboratory Accreditation Program (NVLAP) administered by the National Institute of Standards and Technology at: http://ts.nist.gov/ts/htdocs/210/214/214.htm the American Association of State Highway and Transportation Officials (AASHTO) program at http://www.transportation.org/aashto/home.nsf/frontpage , International Accreditation Services, Inc. (IAS) at http://www.iasonline.org, the American Association for Laboratory Accreditation (A2LA) program at http://www.a2la.org/.
D. Capability Check: The District retains the right to check laboratory equipment in the proposed laboratory and the laboratory technician's testing procedures, techniques, and other items pertinent to testing, for compliance with the standards set forth in this Contract.

E. Test Results: Cite applicable Contract requirements, tests or analytical procedures used. Provide actual results and include a statement that the item test or analyzed conforms or fails to conform to specified requirements.

1. If the item fails to conform, notify the District immediately. Conspicuously stamp the cover sheet for each report in large red letters "CONFORMS" or "DOES NOT CONFORM" to the specification requirements, whichever is applicable.

2. Test results must be signed by a testing laboratory representative authorized to sign certified test reports.

3. Furnish the signed reports, certifications, and other documentation to the District via the QC Manager.

4. Furnish the signed reports, certifications, and a summary report of field tests at the end of each month to the District. Attach a copy of the summary report to the last daily Contractor Quality Control Report of each month.

1.12 NOTIFICATION ON NON-COMPLIANCE

A. The District will notify the Contractor of any detected non-compliance with the Contract. Take immediate corrective action after receipt of such notice. Such notice, when delivered to the Contractor at the work site, shall be deemed sufficient for the purpose of notification. If the Contractor fails or refuses to comply promptly, the District may issue an order stopping all or part of the work until satisfactory corrective action has been taken. No part of the time lost due to such stop orders will be made the subject of claim for extension of time for excess costs or damages by the Contractor.

PART 2 - PRODUCTS - Not Used.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Verify existing site conditions and substrate surfaces are acceptable for subsequent Work. Beginning new Work constitutes acceptance of existing conditions by the Contractor.

B. Verify existing substrate is capable of structural support or attachment of new Work being applied or attached.

C. Examine and verify specific conditions described in individual specification sections.

D. Verify utility services are available, of correct characteristics, and in correct locations.

3.2 TEST AND INSPECTION LOG

A. Prepare a record of tests and inspections. Include the following:

1. Date test or inspection was conducted.
2. Description of the Work tested or inspected.
3. Date test or inspection results were transmitted to Architect.
4. Identification of testing agency or special inspector conducting test or inspection.

B. Maintain test and inspection log at project site. Post changes and modifications as they occur. Provide access at the Project site to the District and Architect, during normal working hours, to Contractor generated test and inspection logs.

3.3 PREPARATION

A. Clean substrate surfaces prior to applying next material or substance.

B. Seal cracks or openings of substrate prior to applying next material or substance.

C. Apply manufacturer required or recommended substrate primer, sealer, or conditioner prior to applying new material or substance in contact or bond.

3.4 PREPARATION AND PROTECTION

A. General: On completion of testing, inspecting, sample taking, and similar services, repair damaged construction and restore substrates and finishes.

B. Protect construction exposed by or for quality-control service activities.

C. Repair and protection are Contractor’s responsibility, regardless of the assignment of responsibility for quality-control services.

END OF SECTION 01400
SECTION 01415
MITIGATION MONITORING REGULATORY REQUIREMENTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. All Contract Documents shall be reviewed for applicable provisions related to the provisions in this document, and provisions in the General Conditions and other Specification Sections shall apply to this Section without limitation.

1.2 SUMMARY

A. This Mitigation Monitoring and Reporting Program (MMRP) was formulated based on the findings of the Initial Study/Mitigated Negative Declaration (IS/MND) prepared for the Contra Costa College Improvement Implementation Project. This MMRP is in compliance with Section 1509 of the CEQA Guidelines, which requires that the Lead Agency "adopt a program for monitoring or reporting of the revisions which it has required in the project and the measures it has imposed to mitigate or avoid significant environmental effects." The MMRP lists mitigation measures recommended in the IS/MND and identifies mitigation monitoring requirements.

B. The District has attempted to insert these MMRP requirements into the various other Specification Sections that are related to the nature of each mitigation measure. This Section is included to provide a consolidated location for all of the CEQA requirements. Where measures are found in any of the Contract Documents that conflict with these measures, the more stringent measure shall apply.

1. Table 1 presents the mitigation measures identified for the Project. Each mitigation measure is numbered according to the topical section to which it pertains in the IS/MND. As an example, Mitigation measure AIR-1 is the first mitigation measure identified in the IS/MND for the Project.

   a. Elements of the MMRP which have been stricken out do not apply to this project.

   b. The first column of Table 1 identifies the mitigation measure from the IS/MND.

   c. The second column, entitled "Action and Implementation Timing," describes each mitigation measure.

   d. The third column, "Party Responsible for Monitoring," names the party ultimately responsible for ensuring that the mitigation measures are implemented.

   e. The fourth column "Action by Monitor," outlines the steps for monitoring the action identified in the mitigation measure.

   f. The fifth column entitled "Monitoring Timing," states the time the monitor must ensure that the mitigation measure has been implemented.

   g. The last column will be used by the District to ensure that individual mitigation measures have been monitored.
### II. AIR QUALITY

**AIR-I**: Consistent with guidance from the BAAQMD, the District shall require contractors to include emissions control measures in construction specifications for the project. The District shall review the final construction specifications to verify that the requirements have been included prior to beginning grading and excavating activities for the project. The District shall verify via field inspection at least twice during construction that the measures are being implemented. The following actions are required:

- Idling time of diesel powered construction equipment shall be limited to 2 minutes;
- Alternative powered construction equipment (i.e., CNG, biodiesel, electric) shall be utilized when feasible;
- Add-on control devices shall be used such as diesel oxidation catalysts or particulate filters;
- Project construction shall be phased; and
- Operating hours of heavy duty equipment shall be minimized.

<table>
<thead>
<tr>
<th>Recommended Mitigation Measures</th>
<th>Action and Implementation Timing</th>
<th>Party Responsible for Implementing Mitigation</th>
<th>Party Responsible for Monitoring</th>
<th>Action by Monitor</th>
<th>Monitoring Timing</th>
<th>Verification of Compliance Name/Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>AIR-I</td>
<td>Implement the emission control measures listed in Mitigation Measure AIR-I during construction</td>
<td>Contra Costa Community College District and construction contractor</td>
<td>Contra Costa Community College District</td>
<td>1. Review final construction specifications to ensure all requirements listed in Mitigation Measure AIR-I are included</td>
<td>1. Before grading begins</td>
<td>Name:</td>
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<td>2. Visit project site at least twice to verify that emission control measures are being implemented</td>
<td>2. During project construction</td>
<td>Date:</td>
</tr>
<tr>
<td>Recommended Mitigation Measures</td>
<td>Action and Implementation Timing</td>
<td>Party Responsible for Implementing Mitigation</td>
<td>Party Responsible for Monitoring</td>
<td>Action by Monitor</td>
<td>Monitoring Timing</td>
<td>Verification of Compliance Name/Date</td>
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| AIR-2: Consistent with the guidance from the BAAQMD, the District shall include dust control measures in construction contracts and specifications for the project. The District shall verify via field inspection at least twice during construction of each project that the measures are being implemented. The following controls shall be implemented at all construction sites: | Implement the dust control measures listed in Mitigation Measure AIR-2 during construction | Contra Costa Community College District | Contra Costa Community College District | 1. Review final construction specifications to ensure all requirements listed in Mitigation Measure AIR-2 are included | 1. Before grading begins | Name:  
Date: |

- Water all active construction areas at least twice daily and more often during windy periods; active areas adjacent to existing land uses shall be kept damp at all times, or shall be treated with non-toxic stabilizers to control dust;  
- Cover all trucks hauling soil, land, and other loose materials or require all trucks to maintain at least two feet of freeboard;  
- Pave, apply water three times daily, or apply (non-toxic) soil stabilizers on all unpaved access roads, parking areas, inactive construction areas, and staging areas at construction sites;  
- Sweep daily (with water sweepers) all paved access roads, parking areas and staging areas at construction sites; water sweepers shall vacuum up excess water to avoid runoff-related impacts to water quality;  
- Sweep streets daily (with water sweepers) if visible soil material is carried onto adjacent public streets;  
- Enclose, cover, water twice daily, or apply non-toxic soil binders to exposed stockpiles (dirt, sand, etc.);  
- Install base rock at entryways for all existing trucks, and wash off the tires or tracks of all trucks and equipment in designated areas before leaving the site;  
- Limit traffic speeds on unpaved roads to 15 mph;  
- 2. Visit project site at least twice to verify that dust control measures are being implemented  
- 2. During project construction |
<table>
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<tr>
<th>Recommended Mitigation Measures</th>
<th>Action and Implementation Timing</th>
<th>Party Responsible for Implementing Mitigation</th>
<th>Party Responsible for Monitoring</th>
<th>Action by Monitor</th>
<th>Monitoring Timing</th>
<th>Verification of Compliance Name/Date</th>
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<tr>
<td>AIR-2 Continued</td>
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<td>• Install sandbags or other erosion control measures to prevent silt runoff to public roadways;</td>
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<td>• Replant vegetation in disturbed areas as quickly as possible; and</td>
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<td>• Suspend excavation and grading activity when sustained wind speeds exceed 25 mph. Sustained wind speed shall be determined by averaging observed values over a two-minute period. Wind monitoring by the construction manager shall be required at all times during excavation and grading activities.</td>
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<td>AIR-3a: Implement Mitigation Measure AIR-1.</td>
<td>See Mitigation Measure AIR-1</td>
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<td>AIR-3b: Implement Mitigation Measure AIR-2.</td>
<td>See Mitigation Measure AIR-2</td>
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**IV. BIOLOGICAL RESOURCES**

**BIO-1:** Prior to construction, the District shall prepare and submit a Notification of Lake or Streambed Alteration application package (Form FG2023) to the California Department of Fish and Game (CDFG) for working within the riparian corridor of the Rheem Creek tributary. The application shall include a Riparian Restoration Plan prepared by a qualified restoration ecologist for any vegetation removal within the riparian corridor. This plan shall be reviewed and approved by the District. The amount of riparian vegetation trimmed, removed, or disturbed shall be kept to a minimum.

| BIO-1 | | | | | | |
| Submit a Notification of Lake or Streambed Alteration application package prior to construction of bridges | Contra Costa Community College District | Contra Costa Community College District | Verify that Notification of Lake or Streambed Alteration application package is submitted to California Department of Fish and Game | Prior to construction | Name: | Date: |

**BIO-2a:** To determine the extent of Corps jurisdiction at the proposed bridge locations, a qualified wetland scientist shall delineate waters of the U.S. in areas where bridges would be constructed using Corps methodology. The delineation shall be verified by the Corps.

<p>| BIO-2a | | | | | | |
| Delineate waters of the U.S. in areas where bridges would be constructed using Corps methodology prior to construction of bridges | Contra Costa Community College District | Contra Costa Community College District | Submit the delineation to the Corps for verification | Prior to construction | Name: | Date: |</p>
<table>
<thead>
<tr>
<th>Recommended Mitigation Measures</th>
<th>Action and Implementation Timing</th>
<th>Party Responsible for Implementing Mitigation</th>
<th>Party Responsible for Monitoring</th>
<th>Action by Monitor</th>
<th>Monitoring Timing</th>
<th>Verification of Compliance Name/Date</th>
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| **BIO-2b**: The District shall obtain the appropriate federal and State permits for any construction activities and/or structures located below the OHWM of Rheem Creek and/or its tributary. Assuming that the total area impacted would be less than 0.5 acre (21,780 square feet), construction of the pedestrian bridges would likely qualify for authorization under Nationwide Permit (NWP) 14 (Linear Transportation Projects), which regulates “activities required for the construction, expansion, modification, or improvement of linear transportation crossings (e.g., roads, highways, railways, trails, airport runways, and taxiways) in waters of the U.S.” | Obtain the appropriate federal and State permits for any construction activities located below OHWM of Rheem Creek prior to construction | Contra Costa Community College District | Contra Costa Community College District | Verify that appropriate federal and State permits are received | Prior to construction | Name:  
Date: |

| **BIO-3**: If feasible, all vegetation removal shall be conducted during the non-breeding season (i.e., August 1 to February 28) to avoid direct impacts to nesting birds. If such work is scheduled during the breeding season, a qualified ornithologist shall conduct a pre-construction survey to determine if any birds are nesting in the vegetation to be removed. The pre-construction survey shall be conducted within 15 days prior to the start of work from March through May (since there is higher potential for birds to initiate nesting during this period), and within 30 days prior to the start of work from June through July. If active nests are found during the survey, the biologist shall determine an appropriately sized buffer around the nest in which no work shall be allowed until the young have successfully fledged. The size of the nest buffer shall be determined by the biologist in consultation with the CDFG, and shall be based on the nesting species, its sensitivity to disturbance, and the expected types of disturbance. | Restrict vegetation removal activities to the period from August 1 to February 28. If not possible, have a qualified ornithologist create a buffer around nests in which no work shall be allowed until the young have successfully fledged prior to construction | Contra Costa Community College District | Contra Costa Community College District | Verify that construction is not taking place during breeding season, or ensure a proper buffer is created for nesting birds | Prior to construction | Name:  
Date: |
## V. CULTURAL RESOURCES

**CULT-1: The Contra Costa Community College District** shall inform its contractor(s) of the sensitivity of the project area for archaeological resources by including the following directive in contract documents:

> "If prehistoric or historical archaeological deposits are discovered during project activities, all work within 25 feet of the discovery shall be redirected and a qualified archaeologist contacted to assess the situation, consult with agencies as appropriate, and make recommendations regarding the treatment of the discovery. Project personnel should not collect or move any archaeological materials or human remains and associated materials. Archaeological resources can include flaked-stone tools (e.g., projectile points, knives, choppers) or obsidian, chert, basalt, or quartzite toolmaking debris; bone tools; culturally darkened soil (i.e., midden soil often containing heat-affected rock, ash and charcoal, shellfish remains, faunal bones, and cultural materials); and stone-milling equipment (e.g., mortars, pestles, handstones). Prehistoric archaeological sites often contain human remains. Historical materials can include wood, stone, concrete, or adobe footings, walls, and other structural remains; debris-filled wells or privies; and deposits of wood, glass, ceramics, metal, and other refuse."

The Contra Costa Community College District shall verify that the language has been included in the contract documents. Adverse effects to archaeological deposits should be avoided by project activities. If such deposits cannot be avoided, they shall be evaluated for their California Register of Historical Resources eligibility to determine if such deposits qualify as "historical resources" under CEQA (CCR Section 15064.5(e)(1)).

<table>
<thead>
<tr>
<th>1. Include the directive described in Mitigation Measure CULT-1 in contract documents</th>
<th>1. Contra Costa Community College District</th>
<th>1. Contra Costa Community College District</th>
<th>1. Verify that the appropriate language has been incorporated in contract documents</th>
<th>1. Before grading begins</th>
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<tbody>
<tr>
<td>2. Evaluate any archaeological resources discovered during project construction as described in CULT-1 and submit report of findings to the District and the NWIC</td>
<td>2. Construction contractor</td>
<td>2. Contra Costa Community College District</td>
<td>2. Visit project site and verify that measures are being implemented and that any reports are submitted to the NWIC</td>
<td>2. During project construction</td>
</tr>
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</table>

**Name:**

**Date:**
If the deposit is not eligible, a determination shall be made as to whether it qualifies as a "unique archaeological resource" under CEQA. If the deposit is neither a historical nor unique archaeological resource, avoidance is not necessary. If the deposit is eligible to the California Register, or is a unique archaeological resource, it will need to be avoided by adverse effects or such effects must be mitigated. Mitigation may consist of, but is not necessarily limited to, systematic recovery and analysis of archaeological deposits; recording the resource; preparation of a report of findings; and accessioning recovered archaeological materials at an appropriate curation facility. Public educational outreach may also be appropriate. Upon completion of the assessment, the archaeologist shall prepare a report documenting the assessment methods and results, and provide recommendations for the treatment of the archaeological materials discovered. The report shall be submitted to the Contra Costa Community College District and the Northwest Information Center.
**CULT-2:** A qualified paleontologist shall monitor initial project ground-disturbing activities. The paleontologist can then determine whether further monitoring, periodic site reviews, or no further monitoring is appropriate. Paleontological monitoring shall include inspection of mechanically exposed, paleontologically sensitive geological formations underlying the project site. Samples of matrix shall be collected for processing, sorting, and microscopic examination to determine if microfossils are present within exposed geological formations. If paleontological resources are discovered during project activities, all work within 25 feet of the discovery shall be redirected until the paleontological monitor has assessed the situation and made recommendations regarding their treatment. It is recommended that adverse effects to paleontological resources be avoided by project activities. If avoidance is not feasible, the paleontological resources shall be evaluated for their significance. Paleontological resources are considered significant if they possess the possibility of providing new information regarding past life forms, paleoecology, stratigraphy, and geological formation processes. If the resources are not significant, avoidance is not necessary. If the resources are significant, they must be avoided by adverse effects, or such effects must be mitigated. Mitigation may include monitoring, recording the fossil locality, data recovery and analysis, a technical data recovery report, and accessioning the fossil material and technical report to a paleontological repository. Public educational outreach may also be appropriate.

Upon completion of the paleontological monitoring, a report of findings with an appended, itemized inventory of specimens—as appropriate—should be prepared and submitted to an appropriate repository, such as the University of California Museum of Paleontology.

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<tbody>
<tr>
<td>1. Have a paleontologist monitor project ground-disturbing activities prior to construction</td>
<td>1. Contra Costa Community College District</td>
<td>1. Contra Costa Community College District</td>
<td>1. Verify that the appropriate language has been incorporated in contract documents</td>
</tr>
<tr>
<td>2. Evaluate any paleontological resources discovered during project construction as described in CULT-2 and submit report of findings to the District and a paleontological repository</td>
<td>2. Construction contractor</td>
<td>2. Contra Costa Community College District</td>
<td>2. Visit project site and verify that measures are being implemented and that any reports are submitted to a paleontological repository</td>
</tr>
<tr>
<td></td>
<td>1. Before grading begins</td>
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**Name:**

**Date:**
CULT-3: If human remains are encountered, these remains shall be treated in accordance with Health and Safety Code Section 7050.5. The Contra Costa College District shall inform its contractor(s) of the cultural sensitivity of the project area for human remains by including the following directive in contract documents: “If human remains are encountered during project activities, work within 25 feet of the discovery shall be redirected and the County Coroner notified immediately. At the same time, an archaeologist shall be contacted to assess the situation and consult with agencies as appropriate. Project personnel shall not collect or move any human remains and associated materials. If the human remains are of Native American origin, the Coroner must notify the Native American Heritage Commission within 24 hours of this identification. The Native American Heritage Commission will identify a Most Likely Descendant to inspect the site and provide recommendations for the proper treatment of the remains and associated grave goods.” The Contra Costa Community College District shall verify that the language has been included in the contract documents.

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<tr>
<th>Step</th>
<th>Description</th>
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<tr>
<td>1.</td>
<td>Include the directive described in Mitigation Measure CULT-3 in contract documents</td>
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<tr>
<td>2.</td>
<td>Stop work within 25 feet of human remains discovered during project construction; prepare and submit report of findings to the District and NWIC</td>
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<tr>
<td>1.</td>
<td>Contra Costa Community College District</td>
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<td>2.</td>
<td>Construction contractor</td>
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<td>1.</td>
<td>Contra Costa Community College District</td>
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<td>2.</td>
<td>Contra Costa Community College District</td>
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<td>1.</td>
<td>Verify that the appropriate language has been incorporated in contract documents</td>
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<td>2.</td>
<td>Visit project site and verify that measures are being implemented and that any reports are submitted to NWIC</td>
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<tr>
<td>1.</td>
<td>Before grading begins</td>
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<td>2.</td>
<td>During project construction</td>
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Name: [ ]
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VII. HAZARDS AND HAZARDOUS MATERIALS

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<tr>
<th>HAZ-1a: Prior to demolition of structures on the site, a comprehensive lead-based paint survey shall be conducted. If any lead-based paint is identified, it shall be removed from the site in accordance with all applicable regulations, including Occupational Safety and Health Administration (OSHA) guidelines. The District shall verify that the survey has been conducted before beginning demolition of the buildings.</th>
<th>Complete a lead-based paint survey as described in Mitigation Measure HAZ-1a</th>
<th>Contra Costa Community College District</th>
<th>Contra Costa Community College District</th>
<th>Verify that the survey has been conducted</th>
<th>Before demolition begins</th>
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<th>Date:</th>
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<td>HAZ-1b: Prior to demolition of structures on the site, a complete Asbestos Hazard Emergency Response Act-Level Pre-Demolition Asbestos Survey shall be conducted. If asbestos is identified, a licensed asbestos abatement contractor shall be retained to abate identified asbestos-containing material in accordance with all applicable regulations. The District shall verify that the survey has been conducted before beginning demolition of the buildings.</td>
<td>Complete an asbestos survey as described in Mitigation Measure HAZ-1b</td>
<td>Contra Costa Community College District</td>
<td>Contra Costa Community College District</td>
<td>Verify that the survey has been conducted</td>
<td>Before demolition begins</td>
<td>Name:</td>
<td>Date:</td>
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### VIII. HYDROLOGY AND WATER QUALITY

| HYD-I: As a condition of approval of the project plans, the District shall prepare a Storm Water Pollution Prevention Plan (SWPPP) designed to reduce potential impacts to surface water quality through the construction and operational periods of the project including all on- and off-site improvements. The SWPPP shall be submitted for approval to the Facilities Division of the CCCCD and Division of the State Architect prior to issuance of project approvals. The SWPPP shall be maintained on-site and made available to Water Board staff upon request. The SWPPP shall include specific and detailed BMPs designed to mitigate construction-related and operational period pollutants.  
Construction Period: At a minimum, BMPs shall include practices to minimize the contact of construction materials, equipment, and maintenance supplies (e.g., fuels, lubricants, paints, solvents, adhesives) with stormwater. The SWPPP shall specify properly designed centralized storage areas that keep these materials out of the rain.  
An important component of the stormwater quality protection effort is the knowledge of the site supervisors and workers. To educate on-site personnel and maintain awareness of the importance of stormwater quality protection, site supervisors shall conduct regular tailgate meetings to discuss pollution prevention. The frequency of the meetings and required personnel attendance list shall be specified in the SWPPP.  
The SWPPP shall include operational-period BMPs that would result in treatment of an appropriate percentage of the runoff from the project including all on- and off-site improvements. The SWPPP shall include as many LID BMPs as feasible. CCCCD Facilities staff and the Division of the State Architect shall review and approve the SWPPP, including operational period BMPs, prior to approval of the project plans. | Facilities Division of the District shall prepare and the Division of the State Architect shall approve a SWPPP that includes requirements listed in HYD-I | Contra Costa Community College District | Contra Costa Community College District | Verify that the SWPPP has been prepared | Before construction begins | Name:  
Date: |
**HYD-2:** Implement Mitigation Measure HYD-1.

See Mitigation Measure HYD-1.

**HYD-3:** During design development and prior to construction of the bridges, a qualified engineering professional shall design the foundations and support structures for the proposed prefabricated pedestrian bridge(s) in such a way as to span the creek(s) from outside the ‘top-of-bank’ points of the stream banks, or: A Location Hydraulic Study (LHS) shall be prepared showing that any appurtenance structures required for the bridges will not exacerbate flooding up or downstream of the project site, result in bank or bottom scour, or accelerate bank erosion and result in degradation of water quality from creek damage.

**HYD-4:** Implement Mitigation Measure HYD-1.

See Mitigation Measure HYD-1.

**XII. NOISE**

**NOISE-1:** The project shall implement the following noise reduction measures:

- The District shall coordinate with the CCC campus administration and the construction contractor to schedule loud construction activities to less sensitive time periods.

- All heavy construction equipment used on the project site shall be maintained in good operating condition, with all internal combustion, engine-driven equipment fitted with intake and exhaust mufflers that are in good condition.

**NOISE-2:** Implement Mitigation Measure NOISE-1.

See Mitigation Measure NOISE-1.
PART 2 – PRODUCTS - Not Used.

PART 3 – EXECUTION - Not Used.

END OF SECTION 01415
PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. All Contract Documents shall be reviewed for applicable provisions related to the provisions in this document, and provisions in the General Conditions and other Division 1 Specification Sections shall apply to this Section without limitation.

1.2 SUMMARY

A. In Compliance with CEQA requirements, the District conducted an Initial Study to ascertain if the project may have an effect on the environment. The Initial Study identified potential impacts on the environment. However, all potential impacts of the proposed Project can be avoided or reduced to a less-than-significant level by implementation of the following mitigation measures. Contractor shall conform with the following mitigation measures, including but not limited to, the following:
   1. Noise Control
   2. Dust Control
   3. Traffic Control
   4. Spill Prevention, Control and Countermeasures
   5. Tree Protection
   6. Migratory Bird Protection
   7. Cultural Resources Protection

B. In no case shall the restrictions identified in this Section limit the Contractor's responsibility for compliance with all Federal, state, and local safety ordinances and regulations.

1.3 NOISE CONTROL

A. The intent of this Section is to minimize construction noise within construction areas, lay-down areas, and communities adjacent to the construction site. To this end, the Contractor and all subcontractors, suppliers, and vendors, are required to comply with all applicable noise regulations, specification requirements, and the noise level limits specified herein.

B. The Contractor shall use equipment with efficient noise-suppression devices and employ other noise abatement measures such as enclosures and barriers necessary for the protection of the public, as necessary.

C. The Contractor shall schedule and conduct operations in a manner that will minimize, to the greatest extent feasible, the disturbance to the public in areas adjacent to the Work and to occupants of buildings in the vicinity of the Work.

D. Noise Control Measures. Contractor shall implement the following noise-control measures to reduce and control noise generated from construction, demolition, and construction related activities:
   1. Restrict noise-producing construction activities to between 7:00 a.m. and 7:00 p.m. on weekdays. If construction is scheduled for Saturdays or Sundays to avoid disrupting college operations, restrict noise-producing construction activities to between 9:00 a.m. and 5:00
p.m. Construction on Sundays shall be avoided, if possible, and there will be no construction on public holidays without prior written request submitted to and written approval returned by the District, at its sole discretion. A decision by the District to deny Sunday or holiday work shall not be deemed to cause a delay in the Contract Time. When activities must occur outside the hours specified above, conform with notification requirements of this Section and utilize local barriers around equipment and other noise attenuating devices if necessary to limit noise to acceptable levels.

2. Comply with all applicable local and County requirements regarding both allowable hours of Work and noise level limitations.

3. All construction equipment shall have appropriate mufflers, intake silencers, and other required noise-control features, shall be properly maintained and in compliance with State standards.

4. Vehicles and other gas or diesel powered equipment shall be prohibited from unnecessary warming up, idling, and engine revving.

5. Impact tools shall utilize “quiet technology” to minimize noise.

E. Secure written permission from Construction Manager at least three (3) working days prior to using noisy and vibratory equipment, such as jackhammers, concrete saws, impact tools, and high frequency electrical equipment. Cooperate with District if the use of noisy equipment becomes objectionable to college employees and/or students.

F. The work must be conducted so that nearby residents and college operations in surrounding facilities and classrooms will not be disturbed at any time during any phase of the Work including, but not limited to, the following requirements:

1. Do not use loud vocal or mechanical signals. Use of outside speakers, loud radios and similar devices are prohibited.

2. Work shall be performed in a manner to prevent nuisance conditions such as noise which exhibits a specific audible frequency or tone (e.g., backup alarms, poorly maintained equipment, brake squeal, etc.) or impact noise (e.g., jackhammers, hoe rams). The District will make any final interpretation concerning whether or not nuisance noise conditions exist. Only the District representatives and specifically designated College representatives have the authority to stop the Work until nuisance noise conditions are resolved, without additional Contract Time or compensation for the Contractor.

1.4 DUST CONTROL

A. Contractor shall implement dust control measures to protect air quality during construction to control dust emissions generated during construction, implement the following Bay Area Air Quality Management District (BAAQMD) measures for construction emissions of particulate matter over 10 microns in size (PM10).

1.5 TRAFFIC CONTROL

A. Contractor shall implement traffic control to minimize the effects of construction traffic on the campus and surrounding residential areas, as appropriate.

B. Contractor shall notify the District, Architect, Construction Manager, Project Inspector, Campus Police Services, city and county agencies, as applicable, a minimum of five (5) working days in advance of performing work which necessitates closing or interfering with traffic on public
thoroughfares, parking areas, driveways and walks. Obtain written permission prior to effecting such closures and interruptions.

1.6 **SPILL PREVENTION, CONTROL AND COUNTERMEASURES**

A. Contractor shall implement Spill Prevention, Control and Countermeasures to minimize the potential for and effects from spills of hazardous, toxic or petroleum substances during construction and demolition activities.

B. The federal reportable spill quantity for petroleum products, as defined in 40 CFR 110, is any oil spill that includes any of the following:
   1. Violates applicable water quality standards.
   2. Causes a film or sheen on or discoloration of the water surface or adjoining shoreline.
   3. Causes a sludge or emulsion to be deposited beneath the surface of the water or adjoining shorelines.

C. If a spill is reportable, notify the District’s Representative and take action to contact appropriate safety and clean-up crews.
   1. A written description of reportable releases must be submitted to the District’s Representative and to the San Francisco Bay Regional Water Quality Control Board (RWQCB). This submittal must contain a description of the spill, including the type of material and an estimate of the amount spilled, the date of the release, an explanation of why the spill occurred and a description of the steps taken to prevent and control future releases. Document the releases on a spill report form.
   2. If a reportable spill has occurred and results determine that project activities have adversely affected surface water or groundwater quality, the District will engage a registered environmental assessor at Contractor’s expense for a detailed analysis to identify the likely cause of contamination. This analysis will conform to American Society for Testing and Materials (ASTM) standards and will include recommendations for reducing or eliminating the source or mechanisms of contamination.
   3. Based on this analysis, the Contractor shall select and implement measures to control contamination, with a performance standard that groundwater quality must be returned to baseline conditions. These measures will be subject to approval by the District.

1.7 **TREE PROTECTION**

A. Definitions:
   1. Dripline: If applicable, the area on the ground from the trunk of any tree to the point directly below the outermost tips of the foliage of that tree.
   2. Root Protection Zone ("RPZ"): If applicable, the areas enclosed with tree protection fencing as designated on the drawing(s).
   3. Tree damage: If applicable, tree damage shall include, but not limited to, the following: Significant injury to the root system or other parts of a tree including burning, application of toxic substances, damaging through contact with equipment or machinery, changing the natural grade within the Dripline or RPZ, compacting the soil within the Dripline or RPZ, interfering with the normal water requirements of the tree, unauthorized trenching or excavating within the Dripline or RPZ, or unauthorized removal of more than 1/3 of the live wood, foliage or roots.
B. Root Protection: No storage of materials or equipment will be allowed within the Dripline. Whenever possible, excavation shall be on a radial line, diverging from the tree trunk. For items of Work delayed materially beyond Date of Substantial Completion, provide update submittal within 14 Days after acceptance, listing date of acceptance as start of warranty period.

C. Exposure to harmful substances: No storage or dumping of any substances that may be harmful to trees shall occur at any location on the Site.

D. Where construction is to be performed in the vicinity of trees and shrubbery, the Work shall be carried on in a manner that will cause minimum damage. District will designate trees that are to be removed. Under no circumstances are additional trees to be removed without written permission from District. Trees and shrubbery that are not to be removed shall be protected from injury or damage resulting from Contractor's operations.

E. Any tree that is removed without District’s permission or is irreparably damaged, in the opinion of District, shall cost Contractor in damages [$100.00] per square inch of cross section, measured at 4 ½ feet above ground, but not less than [$250.00], such cost to be deducted from monies due or to become due under the Contract. If tree protection is not performed or is not performed adequately and District determines that a tree has been irreparably damaged, Contractor shall pay the same amount of damages as for unauthorized removal of a tree. Contractor shall immediately report all tree damage to District, so that District may determine applicable damages.

1.8 MIGRATORY BIRD PROTECTION

A. If applicable, conduct vegetation and tree removal outside of the migratory bird nesting season. The typical nesting season for migratory birds in this part of California is March 1st through July 31.

B. If vegetation and tree removal must take place during the nesting season, these activities shall be preceded by a survey for nesting migratory birds by the District’s qualified ornithologist. If bird nests are discovered in the trees or on the buildings, they shall not be removed while the nest(s) are active.

1.9 CULTURAL RESOURCES PROTECTION

A. If buried cultural resources, such as chipped or ground stone, historic debris, building foundations or human bones or paleontological resources are discovered inadvertently during ground-disturbing activities, Contractor shall avoid any further disturbance of the materials and immediately discontinue earthwork within 100 feet of the find. Contractor shall notify District’s Representative immediately upon encountering cultural resources. Contractor shall be prepared to move on to another location or phase of work, allowing sufficient time for District’s Representative to evaluate the nature and significance of the find and implement appropriate management procedures.

B. In the event that prehistoric human remains are encountered, further excavation or disturbance of the site shall cease immediately, pursuant to Health and Safety Code 7050.5. Contractor shall notify District’s Representative immediately upon encountering human remains. Contractor shall move on to another location or phase of Work to allow proper assessment of the situation.

C. If human remains of Native American origin are discovered during project construction, it will be necessary to comply with State laws relating to the disposition of Native American burials, which fall under the jurisdiction of the NAHC (Public Resources Code (PRC) Section 5097. Consequently,
if any human remains are discovered or recognized in any location other than a dedicated cemetery, there will be no further excavation or disturbance of the site or any nearby areas reasonably suspected to overlie adjacent human remains:

1. Until the Contra Costa County Coroner has been informed and has determined that no investigation of the cause of death is required;

2. If the remains are of Native American origin;
   a. The descendants of the deceased Native American(s) have made a recommendation to the landowner or the person responsible for the excavation work regarding means of treating or disposing of, with appropriate dignity, the human remains and any associated grave goods as provided in PRC Section 5097.98 or
   b. The NAHC has been unable to identify a descendent or the descendent failed to make a recommendation within 24 hours after being notified by the NAHC.

PART 2 – PRODUCTS - Not Used.

PART 3 – EXECUTION - Not Used.

END OF SECTION 01416
PART 1 - GENERAL

1.1 RELATED DOCUMENTS
A. All Contract Documents shall be reviewed for applicable provisions related to the provisions in this document, and provisions in the General Conditions and other Specification Sections shall apply to this section without limitation.

1.2 REQUIRED TEMPORARY FACILITIES AND CONTROLS
A. Contractor shall provide and maintain all temporary facilities, utilities, and controls as required to perform the Work and as required herein. Materials, installation, and maintenance of temporary utilities and facilities shall be in compliance with all applicable local and State regulatory requirements. Remove temporary utilities and facilities, including associated materials and equipment, when no longer required. Restore and recondition existing facilities used during construction and areas of the Site, roads, driveways, parking lots, landscaping, and any other existing improvements either damaged or disturbed by the installation of temporary facilities or utilities to their original condition. Remove and properly dispose of debris resulting from removal and reconditioning operations.

B. Contractor shall furnish and install requirements for temporary utilities, facilities, security, and protection, which include but are not limited to the following:

1. Temporary Electric Power and Lighting
   a. The District will pay for electric power required to complete the Work. The installation and removal of all temporary distributions of power throughout the Site shall be the sole responsibility of the Contractor without adjustment to the Contract Sum or the Contract Time. The Contract Sum shall not be adjusted on account of any disruption, reduction or elimination of electrical power service to the Site, unless the same is caused by the District’s non-payment of undisputed utility charges for such electrical power service. Contractor shall provide power outlets for construction operations, with branch wiring and distribution boxes located as required to complete the Work.

   b. Contractor shall provide and maintain electrical power at the Site for construction purposes, for temporary facilities and trailers, and for any other site offices or trailers required by the Contract Documents. Contractor shall provide all necessary wiring and appurtenances for connection to District’s system. Connect to District power at location(s) as directed by District.

   c. Contractor shall provide and maintain distribution of temporary electrical power and lighting to the Work, and for use by the Project Inspector and District Project Manager where applicable.

   d. Contractor shall provide temporary power main service disconnect and over current protection at convenient locations and as required by governing codes.

   e. The Contractor shall be responsible for providing temporary facilities as required to deliver power service from the point of connection to the point(s) of intended use.
f. Contractor shall verify characteristics of District power available for temporary service use, and provide all transformers and/or other equipment necessary to modify District power for temporary use by the Contractor. Contractor shall pay all costs associated with any necessary modifications to District power for temporary use on the Work.

g. The Contractor shall provide, install, and maintain temporary electrical lighting wherever necessary to provide illumination for the proper performance and/or observation of the Work. Where required, a minimum of 20 foot-candles for rough work and 50 foot-candles for finish work shall be provided.

2. Temporary Communications/Telephone

a. Contractor shall provide, maintain, and pay for all required communications and data services (including without limitation telephone, facsimile, e-mail and internet) to all Project field offices to include a multi-function printer, copier, scanner, fax unit commencing at the time of Project mobilization, including all installation, connection, and monthly charges. The installation and removal of all temporary telephone and data distribution shall be the sole responsibility of the Contractor without adjustment of the Contract Sum or the Contract Time. Routing of the new lines shall be acceptable to the District.

b. Contractor shall provide, maintain and pay for telephone, data/internet and facsimile (FAX) machine service to field offices at time of project mobilization and for the duration of the project. Contractor to pay costs for telephone installation, telephones, internet access, maintenance services and removal.

c. Not used.

d. Coin operated phones are not acceptable.

e. Contractor to provide a list of important telephone numbers at each telephone on the site offices including, but not limited to the following:
   i) Police and Fire Departments
   ii) Campus Police
   iii) Ambulance Service
   iv) Contractor's home office
   v) All Principal Subcontractors' field and home offices
   vi) Architect's office
   vii) Engineer's office
   viii) District office
   ix) Project Manager
   x) Project Inspector
   xi) Building & Grounds Department
   xii) Testing Laboratory

f. Provide superintendent with cellular telephone for use when away from field office.
3. **Temporary Water**
   
a. The District will furnish and pay for water during the course of the work to the extent water is available on the Site. The Contractor shall be responsible for providing all temporary facilities required to deliver District water from the point of connection to point of intended use on the Project.

b. Contractor shall be allowed to utilize water from the District for domestic use only. Water shall not be provided nor used for dust control, street cleaning, cleaning tools, or vehicle washing. Water used for such purposes shall be provided by the Contractor at its expense.

c. Contractor shall provide and maintain necessary temporary water supply connections, pipes, hoses, nozzles, and fittings required. Before final acceptance, all temporary water supply components installed by Contractor shall be removed in a manner approved by District’s Representative.

d. Unnecessary waste of water will not be permitted. Special hydrant wrenches shall be used for opening and closing fire hydrants, in no case shall pipe wrenches be used for this purpose. Obtain approval of governing agency prior to opening any fire hydrant.

e. Contractor shall provide and use backflow preventers on water lines at point of connection to any District water supply. Backflow preventers shall comply with requirements of California Uniform Plumbing Code. The installation and removal of all temporary backflow preventers on the Site shall be the sole responsibility of the Contractor without any adjustment to either the Contract Sum or the Contract Time. Before final acceptance, all temporary connections and piping installed by Contractor shall be removed in a manner approved by District’s Representative.

f. Contractor shall provide and make potable water available for human consumption. Contractor shall provide and maintain suitable quality water service required for construction operations.

4. **Temporary Fences**
   
a. Temporary Fencing: Contractor shall provide temporary fencing around specified construction areas for safety and protection. Provide chain link fencing not less than eight (8) feet in height, complete with metal posts and required bracing, anchorage, visual screening, and with truck and pedestrian gates. All vehicle and Pedestrian gates and openings shall have gates secured after hours of operation.

b. Contractor shall provide padlocks used for securing all gates. Padlocks shall be designed to prohibit cutting of shackle. Contractor shall coordinate keying strategy with District.

c. Contractor shall be responsible for locking gates and shall be secured with minimum 3/8 inch thick, 30 grade coil chain, minimum 5/16 inch cable. Gates shall be kept closed and locked at all times when not in use.

d. All existing fences affected by the Work shall be maintained by Contractor until Final Completion of Project. Fences which interfere with construction operations shall not be relocated or dismantled until District gives written permission to do so, and the timing of fence relocation or dismantling has been agreed upon. Where fences must be maintained across the construction easement, adequate gates shall be installed.
Site Enclosure Fence: Contractor shall furnish and install site enclosure fence in a manner that will prevent people and animals from easily entering site except by entrance gate.

e. Contractor will be responsible for maintaining security by limiting number of keys and restricting distribution to authorized personnel.

f. Security Enclosure and Lockup: Install substantial temporary enclosure around partially completed areas of construction. Provide lockable entrances to prevent unauthorized entrance, vandalism, theft and similar violation of security.

g. Contractor shall provide secure lockup for stored materials and equipment which are of value or attractive for theft.

h. Contractor shall be responsible for project security for materials, tools, equipment, supplies and completed and partially completed Work.

i. On completion of the Work across any tract of land, Contractor shall restore all fences to their original or to a better condition, and to their original locations.

5. Temporary Protection of Public and Private Property

a. Contractor shall protect, shore, brace, support and maintain all existing underground utilities including but not limited to the following: all pipes, conduits, drains and other underground construction uncovered or otherwise affected by construction operations.

b. All pavement, surfacing, driveways, curbs, walks, buildings, utility poles, guy wires, fences and other surfaces structures affected by construction operations, together with all sod and shrubs in yards, planting areas, and medians, shall be restored to their original condition, wherever affected by construction operations. All replacements shall be made with new materials.

c. Contractor shall be responsible for all damage to streets, roads, highways, shoulders, ditches, embankments, culverts, bridges and other public or private property, regardless of location or character, which may be caused by transporting equipment, materials, or workers to or from the Work, Site or any part thereof, whether by Contractor or Subcontractors. Contractor shall be solely responsible without adjustment of the Contract Sum or the Contract Time to make satisfactory and acceptable arrangements with the District, or the agency or authority having jurisdiction over the damaged property, concerning its repair or replacement or payment of costs incurred in connection with the damage.

d. All fire hydrants and water control valves shall be kept free from obstruction and available for use at all times.

6. Temporary Sanitary Facilities

a. Contractor shall provide and maintain temporary sanitary toilets for use of all workers throughout the course of the Work. At a minimum, sanitary facilities shall be located at the trailer site, Contractor staging area(s) and adjacent to Work areas.

b. Sanitary facilities shall be of reasonable capacity, properly maintained throughout the Project, and obscured from public view to the greatest practical extent. If toilets of the chemically treated type are used, at least (1) toilet will be furnished for each (15)
persons. Contractor shall enforce the use of such sanitary facilities by all personnel at the Site.

c. Contractor shall comply with all minimum requirements of the Contra Costa Health Department or other public agency having jurisdiction.

d. Maintain temporary facilities in a sanitary condition at all times during the Project.

e. Contractor will keep sanitary facilities free from graffiti.

f. Use of toilet facilities in the Work under construction shall not be permitted.

g. Contractor is not permitted to use existing Campus toilet facilities.

h. All Portable toilets shall be located within fenced areas of the Project Site

i. Contractor shall be responsible for providing access to the temporary toilet facilities.

7. Temporary Barriers and Enclosures

a. Contractor shall provide barriers to prevent unauthorized entry to construction areas to allow for District’s use of the Site, and to protect existing facilities and adjacent improvements from damage during construction operations.

b. Contractor shall provide barricades as required by the Contract Documents, governing agencies, and/or field conditions in order to protect public access pathways to existing buildings scheduled to remain open during any Phase of the Work.

c. Contractor shall protect vehicular traffic, stored materials, Site, and existing structures from damage.

d. Contractor shall provide and maintain temporary enclosures to prevent public entry to any construction area, and to protect all persons using other existing buildings and portions of the Site and/or Premises Contractor shall maintain safe access to all existing facilities to remain in operation during any phase of the Work.

8. Temporary Pollution Control

a. Contractor shall prevent the pollution of drains and watercourses by sanitary wastes, sediment, debris and other substances resulting from construction activities. No sanitary wastes shall be permitted to enter any drain or watercourses other than sanitary sewers. No sediment, debris or other substance shall be permitted to enter sanitary sewers without authorization of the receiving sanitary sewer service and all possible Best Management Practices (BMPs) shall be taken to prevent such materials from entering any drain to watercourse. Rate of discharge for storm water may be not increased by the Project during or following construction.

b. In the event that dewatering of excavations is required, Contractor shall obtain the necessary approval and permits for discharge of the dewatering effluent from the local jurisdiction. Contractor shall be responsible for assuring that water quality of such discharge meets the appropriate permit requirements prior to any discharge.

c. Contractor shall comply with the District’s Storm Water Pollution Prevention Plan, if applicable for this Project.

9. Construction Aids

a. Contractor shall furnish, install, maintain and operate all construction aids as required for the performance of the Work. Such construction aids include, but are not limited
to, elevators and hoists, cranes, temporary enclosures, swing staging, scaffolding, and temporary stairs.

10. **Erosion Control**
   a. Contractor shall comply with the District Storm Water Pollution Prevention Plan for this Project if applicable.
   b. Contractor shall prevent soil erosion on the Site and adjacent property resulting from its construction activities to the maximum extent practical, including implementation of Best Management practices. Effective measures shall be initiated prior to the commencement of clearing, grading, excavation or other operations that will disturb the natural protection.
   c. Work shall be scheduled to expose areas subject to erosion for the shortest possible time and natural vegetation shall be preserved to the greatest extent practicable. Temporary storage, temporary construction buildings and temporary Field office buildings shall be located and construction traffic routed to minimize erosion. Contractor shall provide temporary fast-growing vegetation or other suitable ground cover shall be provided as necessary to control runoff.

11. **Vehicular and Pedestrian Traffic Controls**
   a. The Campus is an active site, with vehicular and pedestrian traffic occurring at all times of the day and all days of the week. Contractors shall coordinate with District's Representative concerning vehicular traffic associated with the construction in order to minimize disruption to college operations. Delivery trucks and large equipment shall enter the Contractors access gate and shall use the route mutually agreed upon between District and Contractor. Contractor shall provide signage directing construction and delivery traffic to this gate. Contractor shall provide information regarding sign types, size, material, text and locations to be reviewed and approved by the District Representative, and the Campus prior to installation. See Article 12 below for additional requirements.
   b. Contractor shall keep all required Fire District and emergency vehicle access paths free from obstruction at all times during the Project.

12. **Temporary Signage**
   a. Sign must be reviewed and approved by the District and the Campus prior to installation. Contractor shall use an experienced sign company to produce all temporary signs. Install signs where indicated in Contract Documents, or as required by the District. Unauthorized signs are not permitted.
   b. Contractor shall provide temporary directional way-finding signs around the Project site to guide faculty, students, and visitors to safely navigate around construction activities at the Project site and to warn faculty, students, and visitors of potential safety hazards. A sample way-finding sign is attached at the end of this section that provides basic dimensions, materials, backgrounds and related information. However, final proposed signs by Contractor shall be reviewed and approved by the District and Campus prior to fabrication and installation.
   c. In addition to way-finding signs, additional safety sign types shall include, but not be limited to: Danger/Construction Area/No Trespassing; Caution/Demolition Work in
Progress; Do Not Enter/Authorized Personnel Only; Warning/Hard Hat Required Beyond this Point; Eye Protection Required Beyond this Point; Danger/Flammable Materials/ No Smoking Within 25 Feet; Danger/Keep Gate Closed; Caution/Laser Operation in Use; Caution/Overhead Work in Progress; Power Actuated Tools in Use; All Visitors Report to Job Trailer; Eye Wash Station; Authorized Access Only; Danger/No Trespassing; Caution/Construction Traffic; Caution/Pedestrian Traffic; Building Closed, and Contractor Deliveries. All signs shall be in both English and Spanish; and shall be in a quantity needed and applicable as determined by the District. A sample safety sign type is attached at the end of this section for general guidance, but final proposed signs by Contractor shall be reviewed and approved by the District and Campus prior to fabrication and installation.

d. Contractor shall maintain and touch-up signs so they are legible at all times.

13. **Temporary Heat and Ventilation**
   
a. Provide temporary heat as required to maintain adequate environmental conditions to facilitate progress of the work, to meet specified minimum environmental conditions for the Work and to protect materials and finishes from damage due to improper temperature and humidity conditions.

b. Portable heaters shall be standard units complete with controls, appropriate safety features, and bear testing lab approval markings.

c. Provide adequate forced ventilation of enclosed areas as required for proper installation and curing of materials, to disperse humidity, and to prevent hazardous accumulations of dust, fumes, vapors and gases.

d. HVAC Equipment: Unless District authorizes use of permanent HVAC system, provide vented, self-contained, liquid-propane-gas or fuel-oil heaters with individual space thermostatic control.
   
i) Use of gasoline-burning space heater, open-flame heater or salamander-type heating units is prohibited.

   ii) Heating Units: Listed and labeled for type of fuel being consumed, by a testing agency acceptable to authorities having jurisdiction and marked for intended use.

**PART 2 – PRODUCTS**

2.1 **MATERIALS** - Not used

**PART 3 - EXECUTION**

3.1 **INSTALLATION, GENERAL**
   
A. Locate Contractor facilities where they will serve Project adequately and result in minimum interference with performance of Work. Relocate and modify facilities as required by progress of the Work during entire project including all phases of project.

B. Provide each facility ready for use when needed to avoid delay. Do not remove until facilities are no longer needed or are replaced by authorized use of completed permanent facilities.

C. Contractor shall obtain District approval prior to installation and/or relocation of facilities.
3.2 **OPERATION, TERMINATION AND REMOVAL**

A. **Supervision:** Enforce strict discipline in use of temporary facilities. To minimize waste and abuse, limit availability of temporary facilities to essential and intended uses.

B. **Maintenance:** Maintain facilities in good operating condition until removal.
   1. Where appropriate, maintain operation of temporary enclosures, heating, cooling, humidity control, ventilation and similar facilities on a 24-hour basis where required to achieve indicated results and to avoid possibility of damage.

C. **Temporary Facility Changeover:** Do not change over from using temporary security and protection facilities to permanent facilities until Substantial Completion and acceptance by the District.

D. **Termination and Removal:** Remove each temporary facility when need for its service has ended, when it has been replaced by authorized use a permanent facility or no later than Final Completion. Complete or, if necessary, restore permanent construction that may have been delayed because of interference with temporary facility. Repair damaged Work, clean exposed surfaces and replace construction that cannot be satisfactorily repaired.
   1. Materials and facilities that constitute temporary facilities are property of Contractor. District reserves the right to take possession of Project Identification signs at no cost to the District.
   2. Remove temporary paving not intended for or acceptable for integration into permanent paving. Where area is intended for landscape development, remove soil and aggregate fill that do not comply with requirements for fill or subsoil. Remove materials contaminated with road oil, asphalt and other petrochemical compounds, and other substances that might impair growth of plant materials or lawns. Repair or replace street paving, curbs and sidewalks at temporary entrances, as required by authorities having jurisdiction.
   3. Clean and renovate permanent facilities used during construction period prior to Final Completion.

**END OF SECTION 01500**
SAMPLE 1

AA, BIO, HS, LA, & PS BUILDINGS, BOOKSTORE, LIBRARY, POLICE

.006 ALUMINUM

BACKGROUND: REFLECTIVE WHITE

BLACK TEXT AND GRAPHICS

ISA PAINTED FEDERAL BLUE WITH WHITE GRAPHIC AND BORDER
WARNING: CHEMICALS KNOWN TO THE STATE OF CALIFORNIA TO CAUSE CANCER AND BIRTH DEFECTS OR OTHER REPRODUCTIVE HARM ARE PRESENT IN YOUR WORK AREA

Aphalt, sand diesel engine exhaust and other materials in your work area contain chemicals known to the state of California to cause cancer and/or reproductive harm. Exposure to some or all of these chemicals occurs during paving operations and related activities. Always familiarize yourself with the hazards of the materials and equipment you are using and follow the precautions indicated on the product labels, Material Safety Data Sheets and your health and safety training program.

WARNING

NO SMOKING OR EATING INSIDE BUILDING
NO FUMAR O COMER DENTRO DEL EDIFICIO

DANGER

OVERHEAD POWER LINES
LINEAS ELECTRICAS ELEVADAS

CAUTION

OVERHEAD WORK IN PROGRESS
TRABAJO EN PROGRESO-ARRIBA
SECTION 01505
CONSTRUCTION AND DEMOLITION WASTE MANAGEMENT

PART 1 - GENERAL

1.1 RELATED DOCUMENTS
A. All Contract Documents shall be reviewed for applicable provisions related to the provisions in this document, and provisions in the General Conditions and other Specification Sections shall apply to this Section without limitation.

1.2 SUMMARY
A. The District has established that this Project shall generate the least amount of waste possible and that processes that ensure the generation of as little waste as possible due to error, poor planning, breakage, mishandling, contamination, or other factors shall be employed.
B. Of the inevitable waste that is generated, as many of the waste materials as economically feasible shall be reused, salvaged, or recycled. Waste disposal in landfills shall be minimized.

1.3 WASTE MANAGEMENT GOALS FOR THE PROJECT
A. The District has established that this Project shall minimize the creation of construction and demolition waste, and shall divert a minimum of 75% of Project generated waste from landfills. Factors that contribute to waste such as over packaging, improper storage, ordering error, poor planning, breakage, mishandling, and contamination, shall be minimized. Of the inevitable waste that is generated, as many of the waste materials as economically feasible shall be reused, salvaged, or recycled. Waste disposal in landfills shall be minimized. Both recycled and waste need to be logged and documented by volume and weight.
B. Diversion Goals: A minimum 75% of total Project waste shall be diverted from landfill. The following waste categories, at a minimum, shall be diverted from landfill. These materials include, but not limited to:
   1. Landscape and land clearing debris (green wood materials)
   2. Asphalt pavement
   3. Gravel and aggregate products
   4. Concrete
   5. Masonry scrap and rubble (brick, concrete, masonry, stone)
   6. Metals (ferrous and nonferrous)
   7. Clean wood (dimensional lumber, sheet goods, millwork, scrap, pallets)
   8. Plastics (films, containers, PVC products, polyethylene products)
   9. Asphalt/Bituminous roofing
   10. Insulation Materials
   11. Glass (un-tempered)
   12. Door and window assemblies
   13. Carpet and carpet pad
   14. Fibrous acoustic materials
   15. Ceiling Tiles
   16. Plumbing fixtures and equipment
   17. Mechanical equipment
18. Lighting fixtures and electrical components
19. Cardboard packing and packaging
20. Furniture
21. Sheet Rock
22. Electronic Waste
23. Universal Waste
24. Paper

1.4 REFERENCES AND RESOURCES

A. This information is provided for Contractor’s convenience only, and the District does not warrant its accuracy. County specific information is available on the Contra Costa County Waste Reduction and Recycling web page at http://www.co.contra-cost.ca.us/depart/cd/recycle/index.html. Additional information may also be found at the County conservation web page at http://www.cccounty.us/index.aspx?NID=285. Refer to the Contra Costa County Builder’s Guide to Reuse & Recycling and the Contra Costa County Recycling Guide.

B. The following sources provided for references:
   1. BuildingGreen.com
   2. California Integrated Waste Management Board
   3. EPA Office of Solid Waste and Energy Response

1.5 QUALITY ASSURANCE:

A. Regulatory Requirements. Comply with applicable requirements of the State of California, local ordinances and regulations concerning management of construction, clearing, and inert materials.

B. Disposal Site, Recyclers and Waste Materials Processors. Use only facilities properly permitted by the State of California, and/or by local authorities where applicable.

1.6 WASTE DIVERSION DOCUMENTATION

A. Provide the District with delivery receipts for the recovered materials and waste materials sent to the permitted recycling facilities, processing facilities, or landfill with the following information on a form to be approved by the District:
   1. Name of firm accepting the recovered materials or waste materials
   2. Specify type of facility (e.g. retail facility, recycler, processor, Class III landfill, MRF)
   3. Location of the facility
   4. Type of materials
   5. Net weights (or volume) of each type of material
   6. Date of delivery

B. Application for Progress Payments: Contractor shall submit with each Application for Progress Payment a Summary of the project waste generated. Failure to submit this information shall render the Application for Payment incomplete and shall delay Progress Payment. The District
and its representatives shall not be responsible for delaying Progress Payments. With each Application for Payment, submit required Progress Documentation, including.

1. Manifests;
2. Weight tickets;
3. Receipts, and
4. Invoices specifically identifying the project and waste material.

PART 2 - PRODUCTS - Not Used

PART 3 - EXECUTION

3.1 STORAGE AND HANDLING

A. Site Storage
1. Remove materials for recycling and recovery from the work locations to approved containers or storage area as required. Failure to remove waste or recovered materials will be considered cause for withholding payment and termination of Contract.
2. Position containers for recyclable and recoverable waste materials at a designated location on the Project Site. If materials are sorted on site, also provide a sorting area and necessary storage containers.
3. Change-out loaded containers for empty containers, as demand requires.
4. If recovered materials are stored on-site for project duration provide adequate security from pilferage.

B. Handling
1. Deposit indicated recyclable, and recoverable materials in storage areas or containers in a clean (no mud, adhesive, solvents, petroleum contamination), debris-free condition. Do not deposit contaminated materials into the containers until such time as such materials have been cleaned.
2. Insure all recovered materials are made safe for handling and storage.
3. If the contamination chemically combines with the material so that it cannot be cleaned, do not deposit into the recycle containers. In such case, request resolution by the District for disposal of the contaminated material. Directions from the District do not relieve the Contractor of responsibility for compliance with all legal and regulatory requirements for disposal, nor shall such directions cause a request for modification of the Contract.

3.2 PROJECT CONDITIONS

A. Site Condition:
1. Signs and instructions should be clear, and easy to understand. All recycling containers should be clearly labeled and lists of acceptable and unacceptable materials will be posted throughout the site. Whenever possible, they should be in multiple-languages, especially in Spanish, and in graphic symbols.
2. The Contractor shall ensure the safety of all personnel involved in the waste management process.
3. A site management plan shall be created by the Contractor including: work areas, materials processing areas, materials storage and disposal areas, worker hand-washing and changing stations, first aid and medical information.

END OF SECTION 01505
PART 1 - GENERAL

1.01 SUMMARY

A. This Section includes procedural requirements for cutting and patching.

B. Related Sections:
   1. Selective Demolition: Section 01732.
      a. Demolition of selected portions of the building and site for
         alterations.
   2. Divisions 2 through 16 Sections for specific requirements and
      limitations applicable to cutting and patching individual parts of the
      Work.
      a. Requirements in this Section apply to mechanical and electrical installations. Refer to Divisions 15 and 16 Sections
         for other requirements and limitations applicable to cutting and patching mechanical and electrical installations.

1.02 DEFINITIONS

A. Cutting: Removal of existing construction necessary to permit installation or performance of other Work.

B. Patching: Fitting and repair work required to restore surfaces to original conditions after installation of other Work.

1.03 SUBMITTALS

A. Cutting and Patching Proposal: Submit a proposal describing procedures at least 10 days before the time cutting and patching will be performed, requesting approval to proceed. Include the following information:
   1. Extent: Describe cutting and patching, show how they will be performed, and indicate why they cannot be avoided.
   2. Changes to Existing Construction: Describe anticipated results. Include changes to structural elements and operating components as well as changes in building’s appearance and other significant visual elements.
   3. Products: List products to be used and firms or entities that will perform the Work.
   4. Dates: Indicate when cutting and patching will be performed.
   5. Utilities: List utilities that cutting and patching procedures will disturb or affect. List utilities that will be relocated and those that will be temporarily out of service. Indicate how long service will be disrupted.
   6. Structural Elements: Where cutting and patching involve adding reinforcement to structural elements, submit details and engineering calculations prepared by a California licensed Structural Engineer. Do not proceed without prior written approval from the Architect and DSA showing integration of reinforcement with original structure.
7. **District's Approval:** Obtain approval of cutting and patching proposal before cutting and patching. Approval does not waive right to later require removal and replacement of unsatisfactory work.

1.04 **QUALITY ASSURANCE**

A. **Structural Elements:** Do not cut and patch structural elements in a manner that could change their load-carrying capacity or load-deflection ratio.
   1. Prior approval is required from the Architect and DSA should it be necessary to cut and patch structural elements.

B. **Operational Elements:** Do not cut and patch the following including but not limited to operating elements and related components in a manner that results in reducing their capacity to perform as intended or that results in increased maintenance or decreased operational life or safety.
   1. Primary operational systems and equipment.
   2. Air or smoke barriers.
   3. Fire-protection systems and security alarm and camera systems.
   4. Control systems, including electrical or pneumatic lines.
   5. Communication systems.
   6. Conveying systems.
   7. Electrical wiring systems. This shall also include all computer/data and fiber optic cabling.
   8. Operating systems of special construction in Division 14 and Division 15 Sections.

C. **Miscellaneous Elements:** Do not cut and patch the following elements or related components in a manner that could change their load-carrying capacity, that results in reducing their capacity to perform as intended, or that results in increased maintenance or decreased operational life or safety.
   1. Water, moisture, or vapor barriers.
   2. Membranes and flashings.
   3. Exterior curtain-wall construction.
   4. Equipment supports.
   5. Piping, ductwork, vessels, and equipment.

D. **Visual Requirements:** Do not cut and patch construction in a manner that results in visual evidence of cutting and patching. Do not cut and patch construction exposed on the exterior or in occupied spaces in a manner that would, in Architect's opinion, reduce the building's aesthetic qualities. Remove and replace construction that has been cut and patched in a visually unsatisfactory manner.

E. **Cutting and Patching Conference:** Before proceeding, meet at Project site with parties involved in cutting and patching, including mechanical and electrical trades. Review areas of potential interference and conflict. Coordinate procedures and resolve potential conflicts before proceeding.
1.05 WARRANTY

Existing Warranties: Remove, replace, patch, and repair materials and surfaces cut or damaged during cutting and patching operations, by methods and with materials so as not to void existing warranties.

PART 2 - PRODUCTS

2.01 MATERIALS

A. General: Comply with requirements specified in other Sections of these Specifications.

B. Existing Materials: Use materials identical to existing materials. For exposed surfaces, use materials that visually match existing adjacent surfaces to the fullest extent possible.
   1. If identical materials are unavailable or cannot be used, use materials that, when installed, will match the visual and functional performance of existing materials.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Examine surfaces to be cut and patched and conditions under which cutting and patching are to be performed.
   1. Compatibility: Before patching, verify compatibility with and suitability of substrates, including compatibility with existing finishes or primers.
   2. Proceed with installation only after unsafe or unsatisfactory conditions have been corrected.

3.02 PREPARATION

A. Temporary Support: Provide temporary support of Work to be cut.

B. Protection: Protect existing construction during cutting and patching to prevent damage. Provide protection from adverse weather conditions for portions of Project that might be exposed during cutting and patching operations.

C. Adjoining Areas: Avoid interference with use of adjoining areas or interruption of free passage to adjoining areas.

D. Existing Services: Where existing services are required to be removed, relocated, or abandoned, bypass such services before cutting to avoid interruption of services to occupied areas.

3.03 PERFORMANCE
A. General: Employ skilled workers to perform cutting and patching. Proceed with cutting and patching at the earliest feasible time, and complete without delay.
   1. Cut existing construction to provide for installation of other components or performance of other construction, and subsequently patch as required to restore surfaces to their original condition.

B. Cutting: Cut existing construction by sawing, drilling, breaking, chipping, grinding, and similar operations, including excavation, using methods least likely to damage elements retained or adjoining construction. If possible, review proposed procedures with original Installer; comply with original Installer's written recommendations.
   1. In general, use hand or small power tools designed for sawing and grinding, not hammering and chopping. Cut holes and slots as small as possible, neatly to size required, and with minimum disturbance of adjacent surfaces. Temporarily cover openings when not in use.
   2. Existing Finished Surfaces: Cut or drill from the exposed or finished side into concealed surfaces.
   3. Concrete and/or Masonry: Cut using a cutting machine, such as an abrasive saw or a diamond-core drill.
   4. Excavating and Backfilling: Comply with requirements in applicable Division 2 Sections where required by cutting and patching operations.
   5. Mechanical and Electrical Services: Cut off pipe or conduit in walls or partitions to be removed. Cap, valve, or plug and seal remaining portion of pipe or conduit to prevent entrance of moisture or other foreign matter after cutting.
   6. Proceed with patching after construction operations requiring cutting are complete.

C. Patching: Patch construction by filling, repairing, refinishing, closing up, and similar operations following performance of other Work. Patch with durable seams that are as invisible as possible. Provide materials and comply with installation requirements specified in other Sections of these Specifications.
   1. Inspection: Where feasible, test and inspect patched areas after completion to demonstrate integrity of installation.
   2. Exposed Finishes: Restore exposed finishes of patched areas and extend finish restoration into retained adjoining construction in a manner that will eliminate evidence of patching and refinishing.
   3. Floors and Walls: Where walls or partitions that are removed extend one finished area into another, patch and repair floor and wall surfaces in the new space. Provide an even surface of uniform finish, color, texture, and appearance. Remove existing floor and wall coverings and replace with new materials, if necessary, to achieve uniform color and appearance.
      a. Where patching occurs in a painted surface, apply primer and intermediate paint coats over the patch and apply final paint coat over entire unbroken surface, from corner to corner and floor to ceiling, containing the patch. Provide additional coats until patch blends with adjacent surfaces.
4. Ceilings: Patch, repair, or re-hang existing ceilings as necessary to provide an even-plane surface of uniform appearance.

5. Exterior Building Enclosure: Patch components in a manner that restores enclosure to a weather tight condition.

END OF SECTION 01730
SECTION 01732
SELECTIVE DEMOLITION

PART 1 - GENERAL

1.01 SUMMARY

A. This Section includes demolition and removal of the following:
   1. Selected portions of a building or structure.
   2. Selected site elements.
   3. Repair procedures for selective demolition operations.
   4. Remove existing wall finishes as required for the installation of required backing to existing studs of wall mounted items (such as casework.)
   5. Patching of finishes to match existing wall finish are specified in Section 01730, Cutting and Patching.
   6. Where existing suspended ceiling is noted to be removed, all components associated with the suspended ceiling system shall be removed included but not limited to hanger wires, perimeter wall angles and vertical struts.
   7. Where new work is to be performed in conflict with existing building components such as wall finishes, those building components shall be removed in order to complete the scope of work and patched as specified in Section 01730, Cutting and Patching.
   8. Saw cutting and bush hammering at existing concrete landing as required and indicated on Drawings.

B. See Division 2 Section "Earthwork" for site clearing and removal of above-and below-grade improvements.

C. See Division 15 Sections for demolishing, cutting, patching, or relocating mechanical items.

D. See Division 16 Sections for demolishing, cutting, patching, or relocating electrical items.
   1. When conflicts occur where new electrical components and light fixtures are required to replace existing light fixtures such as with existing building components such as wall finishes, those building components shall be removed in order to complete the scope of work and patched as specified in Section 01730, Cutting and Patching.

E. Salvage: Also see Drawing and specification Sections for items to be salvaged:
   1. Salvage all removed door hardware.
      a. See Section 08700, Finish Hardware and Door Schedule, Door Notes.
   2. Salvage hand sanitizer dispensers.
   3. Salvage Fire extinguishers and cabinets.
4. Signage: Tactile exit sign, Building Signs, etc.
5. Pay machine.
7. Clocks.
8. Speakers.

1.02 DEFINITIONS

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

B. Remove and Salvage: Detach items from existing construction and deliver them to District ready for reuse.

C. Remove and Reinstall: Detach items from existing construction, prepare them for reuse, and reinstall them where indicated.

D. Existing to Remain: Existing items of construction that are not to be removed and that are not otherwise indicated to be removed, removed and salvaged, or removed and reinstalled.

1. Items noted as Existing shall remain unless otherwise noted or directed on Drawings.

1.03 MATERIALS OWNERSHIP

Except for items or materials indicated to be reused, salvaged, reinstalled, or otherwise indicated to remain District's property, demolished materials shall become Contractor's property and shall be removed from Project site.

1.04 SUSTAINABLE REQUIREMENTS

A. Construction Waste Management:

1. Practices used in work in this Section are intended to contribute to meeting requirements for waste management outlined in Leadership in Energy & Environmental Design (LEED), United States Green Building Council, LEED NC3.0 MR Credit 2

2. Establish waste diversion goals for the project by identifying at least five materials (both structural and nonstructural) targeted for diversion approximate a percentage of the overall project waste that these materials represent.

3. Specify whether materials will be separated or commingled and describe the diversion strategies planned for the project. Describe where the materials will be taken and how the recycling facility will process the material.

4. Provide a final report detailing all major waste streams generated, including disposal and diversion rates.

1.05 SUBMITTALS
A. Proposed Control Measures: Submit statement or drawing that indicates the measures proposed for use, proposed locations, and proposed time frame for their operation. Identify options if proposed measures are later determined to be inadequate. Include measures for the following:
   1. Dust control.
   2. Noise control.

B. Schedule of Selective Demolition Activities: Indicate detailed sequence of selective demolition and removal work, with starting and ending dates for each activity, interruption of utility services, use of elevator and stairs, and locations of temporary partitions and means of egress.

C. Pre-demolition Photographs or Videotape: Show existing conditions of adjoining construction and site improvements that might be misconstrued as damage caused by selective demolition operations. Submit before Work begins.

D. Landfill Records: Indicate receipt and acceptance of hazardous wastes by a landfill facility licensed to accept hazardous wastes.

E. LEED Submittals:
   1. Submit letter of established goals for at least five materials (both structural and nonstructural) targeted for diversion approximate a percentage of the overall project waste that these materials represent.
   2. Submit a letter indicating whether materials will be separated or commingled and include the diversion strategies planned for the project. Include where the materials will be taken and how the recycling facility will process the material.
   3. Submit final report detailing all major waste streams generated, including disposal and diversion rates.
   4. Submit hardcopies of completed Online Documentation required for LEED MR Credit 2.

1.06 QUALITY ASSURANCE
A. Demolition Firm Qualifications: An experienced firm that has specialized in demolition work similar in material and extent to that indicated for this Project.

B. Regulatory Requirements: Comply with governing EPA notification regulations before beginning selective demolition. Comply with hauling and disposal regulations of authorities having jurisdiction.

C. Standards: Comply with ANSI A10.6 and NFPA 241.

D. Pre-demolition Conference: Conduct conference at Project site.

1.07 PROJECT CONDITIONS
A. District will occupy portions of building immediately adjacent to selective demolition area. Conduct selective demolition so District's operations will not be disrupted. Provide not less than seventy two hours notice to District of activities that will affect District's operations.
B. Maintain access to existing walkways, corridors, and other adjacent occupied or used facilities.
   1. Do not close or obstruct walkways, corridors, or other occupied or used facilities without written permission from authorities having jurisdiction.

C. District assumes no responsibility for condition of areas to be selectively demolished.
   1. Conditions existing at time of inspection for bidding purpose will be maintained by District as far as practical.

D. Storage or sale of removed items or materials on-site will not be permitted.

E. Utility Service: Maintain existing utilities indicated to remain in service and protect them against damage during selective demolition operations.
   1. Maintain fire-protection facilities in service during selective demolition operations.

1.08 WARRANTY

A. Existing Warranties: Remove, replace, patch, and repair materials and surfaces cut or damaged during selective demolition, by methods and with materials so as not to void existing warranties.
   1. If possible, retain original Installer or fabricator to patch the exposed Work listed below that is damaged during selective demolition. If it is impossible to engage original Installer or fabricator, engage another recognized experienced and specialized firm.

PART 2 - PRODUCTS

2.01 REPAIR MATERIALS

A. Use repair materials identical to existing materials.
   1. If identical materials are unavailable or cannot be used for exposed surfaces, use materials that visually match existing adjacent surfaces to the fullest extent possible.
   2. Use materials whose installed performance equals or surpasses that of existing materials.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Verify that utilities have been disconnected and capped.

B. Survey existing conditions and correlate with requirements indicated to determine extent of selective demolition required.

C. Inventory and record the condition of items to be removed and reinstalled and items to be removed and salvaged.
D. When unanticipated mechanical, electrical, or structural elements that conflict with intended function or design are encountered, investigate and measure the nature and extent of conflict. Promptly submit a written report to District.

E. Engage a professional engineer to survey condition of building to determine whether removing any element might result in structural deficiency or unplanned collapse of any portion of structure or adjacent structures during selective demolition operations.

3.02 UTILITY SERVICES

A. Existing Utilities: Maintain services indicated to remain and protect them against damage during selective demolition operations.

B. Do not interrupt existing utilities serving occupied or operating facilities unless authorized in writing by District and authorities having jurisdiction. Provide temporary services during interruptions to existing utilities, as acceptable to District and to authorities having jurisdiction.

   1. Provide at least seventy two hours notice to District if shutdown of service is required during changeover.

C. Utility Requirements: Locate, identify, disconnect, and seal or cap off indicated utilities serving areas to be selectively demolished.

   1. Arrange to shut off indicated utilities with utility companies.
   2. If utility services are required to be removed, relocated, or abandoned, provide temporary utilities before proceeding with selective demolition that bypass area of selective demolition and that maintain continuity of service to other parts of building.
   3. Cut off pipe or conduit in walls or partitions to be removed. Cap, valve, or plug and seal remaining portion of pipe or conduit after bypassing.

D. Utility Requirements: Refer to Division 15 and 16 Sections for shutting off, disconnecting, removing, and sealing or capping utilities. Do not start selective demolition work until utility disconnecting and sealing have been completed and verified in writing.

3.03 PREPARATION

A. Site Access and Temporary Controls: Conduct selective demolition and debris-removal operations to ensure minimum interference with roads, streets, walks, walkways, and other adjacent occupied and used facilities.

   1. Do not close or obstruct streets, walks, walkways, or other adjacent occupied or used facilities without permission from District and authorities having jurisdiction. Provide alternate routes around closed or obstructed traffic ways if required by governing regulations.
   2. Erect temporary protection, such as walks, fences, railings, canopies, and covered passageways, where required by authorities having jurisdiction.
3. Protect existing site improvements, appurtenances, and landscaping to remain.

B. Temporary Facilities: Provide temporary barricades and other protection required to prevent injury to people and damage to adjacent buildings and facilities to remain.

C. Temporary Enclosures: Provide temporary enclosures for protection of existing building and construction, in progress and completed, from exposure, foul weather, other construction operations, and similar activities. Provide temporary weathertight enclosure for building exterior.

D. Temporary Partitions: Erect and maintain dustproof partitions and temporary enclosures to limit dust and dirt migration and to separate areas from fumes and noise.

E. Temporary Shoring: Provide and maintain interior and exterior shoring, bracing, or structural support to preserve stability and prevent movement, settlement, or collapse of construction to remain, and to prevent unexpected or uncontrolled movement or collapse of construction being demolished.

3.04 POLLUTION CONTROLS

A. Dust Control: Use water mist, temporary enclosures, and other suitable methods to limit spread of dust and dirt. Comply with governing environmental-protection regulations.
   1. On an as needed basis wet mop floors to eliminate track-able dirt and wipe down walls and doors of demolition enclosure. Vacuum carpeted areas.

B. Disposal: Remove and transport debris in a manner that will prevent spillage on adjacent surfaces and areas.
   1. Remove debris from elevated portions of building by chute, hoist, or other device that will convey debris to grade level in a controlled descent.

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

3.05 SELECTIVE DEMOLITION

A. General: Demolish and remove existing construction only to the extent required by new construction and as indicated. Use methods required to complete the Work within limitations of governing regulations.
   1. Neatly cut openings and holes plumb, square, and true to dimensions required. Use cutting methods least likely to damage construction to remain or adjoining construction.
   2. Cut or drill from the exposed or finished side into concealed surfaces to avoid marring existing finished surfaces.
3. Do not use cutting torches until work area is cleared of flammable materials. At concealed spaces, such as duct and pipe interiors, verify condition and contents of hidden space before starting flame-cutting operations. Maintain fire watch and portable fire-suppression devices during flame-cutting operations.

4. Locate selective demolition equipment and remove debris and materials so as not to impose excessive loads on supporting walls, floors, or framing.

B. Existing Facilities: Comply with building manager's requirements for using and protecting elevators, stairs, walkways, loading docks, building entries, and other building facilities during selective demolition operations.

C. Removed and Salvaged Items:
   1. Clean salvaged items.
   2. Pack or crate items after cleaning. Identify contents of containers.
   3. Store items in a secure area until delivery to District.
   4. Transport items to District's storage area designated by District.
   5. Protect items from damage during transport and storage.

D. Removed and Reinstalled Items:
   1. Clean and repair items to functional condition adequate for intended reuse. Paint equipment to match new equipment.
   2. Pack or crate items after cleaning and repairing. Identify contents of containers.
   3. Protect items from damage during transport and storage.
   4. Reinstall items in locations indicated. Comply with installation requirements for new materials and equipment. Provide connections, supports, and miscellaneous materials necessary to make item functional for use indicated.

E. Existing Items to Remain: Protect construction indicated to remain against damage and soiling during selective demolition. When permitted by District, items may be removed to a suitable, protected storage location during selective demolition and cleaned and reinstalled in their original locations after selective demolition operations are complete.

3.06 PATCHING AND REPAIRS

A. General: Promptly repair damage to adjacent construction caused by selective demolition operations.

B. Patching: Comply with Division 1 Section "Cutting and Patching."

C. Repairs: Where repairs to existing surfaces are required, patch to produce surfaces suitable for new materials.
   1. Completely fill holes and depressions in existing masonry walls that are to remain with an approved masonry patching material applied according to manufacturer's written recommendations.
D. Finishes: Restore exposed finishes of patched areas and extend restoration into adjoining construction in a manner that eliminates evidence of patching and refinishing.

E. Floors and Walls: Where walls or partitions that are demolished extend one finished area into another, patch and repair floor and wall surfaces in the new space. Provide an even surface of uniform finish color, texture, and appearance. Remove existing floor and wall coverings and replace with new materials, if necessary, to achieve uniform color and appearance.

F. Ceilings: Patch, repair, or rehang existing ceilings as necessary to provide an even-plane surface of uniform appearance.

3.07 DISPOSAL OF DEMOLISHED MATERIALS

A. General: Promptly dispose of demolished materials. Do not allow demolished materials to accumulate on-site.

B. Burning: Do not burn demolished materials.

C. Disposal: Transport demolished materials off District's property and legally dispose of them.

END OF SECTION 01732
PART 1 - GENERAL

1.1 RELATED DOCUMENTS
A. All Contract Documents shall be reviewed for applicable provisions related to the provisions in this document, and provisions in the General Conditions and other Specification Sections shall apply to this Section without limitation.

1.2 SUMMARY
A. This section includes administrative and procedural requirements for Operation and Maintenance (O&M) data and documents.

1.3 FORMAT
A. Contractor shall compile O&M manuals for all building equipment including mechanical, plumbing and electrical equipment, commissioned or not.
B. Submit O&M Data specifically applicable to this contract and a complete and concise depiction of the provided equipment, product, or system, stressing and enhancing the importance of system interactions, troubleshooting, and long-term preventative maintenance and operation. Organize and present information in sufficient detail to clearly explain O&M requirements at the system, equipment, component, and subassembly level. Include an index preceding each submittal. Submit in accordance with this section and Section 00700, General Conditions.

1. Package Quality. Documents must be fully legible. Poor quality copies and material with hole punches obliterating the text or drawings will not be accepted.
2. Package Content. Data package content shall be as shown in the paragraph titled “Schedule of Operation and Maintenance Data Packages.” Comply with the data package requirements specified in the individual technical sections, including the content of the packages and addressing each product, component, and system designated for data package submission.
3. Changes to Submittals. Manufacturer-originated changes or revisions to submitted data shall be furnished by the Contractor if a component of an item is so affected subsequent to acceptance of the O&M Data. Changes, additions, or revisions required by the Architect or District Project Manager for final acceptance of submitted data, shall be submitted by the Contractor within 30 calendar days of the notification of this change requirement.

1.4 SYSTEMS COVERED
A. The Contractor shall supply the required information for all systems identified in Contract Documents. A separate manual or chapter shall be provided for all new equipment or systems referenced in the Contract Documents.

1.5 COMPUTER PROGRAMS
A. When any equipment requires operation by computer programs, submit copy of original program on CD, with a hard-copy and an electronic copy (Adobe PDF format) of all user manuals and guides for operating the programs. Program shall be Windows compatible, latest edition or as requested by the District. Provide required licenses to District at no additional cost.
1.6 SUPPLEMENTAL DATA
A. Contractor shall prepare written text and/or special drawings to provide necessary information when manufacturer’s standard printed data is not available and/or additional information is necessary for a proper understanding and operation and maintenance of equipment or systems, or when it is necessary to supplement data included in the manual or Project documents.

1.7 SCHEDULE OF INFORMATION FOR OPERATION AND MAINTENANCE DATA PACKAGES
A. Supply all of the following, when and where applicable, for each O&M data package:
1. Safety precautions
2. Operator prestart
3. Startup, shutdown, and post-shutdown procedures
4. Normal operations
5. Emergency operations
6. Operator service requirements
7. Environmental conditions
8. Lubrication data
9. Preventive maintenance plan and schedule
10. Cleaning recommendations
11. Troubleshooting guides and diagnostic techniques
12. Wiring diagrams and control diagrams
13. Maintenance and repair procedures
14. Removal and replacement instructions
15. Spare parts and supply list
16. Special tools required to service or maintain the equipment
17. Corrective maintenance man-hours
18. Product submittal data
19. O&M submittal data
20. Parts identification
21. Warranty information
22. Personnel training requirements
23. Testing equipment and special tool information
24. Testing and performance data
25. Installing Subcontractor information

PART 2 – PRODUCTS - Not Used.

PART 3 – EXECUTION - Not Used.

END OF SECTION 01785
SECTION 01820

DEMONSTRATION AND TRAINING PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS
A. All Contract Documents shall be reviewed for applicable provisions related to the provisions in this document, and provisions in the General Conditions and other Specification Sections shall apply to this Section without limitation.

1.2 SUMMARY
A. This Section includes administrative and procedural requirements for instructing District’s personnel, including the following:
   1. Demonstration of operation of systems, subsystems, and equipment
   2. Training in operation and maintenance of systems, subsystems, and equipment
   3. Demonstration and training videos

1.3 SUBMITTALS
A. At completion of training, provide two (2) complete training manuals for the District’s use.
B. Attendance Record: For each training module, provide list of participants and length of instruction time.

1.4 QUALITY ASSURANCE
A. Instructor Qualifications: A factory-authorized service representative or District approved equivalent, complying with requirements in Section 01400 Quality Control Requirements, and technical specification sections where required. Service representative shall be experienced in operation and maintenance procedures and training for Project specific systems and equipment.
B. Contractor shall coordinate instruction schedule and verify availability of educational materials, instructor’s personnel, audiovisual equipment, and facilities needed to avoid delays.
C. For instruction that must occur outdoors, review weather forecast and provide alternatives if conditions are unfavorable.

1.5 COORDINATION
A. Contractor shall coordinate instruction schedule with District Construction Manager.
B. Provide written notice, ten (10) working days in advance, to District Construction Manager and Architect prior to scheduling any instruction sessions. District Construction Manager shall furnish Contractor with names and positions of intended participants.

PART 2 - PRODUCTS

2.1 INSTRUCTION PROGRAM
A. Program Structure: Contractor shall develop and provide instruction program that includes group training modules for each system and equipment not part of a system, but included in individual Specification Sections.
B. Training Modules: Contractor shall develop a learning objective and teaching outline for each module. Include a description of specific skills and knowledge that participant is expected to master. For each module, include instruction for the following:

1. Review basis of system design
2. Operational requirements and criteria, including:
   a. System, subsystem, and equipment descriptions
   b. Operating standards
   c. Regulatory requirements
   d. Operating characteristics
   e. Limiting conditions
   f. Performance curves
3. Detailed review of documentation, including:
   a. Emergency manuals and procedures
   b. Operations manuals and procedures
   c. Maintenance manuals and procedures
   d. Identification systems
   e. Warranties and Guarantees
   f. Maintenance service agreements and similar continuing commitments
   g. Normal shutdown instructions
   h. Required sequences for electric or electronic systems
   i. Special operating instructions and procedures
   j. Troubleshooting and diagnostics
   k. Test and inspection procedures

PART 3 - EXECUTION

3.1 PREPARATION

A. Assemble educational materials necessary for instruction, including documentation and training module. Assemble training modules into a combined training manual.

B. Set up as required at instructional location.

END OF SECTION 01820
PART 1 - GENERAL

1.01 SUMMARY

A. Work Included: Perform all site demolition work of concrete, asphalt, pavement, utilities, and related facilities and prepare site as shown on the Drawings and in accordance with this Specification.

1. Contractor shall complete and submit all necessary information to obtain required permits.

B. Related Work:

1. Cutting and Patching: Section 01730.
2. Selective Demolition: Section 01732.
3. Earthwork Section 02300.
4. Cast-In-Place Concrete: Section 03300.

1.02 QUALITY ASSURANCE

A. Contractor shall utilize work persons skilled in the trades appropriate for each task.

B. Contractor shall take precautions to guard against movement, settlement or collapse of any nearby structures not designated for demolition and be liable for the consequences of any such movement, settlement or collapse.

C. Contractor shall prepare a fully coordinated plan for demolition, site shoring, and excavation work as indicated in the Contract Documents.

1.03 SUSTAINABLE REQUIREMENTS

Conform to Waste Management practices with the intended to contribute to meeting requirements for waste management outlined in Leadership in Energy & Environmental Design (LEED), in Article 1.04, in Selective Demolition, Section 01732.

1.04 SUBMITTALS

A. Submit in accordance with the provision of the General Conditions, Article 3.11.

B. Before commencing work the Contractor shall submit to the District the following information:

1. Written protection plan for the District’s review describing protection for neighboring buildings, walkways, roads, utilities, components and finishes, site elements, surrounding materials, and existing trees to remain. Describe in detail the materials, methods, and equipment to be used for protection of elements and materials during demolition operations.

2. Detailed schedule showing the commencement, order, sequence and completion dates for the various work activities.

3. When working on existing utilities (electrical, sewer, storm drain, water, telecommunication, gas, fire lines, etc.) that will be temporarily disconnected or disrupted, submit a notification to the District seven
days in advance and obtain District's approval in writing before proceeding with this phase of the work.

C. Existing Condition Documentation: Prior to start of Work, submit photo documentation of areas of work to confirm the existing conditions. Include enough detailed photo documents of the existing building, structures, trees and landscaping to make comparisons between the conditions prior to Work and the conditions after Work is complete.

D. LEED Submittals: Conform to Article 1.05E, in Selective Demolition, Section 01732.

1.05 JOB CONDITIONS

A. Transport salvaged items from site as they are demolished. Storage or sale of demolished items shall not be permitted on the project site.

B. Explosive use or possession on-site is not permitted.

C. Contractor is required to conduct demolition operations and debris removal to minimize interference with roads, walks, and other adjacent facilities. The Contractor shall not close or obstruct streets, walks, or other occupied and used facilities without approval, and provide alternate routes around closed or obstructed traffic ways in accordance with applicable regulations.

D. Do not allow equipment to pass over existing streets or other public and private property without ample protection. Protect and maintain existing driveway concrete paving. Any such property, which is damaged as the result of operations, shall be restored to original condition.

E. Comply with the requirements of CCR Title 8, Construction Safety Orders, and California State Building Code. Protect adjacent structures, sidewalk, curbs and streets from settlement or other damage.

F. Every precaution shall be taken to prevent spillage when hauling on or adjacent to any public street or highway. If spillage occurs, all such spillage shall be removed and the streets and highways shall be swept, washed or otherwise cleaned as required by the District.

G. All precautions shall be taken by the Contractor to prevent dust nuisance to off-site facilities, and prevent erosion and transportation of soils to off-site properties. Any damage to facilities to remain caused by Contractor shall be repaired at the Contractor's expense.

H. All portions of the Work shall be kept free of standing water at all times. Maintain uniform grades, construct ditches and provide and operate pumps as necessary to prevent erosion, softening of compacted surfaces and formation of mud in trenches and excavations. If ditches are required, they shall be constructed, tamped and maintained in a neat, uniform shape. Do not under any circumstances, conduct or pump water or allow water to be diverted or flow towards other areas of the site, which may, in the opinion of the District be damaged thereby. Protect inlets from siltation as necessary.

1.06 PROTECTION

A. Contractor shall provide, erect and maintain all catch platforms, lights, barriers, weather protection, warning signs, and all other items as required for
the proper protection of workers engaged in demolition operations, visitors, public and adjacent construction.

B. Contractor shall provide adequate fire protection in accordance with all governing agency requirements.

C. Provide and maintain temporary protection of all existing elements designated to remain including but not limited to utility lines, streets, sidewalks, light standards, hydrants, street signs, trees, and fire alarm boxes. Make all repairs necessitated by operations under this Section to the complete satisfaction of the owner of the damaged property.

D. Make all necessary explorations to determine required protective measures before proceeding with demolition and removal work. Contractor shall pay particular attention to shoring and bracing requirements to prevent damage to elements to remain and/or adjacent properties.

1.07 EXISTING UTILITIES

A. Prior to starting any work related to existing utilities, notify the District seven days in advance and obtain the District's approval before proceeding with this phase of the Work.

B. Contractor shall be responsible for protection of existing utility lines. If existing active utility lines are encountered, protect same from damage and notify District. Do not interrupt service except as directed or accepted by District and allow sufficient time to make arrangements for continuation of required services. Damage to said lines as a result of demolition operations shall be repaired or replaced as directed by District.

C. Protect existing active utilities as required to prevent unauthorized disruption of services. Prior to commencing any operations in the general location where utilities are indicated, determine exact alignment and depth of utilities.

D. Abandon-in-Place existing utility piping, conduits, and other related items shown to be abandoned and plug remaining open ends with concrete or cap. Utility piping to be abandoned in place, cut, or capped shall be tagged with permanent markings identifying the type of service.

E. Remove existing utilities shown to be removed, cap or plug remaining open ends, and backfill trenches.

F. Provide chiseled mark at sidewalk indicating location and type of utilities capped.

1.08 NOISE CONTROL

Comply with the Contracting Requirements and Division 1.

1.09 DUST CONTROL

Comply with the Contracting Requirements and Division 1.

1.010 LANDSCAPE PROTECTION

A. Document existing trees and landscaping by means of photos before conducting Work described in this Section; see Article 1.03C.
B. Protect existing trees and landscaping from damage at areas of Work. Replace any landscaping when the District determined that damaged was caused by the Work.

PART 2 - PRODUCTS

NOT USED.

PART 3 - EXECUTION

3.01 GENERAL

A. Verify conditions in the field prior to the start of work. If unanticipated utility elements conflict with the proper operation of systems that are to remain, investigate and measure both nature and extent of the conflict and notify the District and the City’s Representative (if applicable) prior to proceeding with demolition work.

B. Provide shoring, bracing, and other supports as required to comply with all laws and regulations. If safety of adjacent structure and other elements appears to be endangered, cease operations and notify District and the City (if applicable) immediately. Take precautions to support endangered work until determination is made for continuing operations.

3.02 SITE DEMOLITION AND PREPARATION

A. Remove all asphalt concrete, concrete, fencing, and other features noted in the Contract Documents. Sawcut to neat lines asphalt concrete and concrete to remain.

B. All abandoned utilities encountered within the utility demolition area shown on the Drawings shall be removed, unless otherwise indicated in the Contract Documents. Ends of abandoned utilities shall be capped or plugged as approved and tagged with permanent identification.

C. Clear, strip and grub areas to be excavated, or receive fill, paving or structures. Notify the District prior to removing any trees not shown to be removed.

D. Clearing: Clearing shall consist of cutting, removing, and disposing of trees, shrubs, brush, limbs and other vegetative growth, and shall be performed in such a manner as to remove all evidence of their presence from the surface. Clearing shall also include the removal and off-site disposal of trash piles, rubbish, concrete paving, curbs, and asphalt paving. The extent of clearing shall be in accordance with the Architectural drawings.

E. Grubbing: Grubbing shall consist of the removal and disposal of wood or root matter below the ground surface remaining after clearing. The extent of grubbing shall be in accordance with the Architectural Drawings.

F. Stripping: Stripping shall include the removal of all organic sod, topsoil, grass and grass roots, all evidence of surface improvements and other objectionable material remaining after clearing and grubbing from the areas designated to be stripped. The extent of stripping shall be in accordance with the Drawings.

G. Excavations resulting from the removal of such items shall be cleaned out to firm, undisturbed soil and backfilled to match the adjacent grade. Unless
noted otherwise, backfill shall be on site or imported structural fill compacted to the density specified in specification Section 02300 - Earthwork.

H. At completion of demolition, remove all debris from the project and finish off grades and other work in a neat and uniform manner.

I. All surfaces, paving, utilities, improvements, or other items of any kind or nature not indicated to be demolished, which are cut or otherwise disturbed shall be restored to their original condition, quality, finish, appearance, and wearing value with duplicating materials all to the acceptance of the District.

J. Work under this Section shall include complete responsibility for damage by erosion, to areas both inside and outside the limits of Work, caused or contributed to by operations under this Section.

K. If the Contractor is forced to suspend Work prior to completion as a result of inclement weather, it shall be responsible for leaving the project in a suitable condition with proper erosion control and drainage until such time as work is again commenced.

L. Cutting: Cut existing asphalt concrete and Portland cement concrete to remain on neat, straight lines with a saw or equivalent equipment.

3.03 DISPOSAL OF DEMOLISHED MATERIALS

A. General: On a daily basis, remove from site accumulated debris, rubbish, and other materials resulting from demolition operations in accordance with Division 1, except as noted below.
   1. Asphalt concrete may be recycled as non-structured fill.

B. Burning of combustible materials from demolished structures will not be permitted.

C. Removal: Transport from site and legally dispose of removed materials.

3.04 PAVEMENT, CURB, AND SIDEWALK REPAIR

Contractor shall be responsible for repair of all curbs, gutters, pavements and sidewalks that are damaged by the operations that are not shown to be removed. Restore asphalt concrete roadways and parking lots with pavement section thickness as shown on the drawings for new work. Restore curb, gutter, and sidewalk to match existing.

3.05 CLEANING UP

Upon completion of all work under this Section, remove all tools, materials, plant, apparatus and rubbish of any sort. The premises shall be left clean.

END OF SECTION
PART 1 - GENERAL

1.1 RELATED DOCUMENTS
A. The General Conditions and Division I General Requirements shall be included in and made part of this Section.
B. Examine all other Sections of the Specifications for requirements therein affecting the work of this Section of the Specifications.

1.2 COMPLIANCE AND INTENT
A. The Contractor is responsible for repair, to the satisfaction of the District, of surfaces not scheduled for demolition that become damaged as a result of the work. All unscheduled repair work shall be at no increase to contract price.
B. Contractor shall coordinate removal with all site requirements related to protection of existing finishes. Water and encapsulants used during abatement work must not migrate beyond established regulated work area barriers. All protection work must be completed prior to the start of abatement work on each floor and any pathways of travel on other floors.
C. This project deals with abatement of asbestos-containing materials (ACMs). It is necessary for the Contractor to coordinate all abatement work with the project drawings and specifications. During all work, provide monitoring and worker protective equipment in accordance with the California Occupational Safety and Health Administration (Cal-OSHA) and as required by this specification. Where there is conflict, the most stringent requirement shall apply.
D. The work covered by this specification includes the handling, removal, and proper disposal of ACMs. Hazardous materials shall be removed and disposed of according to all federal, state and local regulations. The Contractor shall determine if additional hazardous materials will be impacted by the scope of the abatement work. The cleanup of any incidental asbestos found in areas undergoing abatement of asbestos that become separated from the building during the dismantling process are part of the work.
E. The abatement workers shall have received Cal-OSHA accredited training and be certified for asbestos abatement work.
F. Furnish all labor, materials, facilities, equipment, services, employee training, medical monitoring, permits and agreements necessary to perform the work required for asbestos abatement in accordance with this specification.
G. Comply with all federal, state, and local regulations pertaining to asbestos removal, storage, transportation and disposal; employee health and safety; Contractor certifications; and all licenses, permits, and training.

H. Work on the premises shall be confined to areas designated in the Contract Documents. Materials and equipment shall be stored within areas designated by the District. Should additional space be required, the Contractor shall request permission for additional space and shall adequately safeguard occupants from associated health and safety hazards.

I. Perform all work specified herein with competent persons trained, knowledgeable and qualified in state-of-the-art techniques relating to asbestos abatement, handling, and the subsequent cleaning of contaminated areas.

J. During removal activities, the Contractor shall protect against contamination of soil, water, plant life, sensitive building finishes, adjacent building areas, and shall ensure that there is no airborne release of dusts. The District may collect air samples in the building and in adjacent areas to evaluate the Contractor's performance. Evidence of settled dust or airborne levels of contaminants above background will require the implementation of additional controls at no increase to contract price.

K. It is the Contractor's responsibility to determine the quantities of ACMs that will require removal prior to commencement of the project. The Contractor shall conduct a site visit to determine exact locations of materials that will require abatement. This section provides appropriate protocols for handling and disposal of ACMs. ACMs shall be removed according to the procedures outlined in this specification. If additional suspect ACMs are discovered during the course of the abatement work, immediately notify the District and/or the District's Environmental Consultant.

L. The work of this section shall be performed by an entity that holds a current, valid asbestos handling license issued by the California State Contractor's Licensing Board (SCLB) and a current valid Certificate of Registration for Asbestos-Related Work issued by the California Department of Industrial Relations-Division of Occupational Safety and Health (Cal-OSHA), unless other specified. Display copies of CSLB license and Cal-OSHA Registration in a visible place at the job-site.

M. ACMs removed during the abatement activities shall be disposed of in an approved manner complying with all applicable federal, state, and local regulations. Appropriate waste manifests or letters of salvage shall be furnished to the District thereby limiting the District's liability for improperly salvaged items. Materials are conveyed to the Contractor "as is," without any warranty, expressed or implied, including but not limited to, any warranty to marketability or fitness for a particular purpose, or any purpose. The District or the District's Environmental Consultant shall approve the non-ACM hazardous waste disposal site(s) prior to disposal for materials that may be disposed of in that manner.

N. All interior asbestos abatement work shall be conducted using a negative pressure enclosure and three stage decontamination units unless otherwise specified.
1.3 DEFINITIONS

A. The following definitions pertain to work of this section.

1. Abatement: Process of controlling fiber release from ACMs including encapsulation, enclosure, controlled renovation procedures, removal, clean-up and disposal.

2. ACM: Asbestos-containing material

3. Aggressive Sampling: Air sampling either during or following the agitation of the air.


5. Airlock: A system for permitting ingress and egress with minimum air movement between a contaminated area and uncontaminated areas. Typically consists of two curtained or gasketed doorways separated by a distance of at least six feet such that one passes through one doorway into the airlock, allowing the doorway to close off the opening. This airlock must be maintained in uncontaminated condition at all times.

6. Ambient Air Quality: The quality of air (in terms of airborne fiber content) that is present in a given space.

7. Area Monitoring: Sampling of airborne asbestos fiber concentrations within the work area and outside the work area. Sampling shall represent airborne concentrations that may reach the breathing zone.

8. Asbestos Fibers: Refers to asbestos fibers having an aspect ratio of 3:1, and those fibers longer than five (5) microns.

9. Asbestos Permissible Exposure Limit (PEL): A level of airborne fibers specified by OSHA as an occupational exposure standard for asbestos. This level represents the 8-hour time-weighted average of 0.1 fibers per cubic centimeter of air as measured by Phase Contrast Microscopy (PCM) analytical method.

10. Asbestos-Containing Material (ACM): Those manufactured products and construction materials including structural and mechanical building materials, as well as packings and gaskets that contain more than one percent (1.0%) asbestos by weight.

11. Asbestos: Asbestos includes asbestiform varieties of serpentininite (chrysotile), riebeckite (crocidolite), cummingtonite-gunnerite (amosite), anthophylite, tremolite, and actinolite. For the purposes of determining worker respiratory protection, both the asbestiform and non-asbestiform of the above minerals, and any chemically treated or altered materials shall be considered as asbestos.

12. Authorized Visitor: Designated employees or consultants for the District and representatives of any federal, state or local regulatory or other agency having jurisdiction over the project.
13. Baseline: Refers to the background levels of asbestos monitored before abatement.

14. Breathing Zone: A hemisphere forward of the shoulders and head with a radius of approximately six to nine inches.

15. Breach: A rift or gap in the critical or secondary barriers that allow egress of air from the containment to outside, or vice versa.

16. Bridging Encapsulant: An encapsulant that forms a discrete layer on the surface of an in-situ asbestos matrix.


18. Chain-of-Custody: A legal concept involving documentation of the physical possession of a sample(s) from the moment it is collected, transported, analyzed, and ultimately stored in an archive.

19. Change Rooms: Refers to the two chambers in the decontamination area used to change into and out of protective clothing.

20. Certified Industrial Hygienist (CIH): A person certified by the American Board of Industrial Hygiene.

21. Clean Room: An uncontaminated area or room that is part of the worker decontamination enclosure system, with provisions for storage of workers' street clothes and protective equipment.

22. Clearance Level: Clearance level for samples analyzed by PCM will be less than 0.01 fibers per cubic centimeter of air and for TEM will be less than 70 structures per square millimeter (<70 s/mm²). Samples may be collected by aggressive or non-aggressive sampling methods and the minimum air volume shall be 1,200 liters.

23. Competent Person: One who is capable of identifying existing and predictable hazards and who has the authority to take prompt corrective measures to eliminate them.

24. Critical Barrier: A unit of temporary construction that provides the only separation between asbestos work area and an adjacent potential occupied space. This includes the decontamination unit, perimeter walls, ceilings, penetrations and any temporary critical barriers between the work area and the uncontaminated environment.

25. CSLB: Contractors State Licensing Board

26. Decontamination Area: Area which is constructed to provide the means for workers to store clothing, equipment and other articles, and to properly remove contamination upon concluding work activities that result in exposure to these hazardous materials.

27. DOP: Dioctylphthalate, the challenge aerosol used to perform on-site leak testing of HEPA filtration equipment.

28. DOT: Federal Department of Transportation.

29. DOSH: Division of Occupational Safety & Health (see also Cal-OSHA)
30. Decontamination Unit: Refers to system of airlocks used to decontaminate personnel, waste bags, equipment, etc. when exiting the work area. A decontamination unit shall be set up for each containment area.

31. Demolition: The wrecking or taking out of any load-supporting structural member of a facility together with any related handling operations or the intentional burning of any facility.

32. Disposal Bag: Minimum six (6) mil thick leak-tight plastic bags used for transporting asbestos waste from a work area to disposal or shipping container. Each disposal bag must have required labels according to Title 8 CCR 1529 (Cal-OSHA asbestos rule), 5194 (HAZCOM). RACM waste must be additionally labeled according to 49 CFR 171-179 (USDOT), and 40 CFR 61 Subpart M (NESHAP). Hazardous waste disposal bags must be labeled with generator's name, address, site location, generator number, and the following information:

CONTAINS ASBESTOS FIBERS
AVOID CREATING DUST
CANCER AND LUNG DISEASE HAZARD
AVOID BREATHING AIRBORNE ASBESTOS
RQ WASTE ASBESTOS, 9 NA 2212 PG III
(Class 9 placard)
HAZARDOUS WASTE
STATE AND FEDERAL LAW
PROHIBITS IMPROPER DISPOSAL
IF FOUND, CONTACT THE NEAREST
POLICE OR PUBLIC SAFETY
AUTHORITY OR THE CALIFORNIA
DEPARTMENT OF TOXIC SUBSTANCES CONTROL

33. District: Contra Costa Community College District

34. District's Environmental Consultant: Environmental Consulting firm and its representatives retained to provide compliance oversight and monitoring for the Contractor's asbestos abatement work activities.

35. Encapsulant: A liquid material that can be applied to ACMs that controls the possible release of asbestos fibers from the material either by creating a membrane over the surface (bridging) or by penetrating into the material and binding its components together (penetrating encapsulant).

36. Encapsulation: A specified procedure necessary to coat ACMs or asbestos contaminated surfaces with an encapsulant to control the possible release of asbestos fibers into the ambient air.

37. Enclosure: The construction of an airtight, impermeable, permanent barrier surrounding the ACM to prevent the release of asbestos fibers into the air.

38. Equipment Decontamination Enclosure System: A decontamination enclosure system for materials and equipment, typically in a designated area of the work area, and including a washroom, a holding area, and an uncontaminated area.
39. Equipment Room: A contaminated area or room that is part of the worker decontamination enclosure system, with provisions for storage of contaminated clothing and equipment. The equipment room shall be kept clean from asbestos-containing debris at all times.

40. Excursion Limit: A California Code of Regulations (Title 8 CCR 1529) requirement that ensures no employee exposed to airborne concentrations of asbestos in excess of 1.0 fibers per cubic centimeter of air as averaged over a sampling period of thirty (30) minutes.

41. Filter: A media component used in respirators to remove solid or liquid particles from the inspired air.

42. Fixed Object: A unit of equipment or furniture in the work area that cannot be removed from the work area.

43. Friable Asbestos-Containing Material: Material that contains more than 1.0% asbestos by weight, and that can be crumbled, pulverized or reduced to powder by hand pressure when dry.

44. Foreman: An individual who typically fulfills the duties of "competent person" as defined by Title 8 CCR 1529. This individual must supply documentation of a passing grade in a Cal-OSHA accredited course in Asbestos Contractor/Supervisor training. The foreman must be on-site during all abatement work.

45. Glove Bag: A polyethylene bag with two inward projecting long sleeve gloves, designed to enclose an object from which an ACM is to be removed. Bags shall be seamless at the bottom, have a minimum thickness of 6 mil, and shall be labeled appropriately.

46. Glove Bag Technique: A method for removing ACM from heating, ventilation and air conditioning (HVAC) ducts, piping runs, valves, joints, elbows, and other non-planar surfaces. 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. Secondary containment shall be provided for all glove bag work unless otherwise noted.

47. Gross or Full Abatement: Designated rooms, spaces, or areas of the project that have been totally sealed, contained in polyethylene, equipped with decontamination enclosure systems, and placed under negative pressure.

48. HEPA: High Efficiency Particulate Air filter capable of filtering out airborne particulate 0.3 microns or greater in diameter at 99.97 percent efficiency.

49. Manifest: The document authorized by both Federal and State authorities for tracking the movement of ACMs.

50. Movable Object: A unit of equipment or furniture in the work area that can be removed from the work area (e.g., smoke detectors, lights, etc.)

51. Negative Pressure Respirator: A respirator in which the air pressure inside the respiratory inlet covering is positive during exhalation in relation to the air pressure of the outside atmosphere, and negative during inhalation in relation to the air pressure of the outside atmosphere.
52. Negative Pressure: Air pressure lower than surrounding areas, generally caused by exhausting air from a sealed space (work area).


54. NIOSH: National Institute for Occupational Safety and Health: Sets test standards, analytical methods, and certifies performance of various respirator designs (research institute within Federal OSHA).

55. NIST: National Institute of Standards and Technology: Administers the NVLAP Program.

56. NOA – Naturally Occurring Asbestos. Found in soil, fill and concrete.

57. NVLAP: National Voluntary Laboratory Accreditation Program – evaluates and certifies laboratories doing PLM and TEM analyses.

58. Passive Sampling: Refers to air sampling with no air agitation.

59. Permissible Exposure Limits (PEL): A level of airborne fibers specified by OSHA as an occupational exposure standard for asbestos. This level represents the 8-hour time-weighted average of 0.1 fibers per cubic centimeter of air and 30 minute excursion limit of 1.0 fibers per cubic centimeter of air as measured by Phase Contrast Microscopy (PCM) analytical method.

60. Phase Contrast Microscopy (PCM): Technique using a light microscope equipped to provide enhanced contrast between the fibers and the background. Filters are cleared with a chemical solution and viewed through the microscope at a magnification of approximately 400X. This method does not distinguish between fiber types and only counts those fibers longer than 5 microns and wider than approximately 0.25 microns. Because of these limitations, fiber counts by PCM typically provide only an index of the total concentration of airborne asbestos in the environment monitored.

61. Polarized Light Microscopy (PLM): An optical microscope technique used to identify asbestos content and distinguish between different types of asbestos fibers by their shape and unique optical properties.

62. Powered Air Purifying Respirator (PAPR): A full facepiece respirator that has the breathing air powered to the wearer after it has been purified through a filter.

63. Protection Factor: The ratio of the ambient concentration of an airborne substance to the concentration of the substance inside the respirator at the breathing zone of the wearer. The protection factor is a measure of the degree of protection provided by a respirator to the wearer.

64. Remodel: Replacement or improvement of an existing building or portion thereof where exposure to airborne asbestos may result. Remodel includes, but is not limited to, installation of materials, demolition, cutting, patching, and removal of building materials.

65. Respirator: A device designed to protect the wearer from the inhalation of harmful atmospheres.
66. **Shower Room:** A room between the clean room and the equipment room in the work decontamination enclosure system. This room contains hot and cold or warm running water and soap suitably arranged for complete showering during decontamination. The shower room comprises an airlock between contaminated and clean areas.

67. **Surfactant:** A chemical wetting agent added to water to improve penetration, this reducing the quantity of water required for a given operation or area.

68. **Transmission Electron Microscopy (TEM):** Asbestos structure analysis for a specified volume of air. TEM is a technique that focuses an electron beam onto a thin sample. As the beams transmits through certain areas of the sample, an image resulting from varying densities of the sample is projected onto a fluorescent screen. TEM is the state-of-the-art analytical method for identifying asbestos fibers collected in air samples in non-industrial settings. TEM microscopes equipped with selected area electron diffraction (SAED) capabilities also can provide information on the crystal structure of an individual particle.

69. **TSI – Thermal Systems Insulation**

70. **Visible Emissions:** Any emission containing particulate material that is visually detectable without the aid of instruments. This does not include condensed uncombined water vapor.

71. **Visual Inspection:** A visual inspection by District's Environmental Consultant, of the work area under adequate lighting to ensure that the work area is free of visible PCB material, debris, and dust.

72. **Washroom:** A room between the work area and the holding area in the equipment decontamination enclosure system equipped with water for decontamination of equipment and sealed waste containers. The washroom or shower room comprises one airlock.

73. **Water Filtration:** Refers to water filtration to as small a particulate size as technically feasible, but not more than 5 microns.

74. **Wet Cleaning:** The process of eliminating asbestos contamination from building surfaces and objects by using cloths, mops, HEPA vacuuming, or other cleaning utensils dampened with amended water and afterward thoroughly decontaminated or disposed of as asbestos contaminated waste.

75. **Work Area:** The area where asbestos removal is performed and that is defined or isolated to prevent the spread of asbestos fibers, dust or debris, and entry by unauthorized personnel. Work area is a regulated area as defined by Title 8 CCR 1529.

### 1.4 SCOPE OF WORK

A. Provide the removal of ACMs as specified in this section. Reference all other sections of the Specifications and other documents included in the contract documents for information and requirements that affect the work of this Section.

B. Table 1 attached provides estimated quantities of ACMs that will require removal and/or will be disturbed by the renovation work. The Contractor is responsible for
field verifying quantities of ACMs to be abated and/or disturbed. It should be noted that ACMs listed in Table 1 may not removed completely. Abatement of drywall walls/ceilings and pipe insulation will likely be as needed to conduct work as specified in the construction documents and should be closely coordinated with the General Contractor.

C. The following materials shall be disposed of as regulated asbestos-containing material (RACM): pipe fitting insulation, flooring mastic if removed with mechanical methods and all Category I and Category II materials rendered friable during the removal process.

D. The following materials can be disposed of as Category II Non-friable ACMs if they are not rendered friable during removal: floor tile/mastic, flooring mastics (removed by manual methods). If a removal solvent is used to abate the flooring mastic, the Contractor shall perform waste characterization and dispose of the material as required.

E. Non-textured drywall with associated joint compound and acoustic ceiling tile mastic that contains less than one percent (<1.0%) asbestos by point count method may be disposed of as construction debris.

F. Any dust or debris generated from cutting, drilling, and removal or installation of attachments to existing ACMs shall be disposed as an RACM.

G. Construction work on drywall with asbestos-containing joint compound will require disturbance (drilling, cutting, etc.) of asbestos (Class III Asbestos Work) and shall be conducted by properly trained personnel (16-hour Asbestos Operations and Maintenance) in proper personal protective equipment. All work shall be conducted as follows: (1) asbestos regulated work areas demarcated with barrier tape and signage (6-mil polyethylene drop sheets shall be installed, at a minimum, beneath work areas) and (2) wet methods with local exhaust ventilation with HEPA vacuums.

1.5 REFERENCES

The publications listed below form a part of this specification by reference. The publications are referred to in the text by basic designation only. If there is a conflict between any of the listed regulations or standards, then the most stringent or restrictive shall apply.

A. American National Standards Institute (ANSI) and American Society for Testing and Materials (ASTM)

2. ANSI Z87.1, 2003, Occupational and Educational Eye and Face Protection
3. ANSI Z88.2 1992, Respiratory Protection
4. ANSI Z89.1, 1986, Requirements for Protective Headgear for Industrial Workers
5. ANSI Z41, 1999, Personal Protection – Protective Footwear
6. ANSI Z88.6, 1984, Respiratory Protection – Respiratory Use Physical Qualifications for Personnel
9. ASTM D 1331, Solutions of Surface-Active Agents
10. ASTM D 2794, 1993 Resistance of Coatings to the Effects of Rapid Deformation (Impact)
15. ASTM E849, 1986 Safety and Health Requirement Relating to Occupational Exposure to Asbestos

B. California Assembly Bills (CAB)
1. CAB 040, Yearly Registration of Contractors

C. California Code of Regulations (CCR)
1. Title 8 CCR 5208, General Industry – Asbestos
2. CCR CARS, Carcinogen and Asbestos Registration Sections 340-344.53, 341.6 Amended, and 341.9 Amended Through 341.14
3. CCR ESO, Electrical Safety Orders, Chapter 4, Subchapter 5
4. CCR 1523, Illumination
5. CCR 1529, Asbestos in the Construction Industry
6. CCR 1531, Construction Respiratory Protective Equipment
7. CCR 3203, Injury and Illness Prevention Program
8. CCR 3204, Access to Employee Exposure and Medical Records
9. CCR 3220, Emergency Action Plan
10. CCR 3221, Fire Prevention Plan
11. CCR 5144, Respiratory Protection Equipment Standard
12. CCR 5194, Hazard Communication Standard
13. CCR 6003, Accident Prevention Signs
14. Title 22, Division 4, Minimum Standards for Management of Hazardous and Extremely Hazardous Waste

D. California Health Services (CHS) Titles 22 and 23, California Administrative Code Disposal Requirements
1. CHS 25123, Section 25123
2. CHS 25124, Section 25124
3. CHS 25143, Section 25143
4. CHS 25163, Section 25163
5. CHS 66508, Section 66508
6. CHS 66510, Section 66510
7. CHS DIV 4, Division 4, Commencing with Section 66000, "Disposal"

E. California Health and Safety Code (CHSC)
   1. CHSC 20, Division 20, Commencing with Section 24200

F. California Labor Code (CLC)
   1. CLC DIVISION 5, Part 1, commencing with 6300

G. California Propositions (CP)
   1. CP 65, Proposition 65

H. California State Board of Equalization (CSBE)
   1. CSBE ETU, Excise Tax Unit

I. California State License Board (CSLB)
   1. CSLB CBPC, California Business and Professional Code Sections 7058.5 and 7058.7, "Certification"

J. Code of Federal Regulations (CFR)
   1. 29 CFR 1910.134, Respiratory Protection
   2. 29 CFR 1910.141, Sanitation
   3. 29 CFR 1910.145, Accident Prevention Signs and Tags
   4. 29 CFR 1926.21, Safety Training and Education
   5. 29 CFR 1926.55, Gases, Vapors, Fumes, Dusts, and Mists
   6. 29 CFR 1926.65, Hazardous Waste Operations and Emergency Response
   7. 29 CFR 1926.59, Hazard Communication
   8. 29 CFR 1910.1000, Air Contaminants
   9. 29 CFR 1926.1101, Asbestos
   11. 40 CFR 61-SUBPART M, National Emission Standard for Asbestos
   13. 40 CFR 745, Lead; Requirements for Lead-Based Paint Activities
   14. 40 CFR 763, Asbestos Containing Material in Schools

K. State and Local Regulations
1. Regulation 11, Rule 2, Bay Area Air Quality Management District (BAAQMD)

L. Underwriters Laboratories, Inc. (UL)
   1. UL 586-96, 1996 Test Performance of High-Efficiency Particulate Air Filter Units

1.6 SUBMITTALS PRIOR TO START OF WORK

A. The reviews by the District or District's Environmental Consultant are intended to be only for general conformance with the requirements. The District or District's Environmental Consultant assumes no responsibility for permits, licenses, notices, materials and methods, equipment or temporary construction required to execute the work described in this Section of the Specification or in other Sections of the Specification or in other documents included in the contract documents.

B. Before commencing work involving the abatement or disturbance of asbestos, submit the following for review by the District or District's Environmental Consultant.
   1. Provide a detailed asbestos abatement work plan that follows Attachment A – Asbestos Abatement Work Plan Outline.
   2. Provide an asbestos site safety plan prior to project initiation. The site safety plan shall deal with, at a minimum: site safety and health hazards; fiber release incidents; control of water leakage or discharge within and/or from the work area; medical emergency; asbestos handling procedures; fall protection; electrical safety; Contractor’s internal administrative and inspection procedures; earthquakes and/or fire emergency procedures; protocol for responding to complaints or questions from interested parties; 24-hour emergency telephone numbers for company officers with authority to respond to emergencies.
   3. Competent Person (as defined by Title 8 CCR 1529): Demonstrate education and specialized training with successful completion of examination of a Cal-Osha accredited asbestos training course.
   4. Submit current certificates (less than 11 months) signed by each employee and trainer that the employee has received proper training in the handling of materials that contain asbestos. Include documentation showing that the worker understands the following; health implications and risks involved (including the illnesses possible from exposure to airborne asbestos fibers), the use and limits of the respiratory equipment to be used, and the results of monitoring of airborne quantities of asbestos concerning health and respiratory equipment.
   5. Proof of Respirator Fit Testing: Provide proof of respirator fit testing. Fit testing records must be less than eleven (11) months old and document testing on the type of respiratory protective equipment used for this project. Fit testing records must be signed by the Competent Person.
   6. Foreman Training: Submit evidence that the foreman to be used on the job fulfills the qualifications detailed in this specification and has experience in similar jobs.
   7. Medical Examinations: Submit evidence signed by a physician that each employee used on the job has received an appropriate medical examination as
detailed in Title 8 CCR 1529. The submitted document must be less than eleven (11) months old.

8. Written Notification to Fire and Police Departments: Provide documentation showing notification to local fire and police departments of the abatement three (3) days before commencement.

9. Rental Equipment: When rental equipment is to be used in the abatement areas or to transport hazardous waste, the Contractor shall provide written notification regarding intended use of the rental equipment to the rental agency before use, with copies to the District’s Environmental Consultant.

10. Certificates of Compliance: Submit manufacturer's certification that vacuums, ventilation equipment, and other equipment required to contain airborne asbestos fibers conform to ANSI Z9.2. Submit results of onsite DOP testing of all HEPA-filtered ventilation equipment.

11. Submit uniform hazardous waste manifests prepared, signed and dated by an agent of the landfill. The manifest must certify the amount of hazardous materials delivered to the landfill. The manifest must be provided to the District or District’s Environmental Consultant within ten working days after delivery.

12. Satisfactory proof that written notification and subsequent updates have been provided to the Bay Area Air Quality Management District (BAAQMD), in accordance with Regulation 11, Rule 2, Cal-OSHA, and Title 40 CFR Part 61 Subparts A&M, National Emission Standards for Hazardous Air Pollutant, U.S. EPA.

13. Licenses: Submit copies of state and local licenses, evidence of Cal-OSHA registration and permits necessary to carry out the work of this contract.

14. Notification of Other Contractors: If other contractors are working at the job site, before beginning any work the Contractor must inform all other contractors in writing regarding the location, nature, and requirements of the work areas.

15. Material Safety Data Sheets/Specification Sheets: The Contractor shall submit Material Safety Data and Specification Sheets for all chemicals, encapsulants, etc. to be used for this project.

1.7 SUBMITTALS AT THE COMPLETION OF THE PROJECT

A. Upon completion of on-site work, Contractor shall provide a detailed project summary that will include each of the items listed below. The project Summary shall be submitted and approved by the District prior to acceptance of final pay request and shall include the following:

1. Copies of the Security and Safety Logs showing names of persons entering the workspace. The logs shall include date and time of entry and exit, supervisor's record of any accident (detailed description of accident).

2. Chain of custody documentation and laboratory reports for all analyses performed.

3. Emergency evacuations and any other safety or health incident.

4. Submit uniform hazardous and non-hazardous waste manifests prepared, signed and dated by an agent of the landfill. The manifest must certify the
amount of hazardous materials delivered to the landfill. The manifest must be provided to the District or District’s Environmental Consultant within ten working days after delivery.

5. Personal air sample results.

6. Pressure differential data readings for each differential recording device on the site.

7. Project Summary:
   a. Abatement contractor’s name and address, certification number (CSLB), registration number (DOSH) and Tax ID number.
   b. Hazardous waste hauler certifications (DHS, DOT).
   c. Name, address and registration number of hazardous waste hauler.
   d. Laboratory performing analyses (NVLAP).
   e. Contract number and name of project.
   f. Specific inventory (including locations and approximate quantities) of the hazardous materials which were removed or handled.
   g. Number of employees working on the project.
   h. Dates of commencement and completion of on-site work.
   i. Work method employed (i.e., glove bag, mini-containment, full containment with negative air and decontamination enclosure system, etc.)
   j. Name, location, telephone number and EPA registration of waste disposal site(s) used.
   k. DOP testing results.

1.8 CONTRACTOR MONITORING

A. The District or District’s Environmental Consultant reserves the right to perform air sampling in selected areas during the course of the project. District or District’s Environmental Consultant reserves the right to stop work within in an area if in the course of performing monitoring, the District or District’s Environmental Consultant observes instances of substantial non-conformance with the this Section or other Sections of the Specification presenting health hazards to workers, the general public or the surrounding areas. Work shall not resume until the corrective measures have been enforced. Instances of substantial non-conformance shall include, but not be limited to, the following:

1. Activities or misconduct imperiling worker’s safety and health.
2. Airborne fiber concentrations as measured by PCM outside of the containment area exceeding background or 0.01f/cc whichever is greater. Airborne concentrations as measured by TEM outside of the containment area exceeding background or 70 S/mm², whichever is greater.
3. Loss of negative pressurization for more than two minutes.
4. Breaches in containment resulting in potential release of asbestos to non-work areas.
B. The District's Environmental Consultant may perform air sampling inside and outside the hazardous materials work area during all phases of the work. The Contractor shall cooperate fully with the District's Environmental Consultant and ensure the cooperation of his workers during collection of air samples and work area inspections.

C. When visual inspections or air monitoring are specified, the Contractor shall notify the District or District's Environmental Consultant in writing 24 hours in advance of the day and time when the Contractor will be ready for such inspections or monitoring. Such requests shall be initiated by the Contractor's Competent Person or Foreman indicating that the work area has been previously inspected and is ready for inspection/testing.

D. Air monitoring generated by the District or District's Environmental Consultant shall not be used by the Contractor to represent compliance with regulatory agency requirements for monitoring of workers exposure to airborne asbestos, nor shall any other activity on the part of the District or District's Environmental Consultant be construed to meet the Contractor's compliance with applicable health and safety regulations.

PART 2 - PRODUCTS

2.1 SIGNS AND LABELS:

A. Provide labeling in accordance with State and Federal EPA requirements. Provide the required signs, labels, warnings, placards or posted instructions for containers used to transport hazardous material to the landfill.

B. Location of Caution Signs and Labels: Provide bilingual caution signs at all approaches to work areas in languages used by the Contractor's employees. Locate signs at such a distance that personnel may read the sign and take the necessary protective steps required before entering the area. Provide labels and affix to all asbestos-containing materials, scrap, waste, debris, and other products contaminated with hazardous materials.

C. Warning Sign Format: Vertical format conforming to Title 8 CCR 1529:

DANGER
ASBESTOS
CANCER AND LUNG DISEASE HAZARD
AUTHORIZED PERSONNEL ONLY
RESPIRATORS AND PROTECTIVE CLOTHING ARE REQUIRED IN THIS AREA

D. Warning Label Format: Provide labels that comply with Title 8 CCR 1529 of sufficient size to be clearly legible, displaying the following legend:

2.2 ENCAPSULANTS
A. Encapsulants shall be U.L. Listed, in full-scale E-119 fire test.

B. Average depth of penetration shall meet manufacturer's recommendations.

C. Dry mil thickness of bridging encapsulating systems (if used) shall be as indicated in the specific treatment instructions included in this specification, and as recommended by the manufacturer.

D. Performance Requirements: Classification - penetrating encapsulant; spray applied and brushable. Product shall be tested and listed by EPA and possess the following characteristics:
   2. Fire classification - UL Class A approved in the specific or similar assembly to its intended application.
   3. Product shall be tested and rated non-toxic and non-irritating under the Federal Hazardous Substances Control Act and contain no methylene chloride.
   4. Material shall be tinted sufficiently to provide a readable contrast to background color to which it is applied.

2.3 PLASTIC SHEETING:

   A. Use fire-retardant (FR) polyethylene (poly) film.
      1. Thickness - 6-mil, minimum, NO EXCEPTIONS.
      2. Flame Resistance/Flame Spread Rate <25.
      3. Conforms to NFPA #701 and Tested in accordance with ASTM E-84.

2.4 TAPE, ADHESIVE, SEALANTS:

   A. Tape, 2" or wider, shall be capable of sealing joints of adjacent sheet of polyethylene and shall attach polyethylene sheet to finished or unfinished surfaces or similar materials. Tape shall be capable of adhering under dry and wet conditions, including use of amended water. Taping to critical or sensitive surfaces shall be completed using preservation sealing tape.

   B. Spray adhesive for sealing polyethylene to polyethylene shall contain no methylene chloride or methyl chloroform (1,1,1-trichloroethane) compounds.

   C. Fire resistant sealants shall be compatible with concrete, metals, wood, etc. Sealant shall prevent fire, smoke, water and toxic fumes from penetrating. Sealant shall have a flame spread, smoke and fuel contribution of zero, and shall be ASTM and UL rated for 3 hours for standard method of fire test for fire stop systems.

2.5 STRIP CHART RECORDER(S):

   A. Where interior work areas are required, each shall have a minimum differential pressure of 0.025 inches water gauge at all times. Fluctuations below 0.025 inches of water column are unacceptable and may require temporary cessation of work until conditions are corrected.
B. Multiple data recorder(s) shall be used to document the level of pressure difference between the containment space and all other spaces as deemed necessary by the District or District's Environmental Consultant. Defective or non-operating instrumentation may require temporary cessation of work until instrumentation is repaired or replaced.

C. The data recorder will be checked a minimum of four times per day by a person familiar with the operation. Each check shall be documented with a time and date notation and the initials of the person performing the check. A copy of the data shall be submitted daily to the District or District's Environmental Consultant.

D. Differential air pressure systems shall be in accordance with Appendix J of EPA's "Guidance for Controlling Asbestos-Containing Materials in Buildings, EPA 560/5-85-024. The Differential pressure system shall be continuously monitored by the Contractor using a recording instrument connected to an appropriate strip chart recorder. The recording instrument shall be connected to an audible alarm that will activate at a pressure differential of -0.025 inches water gauge air pressure.

2.6 VACUUM EQUIPMENT:

A. All vacuum equipment used in the work area shall use HEPA filtration systems and be of the wet-dry type. The Contractor shall provide on-site independent DOP testing to document the effectiveness of the vacuum units. The test results shall be signed by the individual performing the testing. Repeat DOP testing every thirty (30) days after initial testing. Provide documentation to the District or District's Environmental Consultant with 24 hours of DOP testing.

2.7 LOCAL EXHAUST SYSTEM:

A. Where containments are required, sufficient High Efficiency Particulate Absolute (HEPA) ventilation units shall be used to maintain the negative pressure in each interior work area at 0.025 inches of water column and a minimum of four (4) air changes per hour.

B. The ventilation system shall remain in operation 24 hours a day until the work area has passed the specified clearance criteria. HEPA filtered air which is exhausted to maintain negative pressure shall be exhausted from the building at locations approved by the District or District's Environmental Consultant. Exhausted air shall not be near or adjacent to other building intake vents or louvers or at entrances to buildings. Other HEPA units shall operate within the enclosure to circulate air and control fiber counts.

C. The Contractor shall provide on-site independent DOP testing to document the effectiveness of the air filtration units. The test results shall be signed by the individual performing the testing. Repeat testing if the unit or the air filtration units have been repaired or replaced. Repeat DOP testing after thirty (30) days after initial testing. Provide documentation to the District or District’s Environmental Consultant with 24 hours of DOP testing.

2.8 RESERVE EQUIPMENT:
A. Contractor shall have the following equipment on site: two reserve, functioning and DOP-tested HEPA Filter Vacuum Cleaning Units, two reserve and DOP-tested HEPA area filtration units for every four containments. Contractor shall also have sufficient polyethylene (poly), respirators, protective equipment, tape, tools, decontamination enclosure systems for each work area.

B. Provide authorized visitors requiring access to the work area with suitable protective clothing, headgear, eye protection, as described in this specification, whenever the visitor must enter the work area. The Contractor shall have available and maintain at all times a minimum of three (3) suits and other suitable protective equipment for this purpose. All protective equipment shall be new and for the exclusive use of visitors.

C. The Contractor shall document that each visitor has been trained and fit-tested prior to entering an abatement area.

2.9 SCAFFOLDING:

A. Scaffolding, as required to do the specified work, shall meet all applicable safety regulations and DOSH standards. A non-skid surface shall be furnished on all scaffold surfaces subject to foot traffic. Contractor must comply with District’s and General Contractor’s Fall Protection Requirements. Scaffolding shall be adequately protected to prevent contamination of planking and framing.

2.10 TRANSPORTATION EQUIPMENT:

A. Transportation equipment, as required, shall be lockable and suitable for loading, temporary storage, transit and unloading of contaminated waste without exposure to persons or property. Any vehicle used to transport asbestos waste shall be properly registered with all applicable controlling agencies.

2.11 CONNECTIONS TO WATER SUPPLY:

A. Contractor shall assure that all connections to the site’s water system shall include backflow protection. Valves shall be temperature and pressure rated for operation of the temperatures and pressures encountered. After use, connections and fittings shall be removed without damage or alteration to existing water piping and equipment. Leaking or dripping valves shall be piped to the nearest drain or located over an existing sink or grade where water shall not damage existing finishes or equipment.

B. Employ heavy-duty abrasion-resistant hoses with a pressure rating greater than the maximum pressure of the water distribution system in each work area. Provide fittings as required to allow for connection to existing wall hydrants or spouts.

2.12 WATER HEATER:

A. The hot water supply must be adequate to allow for 15 minutes of continuous usage while maintaining a water temperature of 85°F. At minimum provide UL rated 40-gallon electric water heater to supply hot water for the decontamination unit shower. Provide relief valve compatible with water heater operation; pipe relief valve down to...
2.13 OTHER TOOLS AND EQUIPMENT:

A. The Contractor shall provide other suitable tools for the stripping, removal and disposal activities.

B. Prohibited Equipment: The following equipment is prohibited from use on this project unless accepted in writing by the District or District’s Environmental Consultant:

1. High or low pressure water blasting equipment for hosing of work areas.
2. Bead blasting or other uncontained abrasive blasting methods.
3. Vacuum-powered removal or collection equipment located outside the asbestos work area, such as a “Vacu-Loader”.
4. Gasoline, propane, diesel or other fuel powered equipment inside the building, unless previously approved in writing by the District or District’s Environmental Consultant.
5. Equipment that creates excessive noise or vibration that would affect the safety of the building or generate complaints from neighboring building occupants. No equipment shall exceed an A-weighted sound level of 85 dB as measured at 3 ft. from the radiating source without written permission of the District or District’s Environmental Consultant.
7. Flammable solvents with a flash point below 140 degrees F or materials containing ethylene glycol ether, methylene chloride, ethyl chloroform (1,1,1-trichloroethane), or other hazardous substances.
8. Non-fire retardant polyethylene sheeting.
9. Polyurethane spray foam for application in fire-rated assemblies, including but not limited to penetrations into stairwells, mechanical rooms, electrical closets, rated floor-to-floor assemblies, etc.

PART 3 - EXECUTION

3.1 INITIAL AREA ISOLATION

A. The District or District’s Environmental Consultant reserves the right to inspect and approve all containment setups before any abatement is undertaken.

B. If a containment area is breached (failure of polyethylene seals, visible dust emission, fiber counts above background level, etc.), the Contractor shall take immediate action to control the breach and clean the area to the satisfaction of the District or District’s Environmental Consultant.
C. If sample results indicate that conditions have exceeded the baseline or clearance criteria, as determined by the District or District's Environmental Consultant, all work shall cease. Work shall not recommence until the condition(s) causing the increase have been corrected.

D. Verify that all electrical power, gas, sewage, water, phone lines, fire life safety lines and sprinkler systems to the work area have been shut down and disconnected so that there is no possibility of reactivation and electrical shock.

E. Provide all connections for temporary utilities in the work area needed throughout abatement. Temporary electrical power shall be according to OSHA and the National Electrical Code for Wet Environments.

F. Contractor shall conform to the District’s lockout requirements, and secure the work area at all times. Area entrances and exits shall be secured by the Contractor throughout the abatement phase. Unauthorized visitors are strictly prohibited. Only the Contractor, District or District’s designative representatives are permitted at the job site. Contractor shall ensure that all doors, gates, windows, and potential entrances to the work areas and the designated waste location areas are secured and locked at the end of each workday.

G. Contractor shall store all materials, equipment, and supplies for the project inside the building or in areas designated by the District and in accordance with District’s requirements.

H. Provide signs around the perimeter of all works areas according to EPA and Cal-OSHA.

I. Contractor shall provide temporary sanitary services of adequate capacity to handle the maximum estimated crew size plus an additional twenty percent. Contractor shall maintain the temporary facilities throughout the duration of the project.

J. The Contractor shall be responsible for identifying all HVAC components (if applicable) that lead into or out of the work areas. All components shall be disconnected and sealed airtight for the duration of the abatement work. All openings shall be sealed with two (2) layers of 6 mil polyethylene secured with duct tape, as applicable.

K. Pre-clean the work area and fixed objects in the work area using HEPA filtered vacuums and/or wet cleaning methods. Protect fixed objects with protective barriers (as appropriate) and cover with 6 mil poly sealed with tape.

3.2 CONTAINMENT SET-UP PROCEDURES

A. Contractor shall construct a full negative pressure containment with 3 stage decontamination chamber for the removal of asbestos-containing interior materials including but not limited to thermal system insulation. Install critical barriers consisting of one layer of 6-mil poly on windows and doors. Cover floor and wall surfaces with 6-mil poly sealed with tape (as appropriate). The work area(s) shall be
placed under negative pressure as outlined in this specification throughout the abatement work period.

B. Contractor shall construct critical barrier negative pressure containment(s) for the removal of asbestos-containing drywall with joint compound, vinyl floor tile and associated mastics, door frame sealant and acoustic ceiling tile mastic. The work area(s) shall be placed under negative pressure as outlined in this specification throughout the abatement work period.

C. Any disturbance of ACMs that produces debris must be performed within a regulated area. If dust or debris is generated from the asbestos related activity, work must be performed in a mini-enclosure with negative pressure, a critical barrier containment, or with a local exhaust method.

D. To permit the inspector to view the majority of the work area, the Contractor shall provide easily accessible viewing ports from the clean space into each abatement area. Viewing ports must be a minimum of 2' x 2'; clear-see-through plastic with no scratches, tape or glue marks.

E. Pressure differential data recorders are required to monitor the pressure differential in the work area. The recorders must be calibrated prior to arriving on site and shall be recalibrated monthly throughout the project. Recalibration shall be performed by qualified technicians following the procedures outlined by the manufacturers. Provide documentation of calibration before beginning work and monthly there after.

F. A three-chambered decontamination unit shall be required during the abatement work conducted in full containment. The unit shall be located immediately outside the contained area. A pre-fabricated unit is acceptable. Chambers shall be arranged as follows: (1) a clean/change room shall be the first chamber entered from outside the work area, (2) a shower shall be located between the clean/change room and the dirty/change room, and (3) a dirty/change room shall be the last chamber before entering the work area.

1. The clean/change room of the worker decontamination unit shall be of sufficient size to accommodate the work crew and their belongings. It shall include a respirator storage area and be fully equipped with reserve equipment and materials such as clean suits, towels, soap, tape, and respirator filters.

2. Worker decontamination unit walls shall be a minimum of two layers of 6-mil fire retardant poly and floors shall be constructed with a minimum of three layers of fire retardant poly. All entry and exit doorways shall consist of at least two sheets of overlapping, fire resistant poly. At no time shall the flapped doors be taped open in order to expedite material or personnel load-out.

G. All water from the shower and bag wash area shall be filtered to the technically feasible limit but not more than five (5) microns before disposal. In addition, the Contractor shall comply with all current local, state and federal codes relating to waste water release. All water connections must be verified leak for leaks and turned-off at the conclusion of each shift. All shower water shall be drained from the shower pan at the end of each shift.
H. A two-chamber decontamination unit may be allowed, unless noted elsewhere, during the abatement work conducted in critical barrier containments. The unit shall be located immediately outside the contained area and shall contain a wash down area. A pre-fabricated unit is acceptable.

I. Contractor shall construct an equipment decontamination enclosure system consisting of a washroom, holding area and clean room separated by airlocks.

J. Approved fire extinguishers (Class ABC, multi-purpose, dry chemical type, rated: 4A; 60BC) shall be readily available to workers (maximum travel distance of 50 feet) inside and adjacent to work area(s). Personnel and emergency exits shall be clearly indicated on the inside of the containment area. The emergency exit plan shall be approved by the District’s Environmental Consultant prior to the set up of any work areas.

3.3 PERSONNEL PROTECTION

A. Informed Workers:
   1. All workers shall be informed of the hazards of ACMs and any other hazardous materials exposure. Workers shall also be instructed in the use and fitting of respirators, protective clothing, decontamination procedures, and all other aspects associated with the abatement work.

B. Personal Hygiene Practices:
   1. The Contractor shall enforce and follow good personal hygiene practices during the abatement of ACMs. These practices will include but not be limited to the following: no eating, drinking, smoking or applying cosmetics in the work area. The Contractor shall provide a clean space, separated from the work area, for these activities.

   2. Workers shall remove street clothes in the clean room and put on a respirator and clean protective clothing before entering the work area. Upon exiting the work area, remove gross contamination from clothing before leaving the work area; proceed to the change room and remove clothing except respirators; proceed to the shower; clean the outside of the respirator with soap and water while showering; remove respirator and thoroughly wash. Following showering, proceed directly to the clean room and dress in street clothes. Do not wear disposable clothing outside the decontamination enclosure system.

   3. If data gathered by the District or District’s Environmental Consultant in areas adjacent to the work areas shows exposure to airborne asbestos or other hazardous materials exceeding Cal-OSHA criteria, that area will become regulated and workers must wear protective clothing and approved respirators and must have a shower facility provided to them.

C. Respirators:
   1. Establish a respiratory protection program as outlined by ANSI and required by Cal-OSHA. Select respirators from those approved by the National Institute for Occupational Safety and Health (NIOSH). Respirators selected must be approved by the Competent Person. Submit program for review a minimum of five (5) working days prior to the commencement of abatement activities.
2. Provide workers with approved and personally-issued respirators with replaceable filters. Provide sufficient quantity of filters approved by NIOSH for use in asbestos environments so that workers can change filters as required by the manufacturer.

3. At a minimum, provide each employee with the following respiratory protection for each work phase:
   a. Pre-cleaning, containment set-up, and containment removal work: NIOSH-approved, half-face respirators with HEPA cartridges.
   b. Asbestos abatement of thermal systems insulation and: full-face powered-air purifying respirators (PAPRs) with HEPA cartridges and organic vapor cartridges (as necessary).
   c. Asbestos abatement of drywall with asbestos containing joint compound, vinyl floor tile and floor tile mastics, ceiling tile mastic, door sealant and Class III work: half-face respirators with HEPA cartridges and organic vapor cartridges (as necessary).

4. At all times, respiratory protection selected shall, at a minimum, meet the requirements of the Table 1 below.

<table>
<thead>
<tr>
<th>Airborne Concentration of Asbestos</th>
<th>Required Respirator</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not in excess of 1.0 f/cc (10 X PEL)</td>
<td>Half-mask air purifying respirator other than a disposable respirator, equipped with high efficiency filters</td>
</tr>
<tr>
<td>Not in excess of 5.0 f/cc (50 X PEL)</td>
<td>Full facepiece air purifying respirator equipped with high efficiency filters</td>
</tr>
<tr>
<td>Not in excess of 10 f/cc (1,000 X PEL)</td>
<td>Any powered air purifying respirator equipped with high efficiency filters or any supplied air respirator operated in continuous flow mode</td>
</tr>
<tr>
<td>Not in excess of 100 f/cc (10,000 X PEL)</td>
<td>Full facepiece supplied air respirator operated in pressure demand mode</td>
</tr>
<tr>
<td>Greater than 100 f/cc or unknown concentration</td>
<td>Full facepiece supplied air respirator operated in pressure demand mode, equipped with an auxiliary positive pressure self-contained breathing apparatus</td>
</tr>
</tbody>
</table>

5. Provide Type C continuous flow or pressure-demand, supplied-air respirators if the average airborne concentration of asbestos exceeds 100 times the permissible exposure limit; i.e., 8-hour time-weighted average (TWA) and ceiling limit. Use the respirators presented in Title 8 CCR 1529 that afford adequate protection at such upper concentrations of airborne asbestos. When Type C Respirators are required provide the following:
   a. The air supply system shall provide Grade D breathing air that conforms to OSHA and ANSI Commodity Specification for Air.
   b. Compressed Air System for Type C Respirators shall be high pressure, with a compressor capable of satisfying the respirator manufacturer's requirements.
recommendations. The compressed air system shall have compressor failure alarm, high temperature alarm, and a carbon monoxide alarm. It also shall have suitable in-line air purifying absorbent beds and filters to assure Grade D breathing air.

c. Use of Belt: Type C respirators shall be worn with belt to minimize possibility of dislodging face mask when hose is snagged in the work area.

D. Protective Clothing:
   1. Provide personnel exposed to asbestos fibers with fire retardant disposable protective whole body clothing, head coverings, gloves, and foot coverings. Provide appropriate gloves to protect workers hands from exposure to hazardous materials. Make sleeves secure at the wrists and make foot coverings secure at the ankles with tape. Ensure that all personnel entering and leaving the work area follow this procedure. Suits shall be of adequate size to accommodate the largest employee. Foot covers may be part of the coveralls. Non-disposable footwear shall be left in the work area until it is decontaminated or disposed of at the completion of the job.

2. Protective clothing will be worn inside the work area after the area passes pre-abatement inspection and shall remain in use until the area passes final clearance inspection.

E. Eye Protection: Provide safety glasses or goggles to personnel removing or handling asbestos-containing materials and waste.

F. Shower Requirements: Contractor shall assure that all certified employees and visitors use protective equipment and the shower or wash down facility following each entry into the containment area after the start of the asbestos abatement.

G. Emergency Precautions and Procedures:
   1. Establish emergency and fire exits from the work area. Display necessary signage at exits and paths to exits with representative visual aids. A diagram of all emergency and fire exits shall be posted in a conspicuous area proximate to the entrance to each work area.

2. The Contractor's supervisor/competent person shall be trained and certified in first aid and CPR, and be prepared to administer first aid to injured personnel after decontamination. Seriously injured personnel shall be treated immediately or evacuated without delay for decontamination. When an injury occurs, the Contractor shall implement fiber reduction techniques until the injured person has been removed from the work area.

3. In the event of a loss of negative pressure to the work area, work shall stop immediately and entrances to the work area sealed tight. The Contractor shall also institute fiber reduction controls until negative pressure is re-established to acceptable levels.

3.4 ASBESTOS REMOVAL (GROSS REMOVAL TECHNIQUE)
A. The Contractor shall abate all ACMs identified in this specification and/or that require disturbance to complete work specified in other specification sections.

B. The Contractor shall continuously apply wetting agent throughout the removal process. The wetting agent shall be applied with a low-pressure fine spray to minimize fiber releases. The materials shall be thoroughly saturated so that there is no detectable fiber release. All ACM shall be immediately packaged in leak-tight containers following removal.

C. Minimize removal activities of ACMs that generate airborne particulate. To the extent feasible, score or cut-out ACMs in sections, wetting along the scoring line continually, and misting the air with an airless sprayer to knock down suspended particulate. After completion of removal work, surfaces from which asbestos has been removed shall be wet cleaned to remove all visible material and residue.

D. Coordinate extent of removal with the other contract documents. Stabilize remaining ACM such as drywall to prevent disturbance during installation of replacement finishes. Apply bridging encapsulant at edges of drywall cuts.

E. Wet clean the exterior surfaces of waste containers in the equipment decontamination enclosure system prior to removal from the work area. Ensure that workers do enter from uncontaminated areas into contaminated areas in the equipment decontamination enclosure system. The Contractor shall transport asbestos-containing waste bags to the waste debris box at designated hours approved by the District or District’s Environmental Consultant. RACM shall be packaged in a minimum of two (2) 6-mil polyethylene bags. Bags shall be properly labeled for RACM disposal including site-specific generator labels. Non-friable waste shall be packaged in clear, leaktight containers and properly labeled while stored on-site. All drywall debris with ACM joint compound shall be stored in clear, leaktight containers and properly labeled while stored on-site. All other products with asbestos content (<1%) shall be packaged in leaktight containers while stored onsite. No specific labeling is required.

F. Asbestos-containing debris and contaminated water shall be cleaned from the work area at the end of each work shift. The Contractor shall clean the work area using wet methods and HEPA vacuum equipment.

3.5 ASBESTOS REMOVAL (GLOVEBAG TECHNIQUE)

A. Bags commercially manufactured specifically for glovebag enclosure removal of asbestos shall be used. All bags shall be a minimum of 6 mil clear poly, appropriately sized for removal area and task.

B. Maximum temperature of components allowable for glovebag work shall be as specified by glovebag manufacturer. Glovebag procedures shall not be permitted on live steam equipment or any equipment in excess of 150 degrees Frahenheit.

C. Pre-clean the work area and protect immediate work area by covering floor and nearby equipment with 6 mil poly. Temporarily wrap damage/deteriorated asbestos
insulation adjacent to the work with 6 mil poly to prevent further damage or disturbance during removal.

D. Provide two (2) workers for each glovebag operation.

E. Install glovebag around pipe, seal with staples and tape leaving enough sealed space above the pipe to allow access. Secure bag to pipe to support weight of stripped insulation and water (additional support may provided by a chair or ladder).

F. Insert HEPA vacuum nozzle and flexible tubing or wetting agent sprayer into hole location provided and seal airtight with duct tape.

G. Smoke test the glovebag and repair leaks as required.

H. During removal, periodically use HEPA vacuum to compensate for any leaks and wet the inside surfaces of the bag to control fiber release.

I. Cut the insulation sharply for neat sealing of exposed insulation. Leave 4 inches margin at the bag/seal point.

J. After removal and detail cleaning, wash down all surfaces to below the levels where the bag will be sealed, and saturate the waste.

K. Upon completion of the removal work but prior to commencing with encapsulation, the District or District's Environmental Consultant reserves the right to conduct visual inspections.

L. Seal all substrate surfaces from which asbestos material was removed with an approved encapsulant and lagging cloth as appropriate.

M. Gather tools in a glove hand and pull the glove inside out. Seal the arm with a minimum of six (6) inches of tape and cut through the middle of the tape. Bend and re-tape the ends. Save the “bagged” tools for the next glovebag operation or clean by placing in a pail of water.

N. Collapse the bag with the HEPA vacuum. With the vacuum still applied, seal the bag just above the glove level. Remove the nozzle and tubing. Place a 6 mil waste bag over the glovebag and carefully remove the glove bag from the component and immediately seal it in a labeled waste bag. Check the component for loose waste and vacuum as required.

O. Seal exposed insulation with fiberglass wettable cloth or other approved material while the insulation is damp, unless other removal is planned.

3.6 DISTURBANCE OF ACMS

A. Removal and installation of fasteners and anchorage in asbestos wall systems is expected. Coordinate asbestos related work activity with contract requirements.
B. All activity that creates debris associated with the ACM material is considered disturbance such as removal of screws or attached equipment or finishes; installation of fasteners or equipment through ACMs.

C. All disturbances must be performed with wet methods and HEPA-filtered equipment such as vacuums.

D. Local-exhaust ventilation equipment used for drilling must full enclose the bit or be performed in a negative-pressure enclosure or mini-containment.

3.7 REGULATED AREA MONITORING

E. Prior to each work shift and continuously throughout the project, each containment and decontamination enclosure system shall be inspected and repaired as needed.

F. Ambient asbestos fiber levels outside each work area shall not exceed 0.01 f/cc (PCM) or 70 s/mm² (TEM) or background whichever is greater. If the asbestos fiber concentrations outside work areas exceed those levels shown above, then abatement must stop and operations be reviewed and modified until the fiber count can be reduced to within the acceptable limits.

3.8 AIR MONITORING

A. The purpose of any air monitoring that may be conducted by the District or District’s Environmental Consultant will be to detect possible release of fibers or dusts (asbestos or lead) emanating from the work areas.

B. All PCM air sample analysis shall comply with NIOSH Method 7400. All TEM analysis shall be consistent with modified-AHERA protocols or NIOSH 7402.

C. The District or District’s Environmental Consultant reserves the right to perform and / or observe final clearance inspection and sampling.

D. The method of analysis for pre-abatement and clearance air samples shall be via Phase Contrast Microscopy (PCM). The method of analysis for in-progress asbestos air samples shall be PCM and TEM at the option of the District or District’s Environmental Consultant.

E. The Contractor shall be responsible for all personal air sampling. These samples shall be taken each shift and for each distinct crew operation, and shall be used to verify adequacy of fiber control and respiratory protection. Personal breathing zone air sampling shall be in accordance with the Cal-OSHA asbestos standard. A minimum of 25% of the workforce shall be monitored during each shift. All sample results shall be available on-site within 24-hours of sample collection. If two consecutive shifts of non-compliant or overloaded samples are noted, the contractor shall hire a CAC/CSST at their own expense to assist in compliance with the specifications.

3.9 CLEARANCE INSPECTIONS
A. The District or District's Environmental Consultant reserves the right to conduct visual inspections. Contractor shall notify the District or District's Environmental Consultant when the decontamination process in each containment area is complete. Evidence of debris will require additional clean up by the Contractor. Contractor shall be responsible for re-cleaning all areas found to be deficient.

B. If the District or District's Environmental Consultant determines that the work area is sufficiently clean, the Contractor may proceed. If the District or District's Environmental Consultant determines that certain areas require additional cleaning, the Contractor shall re-clean the work area and request a second inspection of the recleaned area. All costs incurred by the District or District's Environmental Consultant for inspections required after the second inspection will be charged to the Contractor.

C. Once the initial visual is passed, the Contractor shall remove all but the containment critical barriers.

D. Following the visual inspection, the Contractor shall provide a coating of non-diluted encapsulant in the work area. The Contractor shall allow the encapsulant to dry for the period specified by the manufacturer.

E. Asbestos Clearance Testing: Following encapsulation and drying time, the Contractor shall conduct air clearance sampling. Clearance air sampling shall not take place until all encapsulant is dry. The District or District's Environmental Consultant reserves the right to approve the initiation of clearance sampling.

3.10 ASBESTOS CLEARANCE CRITERIA:

A. The clearance level per containment shall be less than 0.01 fibers per cubic centimeter via phase contrast microscopy (PCM) or less than 70 structures per square millimeter via transmission electron microscopy (TEM). Aggressive air sampling shall be used for clearance purposes. Multiple samples shall be collected in large containment areas.

B. If air samples do not pass the required clearance criteria, the area shall be recleaned and new samples shall be collected by the District or District's Environmental Consultant. The Contractor shall be responsible for all costs associated with re-sampling and re-analyses. This amount will be deducted by the District from the Contractor's final payment.

C. The District or District's Environmental Consultant shall notify the Contractor in writing of acceptable asbestos fiber concentrations. The Contractor shall then remove all the remaining barriers in the work area.

3.11 ASBESTOS DISPOSAL

A. It is the responsibility of the Contractor to determine current waste handling, labeling, transportation and disposal regulations for the work site and for each waste disposal landfill. The Contractor must comply fully with these Specifications, local, state, and federal regulations and provide documentation of the same.
B. Ensure that polyethylene bags are sealed air-tight. All bags shall be wet cleaned prior to removing them from the equipment decontamination enclosure system.

C. Ensure all disposal containers are properly labeled according to 8 CCR 1529, 5194 (HAZCOM), 49 CFR 171-179 (USDOT), 40 CFR 61 Subpart M (NESHAP), and any local regulations and state regulations as required by this specification.

D. Filter all wastewater to the technically feasible limit, but not more than five (5) microns before disposal. Comply with all current local, state and federal codes relating to waste water release.

E. Asbestos-containing waste that is properly labeled and double-bagged may be temporarily stored in areas approved by the District. Areas must be made secure before storing the waste. Waste is not to remain in temporary storage area for longer than four (4) days before final load-out of materials.

F. All friable asbestos waste shall be double-wrapped prior to transport from the site.

G. All vehicles used to transport hazardous waste must be registered with the Department of Toxic Substances Control and Department of Transportation and maintain proper registration and with vehicle at all times.

H. Trucks must have an enclosed cargo area with a storage compartment that is fully lined with a minimum of one (1) layer of 6-mil polyethylene on the walls and two (2) layers on the floor. The driver of the vehicle must stop the vehicle in a safe location at least once during each two hours or one hundred miles of travel whichever is less and inspect the contents of the shipment. At the time of inspection if any form of binding is found to be loose the driver shall immediately take action to remedy the situation for safe transportation.

I. All vehicles and containers used to transport waste are subject to inspection and approval of District prior to departure from site.

J. Contractor shall not throw bags into the truck in a way that may cause the bags to burst open.

K. Contractor shall provide at minimum one (1) day advance notification to the District when signatures are required on manifest(s). The Contractor shall ensure that the Hazardous Waste Manifest is correctly filled out. The Contractor shall give the appropriate copies to the District and shall also instruct the District in writing that they must send the appropriate copy to the Department of Toxic Substances Control.

L. If a debris box is used, the Contractor shall make all necessary arrangement with the District including obtaining all appropriate permits.

M. Contractor is responsible for all coordination with the waste disposal site and with the waste hauling company.

N. Debris box for hazardous waste shall be fully lined with a double layer of polyethylene sheeting and must be locked at all times when unattended.
O. Debris box shall be constructed with minimum 20-gauge steel with no windows or openings other than the door. The door of the container shall have a secure cover on the locking device with access to the lock only at the key-hole. Once the debris box is filled and the manifest is signed, Contractor must transport the debris box off the job site.

P. Disposal shall be in a District approved landfill that meets EPA requirements.
## TABLE I

### ESTIMATED QUANTITIES

#### ASBESTOS-CONTAINING MATERIALS

<table>
<thead>
<tr>
<th>Material Description</th>
<th>Material Location</th>
<th>Waste Category</th>
<th>Asbestos Type</th>
<th>Estimated Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Drywall with Joint Compound</td>
<td>Throughout with Exception of Editing Suite L103</td>
<td>N/A</td>
<td>Drywall: ND Joint Compound: 2% CH Composite: &lt;0.25% CH - 400 Point Count Analysis</td>
<td>Not Quantified</td>
</tr>
<tr>
<td>Vinyl Floor Tile, 12”, Tan with White Flecks and Black Mastic</td>
<td>Audio Recording Studio L107</td>
<td>Cat. II</td>
<td>Tile: 2% CH Mastic: 2% CH</td>
<td>320 sf</td>
</tr>
<tr>
<td>Soundproof Door Insulation</td>
<td>Audio Recording Studio L107</td>
<td>RACM</td>
<td>ASSUMED</td>
<td>1 Each</td>
</tr>
<tr>
<td>Tan Interior Door Sealant</td>
<td>Central Corridor L102 at Eastern Storefront Frame</td>
<td>Cat. II</td>
<td>15% CH</td>
<td>50 If</td>
</tr>
<tr>
<td>Brown Mastic Associated with 12” Acoustic Ceiling Tile</td>
<td>Restrooms L127 and L128</td>
<td>N/A</td>
<td>&lt;0.25% CH - 400 Point Count Analysis</td>
<td>400 sf</td>
</tr>
<tr>
<td>Thermal System Insulation, Hard Packed Elbows and Fittings</td>
<td>Northwestern Study Area in HVAC Soffit, Restrooms L127 and L128, Northeast Computer Lab and Adjacent Offices</td>
<td>RACM</td>
<td>20% CH</td>
<td>Not Quantified</td>
</tr>
</tbody>
</table>

NA = Not Applicable, CH = Chrysotile, RACM = Regulated asbestos containing material (friable), Cat. I = Non-friable (note ACM must be reclassified as a RACM if rendered friable during removal), Cat. II = Category II Non-friable (note ACM must be reclassified as a RACM if rendered friable during removal), O.D. = Outside Diameter, sf = square feet, If = linear feet

END OF SECTION 02080
ATTACHMENT A
ASBESTOS ABATEMENT WORK PLAN OUTLINE

In accordance with the contract documents, the Contractor is required to prepare a written, site-specific Asbestos Abatement Work Plan, and submit to the District for approval prior to start of work. This plan is required for the contractor to meet Cal-OSHA requirements as well as the contract documents, and shall describe work procedures and control methods that will protect the District’s facilities and the environment.

I. Location of Work:
The work to be completed under this work plan will be completed at:
(Building name)
(Location within building)
Previous asbestos inspections or surveys have found that ACMs are present at the following locations:
(List all materials and locations to assure the District and the Contractor are aware of all hazardous materials locations)

II. Description of Work:
Describe the anticipated work scope

III. Schedule:

<table>
<thead>
<tr>
<th>Phase/Task</th>
<th>Anticipated Date(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mobilization</td>
<td></td>
</tr>
<tr>
<td>Set-up of work area(s), containments</td>
<td></td>
</tr>
<tr>
<td>Abatement</td>
<td></td>
</tr>
<tr>
<td>Final Cleaning</td>
<td></td>
</tr>
<tr>
<td>Visual Inspection</td>
<td></td>
</tr>
<tr>
<td>Final Clearance (visual and air sampling)</td>
<td></td>
</tr>
<tr>
<td>Teardown</td>
<td></td>
</tr>
<tr>
<td>Demobilization</td>
<td></td>
</tr>
</tbody>
</table>

IV. Equipment and Materials
List all equipment and materials to be used, such as the following:

- HEPA Vacuums
- Scapers
- Power saws
- Pry bars
- Cutting shears
- Other hand tools
- Encapsulants/sealants
- Gloves
- Respiratory protection
- Fall Protection
- Gas/Diesel Powered Equipment

- Negative air filtration units
- Manometers
- Shower facilities
- Airless sprayers/compressors
- Cleaning detergents
- Solvents (must be approved by District)
- Roller/brushes
- Disposable coveralls
- Eye & foot protection
- Scaffolds/Ladders

October 13, 2014
V. Crew
List all workers and supervisors with emergency contact names and phone numbers.

Clearly identify the supervisor and competent person who have authority for all safety and health.

VI. Control Measures and Work Practices

Describe in a narrative format specific work procedures, exposure contamination controls, and engineering controls. This description should include, but not be limited to, the following:

- OSHA Class I, II, III and IV work
- Negative pressure enclosure
- Respiratory protection
- Mini-containments
- List other procedures

VII. Respiratory Protection and Protective Clothing/Personal Protective Equipment

List all respiratory protection including types and manufacturers which are anticipated for this project. Identify the phases of the project for which respirators will be required or likely to be required. List all personal protective equipment anticipated to be used on the project.

VIII. Decontamination/Hygiene Facilities

Identify the types and locations of decontamination or hygiene facilities to be used on this project. Specify use of disposable towels, soap, hot and cold water, and other supplies. Specify the required use of the facilities, including use of the facilities prior to eating, drinking, smoking and before leaving the project site. Describe handling or treatment of asbestos-contaminated solid waste and wastewater.

IX. Air Monitoring Data

Identify general worker air monitoring protocols to be followed on this project, including worker category classifications, frequency of monitoring, anticipated laboratory to be used for analysis, pump calibration techniques, etc. Identify the competent person responsible for conducting personal air monitoring and proposed consultant if air sampling requirements are not meet from two consecutive shifts.

X. Containment Diagram

Include a diagram (hand written is acceptable) of the containment(s) showing the containment perimeter in relation to the surrounding areas, locations of negative air machines and exhaust locations, direction of airflow, and decontamination areas.
XI. Waste

Describe how all waste on this project will be packaged, labeled, stored, transported, manifested and disposed.

XII. Preparation of Asbestos Abatement Work Plan

Date Prepared and Prepared By (signature, name and title)
SECTION 02081

LEAD-CONTAINING PAINT REMOVAL AND LEAD-RELATED CONSTRUCTION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. The General Conditions and Division I General Requirements shall be included in and made part of this Section.

B. Examine all other Sections of the Specifications for requirements therein affecting the work of this Section of the Specifications.

1.2 COMPLIANCE AND INTENT

A. The Contractor is responsible for repair, to the satisfaction of the District, of surfaces not scheduled for demolition that become damaged as a result of the work. All unscheduled repair work shall be at no increase to contract price.

B. Contractor shall coordinate lead related work with all site requirements related to protection of existing finishes.

C. This project deals with lead-related construction work. It is necessary for the Contractor to coordinate all work with the project drawings and specifications. During all work, provide monitoring and worker protective equipment in accordance with the California Occupational Safety and Health Administration (Cal-OSHA) and as required by this specification. Where there is conflict, the most stringent requirement shall apply.

D. The work covered by this specification includes the handling, removal, and proper disposal of lead. All hazardous materials shall be removed and disposed of according to all federal, state and local regulations.

E. Workers conducting lead-related construction work shall have received lead training in accordance with Cal-OSHA requirements and Department of Health Services (DPH) as appropriate.

F. Furnish all labor, materials, facilities, equipment, services, employee training, medical monitoring, permits and agreements necessary to perform the work required for lead-related construction work in accordance with this specification.

G. Comply with all federal, state, and local regulations pertaining to lead-related construction work, storage, transportation and disposal; employee health and safety; Contractor certifications; and all licenses, permits, and training.

H. Work on the premises shall be confined to areas designated in the Contract Documents. Materials and equipment shall be stored within areas designated by...
the District. Should additional space be required, the Contractor shall request permission for additional space and shall adequately safeguard occupants from associated health and safety hazards.

I. Perform all work specified herein with competent persons trained, knowledgeable and qualified in state-of-the-art techniques relating to handling, and the subsequent cleaning of contaminated areas.

J. During lead-related construction activities, the Contractor shall protect against contamination of soil, water, plant life, adjacent building areas, and shall ensure that there is no airborne release of dusts. The District may collect air samples in the building and in adjacent areas to evaluate the Contractor's performance. Evidence of settled dust or airborne levels of contaminants above background will require the implementation of additional controls at no increase to contract price.

K. It is the Contractor's responsibility to determine the impacts required to lead containing products. The Contractor shall conduct a site visit to determine locations of materials that will require removal or will be disturbed during the renovation work. This section provides appropriate protocols for handling and disposal of lead. All lead-related construction work shall be performed according to the procedures outlined in this specification.

L. Lead containing materials removed during the work activities shall be disposed of in an approved manner complying with all applicable federal, state, and local regulations. Appropriate waste manifests or letters of salvage shall be furnished to the District thereby limiting the District's liability for improperly salvaged items. Materials are conveyed to the Contractor "as is," without any warranty, expressed or implied, including but not limited to, any warranty to marketability or fitness for a particular purpose, or any purpose.

1.3 SUMMARY OF LEAD-RELATED WORK

A. General. This contract involves removal of surface finishes and painted components that contain detectable quantities of lead as outlined in Project D-1037. Existing building components with paint coatings are considered lead-containing paint (LCP) unless tested and proven otherwise. See RGA Environmental's "Limited Hazardous Materials Survey Report" for a summary of painted surfaces and materials tested. The intent of this work and the required procedures is to minimize lead emissions, contamination, and prevent exposure to building occupants, visitors and employees resulting from demolition of finishes, hot work and other painted finish disturbances.

B. Lead-Related Construction Work: The Contractor's lead-related construction work consists of any work activity or task which results in the coincidental removal or disturbance of paints, surface finishes, or other lead containing materials. The Contractor shall determine and implement applicable OSHA worker protection requirements (8 CCR1532.1) and ensure proper clean-up and disposal of any
resulting paint chips and lead wastes resulting (including water) from all lead-related construction activities including, but not limited to, the following:

1. Removal of damaged and intact paint from concrete, plaster, drywall, wood, metal and structural and non-structural steel surfaces prior to required contract work.
2. Removal of intact paint from structural or non-structural steel prior to hot work.
3. Hot work that is likely to be vaporized from accessible and inaccessible painted surfaces.
4. Demolition of building finishes with lead containing paint and ceramics with lead containing glazing.
5. Work that will impact existing painted surfaces including but not limited to drilling, cutting, removal of existing attachments (fixtures, casework, millwork, electrical, plumbing, telecom, life safety, etc.).

1.4 REGULATIONS

A. The Contractor shall comply with the requirements of the current issue of the following regulations and guidelines governing lead removal, lead-related construction and disposal and other applicable Federal, State, and Local Government regulations. The regulations listed herein are incorporated by reference.

   a. 29 CFR 1926, Construction Standards
   b. 29 CFR 1926.62, Lead in Construction
   c. 29 CFR 1910.94, Ventilation
   d. 29 CFR 1910.134, Respiratory Protection
   e. 29 CFR 1910.1025, Lead
   f. 29 CFR 1910.1200, Hazard Communication
   g. 29 CFR 1926.55, Gases, Vapors, Fumes, Dusts, and Mists
   h. 29 CFR 1926.57, Ventilation
   i. 40 CFR Part 50.12, Ambient Air Quality Standard for Lead
   j. 40 CFR Parts 260, 261, 262, 263, 264, 265 and 268, Hazardous Waste Management
   k. 49 CFR Parts 172, 173, 178, 179, Hazardous Material Transportation

2. California Code of Regulations:
   a. 8 CCR Division 1, Chapter 4, Subchapter 4, Construction Safety Orders
   b. 8 CCR 1532.1, Lead in Construction
   c. 8 CCR 1537, Welding, Cutting, and Heating of Coated Metals
   d. 8 CCR 5144, Respiratory Protection
   e. 17 CCR, Division 1, Chapter 8
1.5 DEFINITIONS

A. Definitions specific to the work of this section:

1. Abatement: Procedures for control of lead exposures to the Contractor's workers, Employees, Public and the environment by removal, enclosure, and/or encapsulation of lead-containing paints (LCPs), Lead-Containing Construction Materials (LCCMs), and LCP coated components and proper clean up and disposal of resulting lead contaminated dust, chips, debris, and abatement wastes. Also include procedures for control of lead exposures resulting from welding or other hot work on surfaces with LCPs or residues.

2. Action Level (AL): An exposure of 30 µg/m³ of airborne lead as an 8-hour TWA. When the AL is met or exceeded, certain protective health and safety measures are triggered per 8 CCR1532.1 Lead.

3. Action Levels for Lead Content: The levels of lead concentration established for each type of analysis performed, which if the lead concentration equals or exceeds the action levels specified herein, renders the material hazardous.
   a. Action Level for Toxicity Characteristic Leaching Procedure (TCLP) by EPA 200.7: Action level for TCLP is 5.0 milligrams per liter.
   b. Action Level for Total Threshold Limit Concentration (TTLC) by EPA 6010: Action level for TTLC is 350 milligrams per kilogram.
   c. Action Level for Soluble Threshold Limit Concentration (STLC) by EPA 200.7: Action level for STLC is 5.0 milligrams per liter.

4. Airlock: A system for permitting ingress or egress with minimum air movement between a contaminated area and an uncontaminated area, typically consisting of two curtained doorways at least three feet apart.

5. Air Monitoring: The process of measuring the lead content of a specified volume of air in a stated period of time.

6. Area Monitoring: Sampling of lead concentrations within the lead control area and inside the physical boundaries which is representative of the airborne lead concentrations that may reach the breathing zone of personnel potentially exposed to lead.

7. Authorized Visitor: District representatives, District's Environmental Consultant, or a representative of any regulatory or other agency having jurisdiction over the project.

8. Change Room and Shower Facilities: Rooms within the designated boundary around the lead control area equipped with separate storage facilities for clean protective work clothing and equipment and for street clothes which prevent cross-contamination.
9. Clean Room: An uncontaminated area or room which is part of the worker decontamination enclosure system, with provisions for storage of workers' street clothes and protective equipment.

10. Competent Person: An onsite supervisor who has been formally trained in lead abatement and who is capable of identifying lead hazards, substandard and improper lead abatement controls, procedures, practices, and conditions and who has sufficient experience and authority to take prompt corrective measures to eliminate them.

11. Decontamination Room: Room for removal of contaminated personal protective equipment (PPE).

12. District: Contra Costa Community College District.

13. District's Environmental Consultant: Environmental Consulting firm and its representatives retained to provide compliance oversight and monitoring for the Contractor's lead-related construction activities and work.

14. DOP Test: Test of a High Efficiency Particulate Absolute filter (HEPA) system to verify that a minimum of 99.97% of all particles 0.3 microns in diameter are captured by the filter system test must be conducted with diocetylphthalate (DOP) test aerosol in accordance with ANSI Z9.2-1979 and Federal Standard 209-B for Class 100 air and as indicated in UL 586.

15. Eight-Hour Time Weighted Average (TWA): Airborne concentrations of lead averaged over an 8-hour workday to which an employee is exposed.

16. Fixed Object: A unit of equipment or furniture in the Work Area which cannot be removed from the Work Area.

17. Hazardous Waste: Lead paint debris and materials shall be classified as hazardous due to the characteristic of toxicity, as determined by testing in accordance with the California Code of Regulations, Title 22, Division 4, Chapter 30, Article 11. Any substance(s) listed in Article 11 Section 66699 at concentrations greater than their listed Soluble Threshold Limit Concentration (STLC) or Total Threshold Limit Concentration (TTLC) may need to be further characterized by the Toxicity Characteristic Leaching Procedure (TCLP) in accordance with 40 CFR 261 and other tests prior to disposal as a hazardous waste.

18. HEPA Exhaust System: A portable local exhaust system equipped with HEPA filtration and capable of maintaining a constant, low velocity air flow into contained contaminated areas from adjacent uncontaminated areas when used as Differential Pressure Equipment. Also capable of use as local exhaust to control lead fumes generated from hot work.

19. HEPA Filter: A High Efficiency Particulate Absolute (HEPA) filter capable of trapping and retaining 99.97% of lead particles greater than 0.3 microns in diameter.

20. HEPA Vacuum Equipment: High efficiency particulate air (absolute) filtered vacuuming equipment with a filter system capable of collecting and retaining lead dust. Filters shall be certified to be of 99.97% efficiency for retaining particles of 0.3 microns diameter or larger.
21. Intact LCP Components: LCP components removed substantially intact with LCP firmly adhering to the surface. Examples are door, door trim, baseboards, etc., with intact paint. Also referred to as architectural debris with intact paint.

22. Lead-Based Paint (LBP): Lead-Containing Paint (LCP) that is at least 0.5% lead by weight when analyzed by AAS or ICP-AES (equivalent to 5000 ppm of lead) or 1.0 milligrams of lead per square centimeter (mg/cm²) as determined by XRF testing or as identified by specification. LBP is also a Lead-Containing Construction Material (LCCM).

23. Lead-Containing Construction Materials (LCCM): Any construction material: (I) containing lead at analytically detectable levels greater or equal to 50 ppm; or (2) containing paints or other finishes with lead at levels greater than 600 ppm; or (3) consisting of paints containing lead at any level capable of posing an occupational or environmental hazard during any phase or process of the current construction or demolition project. Occupational hazards shall be considered evident when airborne exposure levels exceed or are likely to exceed the permissible exposure level (PEL) set by Cal/OSHA. Environmental hazards shall be considered evident when lead surface contamination levels exceed 40 ug/ft² on interior floor surfaces and 400 ug/ft² on exterior surfaces and/or when any of the State or Federal hazardous waste criteria for lead is met or exceeded.

24. Lead-Containing Paint (LCP): Any paint or finish coating with a lead content of 0.06% lead or greater. Cal/OSHA regulation requires assessment of employee exposure for all tasks where lead is present at this level or higher. Note: At lead levels below 0.06% exposure assessments are still required for "Trigger Tasks".

25. Lead Control Area: An enclosed area or structure with full containment to prevent the spread of lead dust, paint chips, or debris of LCP removal operations. The lead control area is isolated by physical boundaries to prevent unauthorized entry of personnel.

26. Lead-Related Waste: Paint chips, vacuum dust, and debris, used cleaning articles, waste water, plastic sheets and other disposable items which were used during the LCP abatement process and as a result are considered lead contaminated waste or assumed hazardous waste pending further characterization.

27. Lead-Impacted Construction: Any construction activity, excluding abatement, which disturbs lead or lead-containing paints or coatings and which may, under specific circumstances, result in worker and or environmental exposure.

28. Lead-Related Construction: Any construction activity or process including but not limited to lead abatement, LCCM (i.e. paint) removal lead-impacted construction, or welding on lead-containing surfaces which may expose workers, building occupants, or the environment to a release of airborne lead or surface lead contamination.

29. Mini-containment or Mini-enclosure: A small temporary enclosure constructed of impervious material (such as plastic sheeting) with at least one airlock to
permit ingress and egress. The entire Work Area is contained or enclosed by this system to prevent the escape of contamination outside the Work Area.

30. Permissible Exposure Limit (PEL): An exposure to airborne lead of 50 micrograms of lead per cubic meter of air (50 µg/m³), averaged over an 8-hour workday which is referred to as a time weighted average (TWA). This is the highest level of Lead in air an employee can be permitted to be exposed to in an eight hour work day. For longer work days, the PEL is lowered and can be determined by dividing 400 by the number of hours worked per day. When the PEL is exceeded, the contractor must take action to lower the exposure level and protect the worker per 8 CCR1532.1 Lead.

31. Personal Monitoring: Sampling of lead concentrations within the breathing zone of an employee to determine the 8-hour TWA concentration in accordance with Title 8 CCR 1532.1. Samples shall be representative of the employee’s work tasks. Breathing zone shall be considered an area within a hemisphere, forward of the shoulder, with a radius of 6 to 9 inches and the center at the nose or mouth of an employee.

32. Physical Boundary: Area physically roped or partitioned off around an enclosed lead control area to limit unauthorized entry of personnel. As used in this section, “inside boundary” shall mean the same as “outside lead control area”.

33. Qualified Person: The individual identified by the Contractor to be responsible for conducting air sampling, calibration of air sampling pumps, evaluating sampling results, and conducting respirator fit tests.

34. Recognized Training/Educational Institution: University, college, Steel Structures Painting Council, or a professional training organization funded by or meeting U.S. Environmental Protection Agency (EPA) and/or California Department of Health Services (DHS) training accreditation requirements for contractors performing lead-based paint or construction abatement work.

35. Removal: All herein specified procedures necessary to remove and clean-up all LCCM or LCP from the designated areas and to dispose of these materials at an acceptable site in accordance with Federal, State and Local Regulations. Removal of LCP may be by whole painted component or by removing LCP from painted components either onsite or offsite.

36. Trigger Task: Task specifically identified by the CAL/OSHA Lead standard as a potential exposure hazard requiring certain protective measures to be implemented prior to obtaining the results of an initial exposure assessment. Trigger tasks include, but are not limited to, any of the following tasks when materials or paints which contain lead are present and will be disturbed:
   a. Manual demolition
   b. Manual scraping or sanding
   c. Heat gun application
   d. Use of power cleaning tools
   e. Rivet busting
f. Abrasive blasting

g. Welding, cutting or torch burning

37. Visually Clean: Free of visible dust, paint chips, dirt, debris, or films removable by vacuuming or wet cleaning methods specified. For outside soil or ground cover areas, visually clean shall mean free of construction or paint debris, chips or dust distinguishable from the initial soil or ground conditions.

38. Washroom: A room or area established outside the Work Area for hand washing at minimum. Where the lead PEL is exceeded, the wash room shall contain a shower facility with hot and cold water and a water filtering system.

39. Wet Cleaning: The process of eliminating lead contamination from building surfaces and objects by using cloths, mops, or other cleaning tools which have been washed with specified detergent solutions and rinsed with clean water.

40. Work Area: A designated and controlled area in which lead abatement actions are undertaken or which may become contaminated as a result of such actions. A Work Area is a controlled area delineated at minimum by barrier tape (or similar means) and signage to restrict access to Authorized Personnel. In some instances, a higher degree of physical isolation and control may be required and specified.

1.6 SUBMITTALS AND NOTICES

A. Requirements are as set forth in the General Conditions and Division 1, for items required to be submitted under this section.

B. Product data shall include manufacturer's product data, specifications, samples and application instructions and other pertinent information necessary.

C. Project procedure submittal for LCP coating removal. Submit the following:

1. Detailed work plan for all lead-related construction including: (a) removal method to be employed; (b) lead contamination controls for each different type of method or work operation involving lead-containing paint removal; (c) equipment and materials proposed to be used on LCP coatings; (d) the procedures and practices for protection of building occupants and the environment; and (e) detailed description of Work Area preparation and containment controls for lead-related construction work, cleaning and decontamination procedures, signage, and security measures. Detailed work plan shall follow the outline in Attachment A – Lead-Related Work Plan Outline.

2. Detailed plan for disposal of lead-contaminated wastes generated by this work in accordance with all applicable Federal, State and Local regulations. Each separate waste stream should be addressed including name of waste stream, methods of handling, packaging, labeling, storage, transportation, and disposal or recycling. For materials to be disposed, indicate the classification of the waste (RCRA hazardous, California hazardous, or non-hazardous).
3. Method of transport of hazardous waste including name, address, EPA I.D. number, and telephone number of the transporter and the name, class, address, EPA I.D. number, and telephone number of hazardous waste site(s) to be utilized for disposal of each waste stream.

4. Proposed location, size and type of secured waste storage containers to be used. Include system that will be used for segregating different waste streams.

5. Detailed schedule for completion of lead-related construction work to be updated on a weekly basis indicating tasks being performed until job completion.

6. Detailed plan for protection of workers conducting lead-related construction work which includes all information required for the CAL/OSHA lead compliance plan per Title 8 CCR 1532.1. At minimum, for each removal method, the plan shall detail protective clothing and equipment and procedures and worker decontamination facilities and procedures.

D. Project Procedures Submittal for Hot Work on LCP Surfaces

1. Detailed work plan for containment and removal of lead-containing paint, capture of fumes from all hot work including welding and torch cutting on structural steel. Include equipment and materials proposed to remove paint, capture, HEPA filter, and exhaust all lead-containing fumes for protection of workers, building occupants, and the environment.

2. Cal/OSHA lead compliance plan for welders per 8 CCR 1532.1 Lead.

3. Containment requirements as specified in Title 17 CCR Division 1, Chapter 8.

E. Project procedure submittal for lead-related construction demolition (demolition of finishes with lead containing paint or lead containing materials). Submit the following:

1. Detailed work plan for all lead-related construction including: (a) removal method to be employed; (b) lead contamination controls for each different type of method or work operation involving lead-containing materials; (c) equipment and materials proposed to be used on lead containing materials; (d) the procedures and practices for protection of building occupants and the environment; and (e) detailed description of Work Area preparation and containment controls for lead-related construction work, cleaning and decontamination procedures, signage, and security measures.

2. Detailed plan for disposal of lead-contaminated wastes generated by this work in accordance with all applicable Federal, State and Local regulations. Each separate waste stream should be addressed including name of waste stream, methods of handling, packaging, labeling, storage, transportation, and disposal or recycling. For materials to be disposed, indicate the classification of the waste (RCRA hazardous, California hazardous, or non-hazardous).

3. Method of transport of hazardous waste including name, address, EPA I.D. number, and telephone number of the transporter and the name, class, address, EPA I.D. number, and telephone number of hazardous waste site(s) to be utilized for disposal of each waste stream.
4. Proposed location, size and type of secured waste storage containers to be used. Include system that will be used for segregating different waste streams.

5. Detailed schedule for completion of lead-related construction work to be updated on a weekly basis indicating tasks being performed until job completion.

6. Detailed plan for protection of workers conducting lead-related construction work which includes all information required for the CAL/OSHA lead compliance plan per Title 8 CCR 1532.1. At minimum, for each removal method, the plan shall detail protective clothing and equipment and procedures and worker decontamination facilities and procedures.

F. Lead Abatement Personnel Qualification and Protection Submittal. Submit the following:

1. Employee training certifications demonstrating that all employees engaged in LCP removal or hot work activities have attended formal lead hazard and lead-related construction training by a Recognized Training/Educational Institution. All training for other lead-related construction activities shall be in accordance with the worker training provisions in the CAL/OSHA and California Department of Health Services (DHS) lead regulations and this specification:
   a. The minimum acceptable training course duration is 40 hours for the Contractor's lead abatement Supervisor/Competent Person and all workers conducting removal of LCP.
   b. The minimum training course for workers conducting other lead-related construction work shall meet all requirements of 8 CCR1532.1, Lead. Documentation shall consist of training institution certificates or certification by trainer for each employee with dates trained and a copy of the training syllabus.
   c. Updated information shall be provided in advance of on-site lead worker personnel changes.

2. Documentation that all employees engaged in lead-related construction activities or the "Trigger Tasks" have had the appropriate medical examinations specified in Title 8 CCR1532.1 within the prescribed time periods immediately preceding project start-up. It shall be the Contractor's responsibility to secure any and all medical and exposure information releases required for employee records in accordance with regulation. Evidence of medical requirement compliance shall include, but are not necessarily limited to:
   a. Documentation of medical surveillance examination by a licensed medical physician prior to commencement of onsite LCP-related work including baseline blood lead levels performed within the last six (6) months. The baseline blood lead shall have been within the past 30 days.
b. Statement by the examining physician that employee is fit to wear a respirator in accordance with 8 CCR 1532.1 within the last twelve (12) months.

3. Documentation that all employees required to wear respirators has passed respirator fit tests within the past twelve (12) and has been assigned individual respirators which fit them.

4. Methods, procedures and plan for monitoring employee airborne lead exposure during lead abatement activities. Methods and procedures, at a minimum, shall comply with requirements outlined in Title 8 CCR 1532.1 Lead.

G. Lead Abatement Product and Equipment Submittal. Submit the following:

1. Calibration data showing where secondary standards (rotometer) for personal air monitoring equipment have been calibrated from a primary standard within the last 30 days from the date of submittal.

2. Product data sheets and material safety data sheets (MSDS) for each product proposed for use on this project such as wetting agents, chemical paint removers, detergents, adhesives, and abrasives.

3. Manufacturers certification that HEPA vacuums, HEPA ventilation equipment, and other equipment required to contain airborne dust and fume conform to ANSI Z 9.2

4. Product data sheets for all power tools and equipment used to remove LCP including, but not limited to, heat guns, and vacuum-assisted power tools.

5. Certification that HEPA filter exhaust systems have been DOP tested in-place after installation and been found to provide 99.97% efficient air cleaning for particulates greater or equal to 0.3 microns in diameter. All DOP filter certification testing shall be conducted on site by an independent testing firm.

H. Lead Abatement Daily Submittal - submit the following documentation daily to the District or the District's Environmental Consultant within 24 hours of initiation:

1. An accurate daily entry log or roster of all authorized personnel entering and exiting the Work Area.

2. Copies of initial and periodic personnel air monitoring laboratory results and calculated eight hour time weighted average results for each employee monitored shall be provided within 48 hours of sample collection.

3. Provide the District and/or District's Environmental Consultant at least 24 hours notice prior to scheduling start-up of each different type of lead-related construction operation including chemical paint removal, power tool removal, and welding on lead-containing surfaces.

4. Updated training and medical certifications (as required herein) shall be provided prior to assignment of new personnel and for existing personnel prior to the stated allowable time limits or expiration dates. The allowable intervals since the last medical examination (12 months), blood lead test (6 months), or fit test (12 months), shall not be exceeded.
I. Lead Abatement Close-out Submittal - Submit the following:

1. Provide post-abatement blood-lead test documentation for each worker required to undergo blood lead monitoring prior to or during lead-related work, disposal manifests and records as required herein for project closeout. Each worker transferred or terminated shall have a final blood-lead test within five days of termination or transfer. Each worker shall have a final blood-lead test within five days of project completion.

1.7 DISTRICT'S ENVIRONMENTAL CONSULTANT

A. The District's Environmental Consultant is authorized to provide lead removal and lead-related construction compliance observation and monitoring, testing, and technical oversight services including, but not limited to:

1. Airborne lead monitoring to evaluate the effectiveness of the Contractor's lead dust and fume control work practices, procedures, and dust containment methods. The results from this monitoring shall be used to evaluate the Contractor's personal monitoring data and to evaluate the Contractor's compliance with occupational and environmental regulations.

2. Visual inspections to verify if the Contractor has met the requirements for various phases of the lead related construction process including Work Area preparation, removal, and clean up and decontamination.

3. Wipe sampling for lead contamination to determine if the Contractor has successfully completed clean up and met the lead-related construction project decontamination completion standards.

B. The cost of the District's Environmental Consultant will normally be the responsibility of the District except under the following circumstances. The Contractor shall be responsible for the cost of the District's Environmental Consultant for additional services provided when: (1) the Contractor's Work Area fails final clearance inspection and/or testing; or (2) additional workdays or workday hours (overtime) are required by the Contractor; or (3) the Contractor exceeds the allowable number of workdays for work completion; or (4) additional services associated with response to an uncontrolled, unauthorized hazardous materials release to the environment by the Contractor's work or operations.

1.8 CONTRACTOR'S COMPLIANCE AND QUALITY ASSURANCE

A. The Contractor shall have a Competent Person onsite at all times while lead-related construction work is in progress. The Contractor's Competent Person shall communicate and coordinate with the District's Environmental Consultant with regard to work schedule, inspections, daily submittals, and compliance issues.

B. The Contractor's Competent Person shall:

1. Ensure the Contractor's compliance with the plans and specifications.

2. Conduct worker exposure monitoring using a Qualified Person and provide results to the District's Environmental Consultant.
3. Conduct daily air monitoring during hot work operations involving LCP or LCCM coating on steel structures to verify that the nearest building occupant locations are not exposed to airborne lead levels in excess of 5 µg/m³ lead per 8-hour work shift or 1 µg/m³ lead per 24 hour period.

4. Pre-inspect Work Areas for compliance and completion prior to notifying the District's Environmental Consultant of the Work Area's readiness for inspection.

5. Accompany the District's Environmental Consultant during Work Area pre-start and clearance inspections upon request.

6. Ensure all of the Contractor's lead-related construction workers have current valid medical, blood-lead test, training, and respirator fit testing records where required and provide copies of all new or updated records to the District's Environmental Consultant for approval before assigning the workers to any work within Work Areas.

7. Take timely and appropriate corrective actions to ensure compliance with the lead removal and lead-related construction specifications and to eliminate unsafe, unhealthy, and environmentally unsound work practices regardless of whether or not they are brought to the Contractor's attention by the District's Environmental Consultant.

8. Adhere by the Consultant's initial characterization of waste for proper packaging, labeling, storage, transportation, and disposal of waste. Ensure any additional waste testing required is completed and ensure proper storage, shipping and timely disposal of all hazardous waste.

PART 2 - PRODUCTS

2.1 PROTECTIVE COVERING

A. Polyethylene sheets, fire resistant, of 6 mil thickness in size (dimensions) to minimize the frequency of joints.

2.2 CLEANERS

A. For clean up and decontamination, a tri-sodium phosphate (TSP) wash solution containing at least five percent (5%) TSP shall be used. Alternative cleaning and decontamination agents shall be subject to approval by the District and the District's Environmental Consultant.

2.3 TAPE

A. Duct tape (or approved equivalent) two (2) inches or wider, capable of sealing joints of adjacent sheets of polyethylene sheeting and for attachment of polyethylene sheeting to finished or unfinished surfaces of dissimilar materials and capable of adhering under both dry and wet conditions.

2.4 CHEMICAL PAINT REMOVAL SYSTEMS
A. Chemical paint removal systems shall be selected on the basis of the type of paint to be removed, the substrate type, and chemical compatibility with new coating systems to be applied. Chemical removal systems shall effectively remove paint without adversely affecting the treated surface’s suitability for repainting or adversely affecting the bonding, appearance or durability of the coatings to be applied.

B. Chemical paint removal systems containing methylene chloride are prohibited.

C. Submit manufacturer’s product data sheets for each chemical remover for review and approval by the District’s Environmental Consultant.

2.5 SPRAY ADHESIVE

A. Provide spray adhesive in aerosol cans which is specifically formulated to stick to sheet polyethylene.

2.6 DISPOSAL CONTAINERS

A. Provide six (6) mil thick polyethylene sheeting, six (6) mil leak-tight polyethylene bags and other impervious containers as required by applicable regulations. All waste shall be labeled as hazardous or potentially hazardous waste unless proven otherwise by appropriate sampling and laboratory analysis.

B. All hazardous waste shipping containers shall meet applicable DOT requirements.

2.7 WARNING SIGNS AND LABELS

A. Caution Signs: To be minimum of 20 x 14 inches and includes phrase “Caution Lead Hazard, Keep Out Unless Authorized” in minimum two-inch high letters. These shall be posted at each approach to each lead or removal Work Area or area where lead-related construction hot work is conducted.

B. CAL/OSHA Lead Warning Posters: "Warning - Lead Work Area, Poison, No Smoking or Eating" shall be posted at the entrance to each Work Area.

C. Labels: Hazardous waste shall be labeled according to Federal, State and Local regulations including, but not limited to, the California Code of Regulations, Title 22, Chapter 30 and the U.S. Department of Transportation 49 CFR Parts 172, 173, 178 and 179.

2.8 PERSONAL PROTECTIVE EQUIPMENT

A. Personal protective equipment shall comply with the requirements of Title 8 CCR 1532.1 Lead.

B. Minimum protective clothing and equipment for lead-related construction work shall consist of fire-retardant, disposable, full-body coveralls, disposable boots, gloves, or
equivalent in accordance with ANSI Z41. Sleeves at wrists and cuffs at ankles shall be secure.

C. Eye protection and hard hats shall be available and worn at all times and shall conform to ANSI 87.1 and ANSI 89.1

D. The Contractor shall provide Authorized Visitors with suitable disposable protective clothing, headgear, respirators, and footwear whenever authorized visitors are required to enter the Work Area. Up to an average of ten sets per day of suitable personal protective equipment shall be made available for authorized visitors.

E. All disposable clothing worn during each work shift shall be removed prior to exiting the Work Area and shall be properly segregated and placed in container for proper waste characterization. The Contractor shall bear full responsibility for additional costs associated with waste profiling and disposal if wastes are not properly segregated.

2.9 RESPIRATORS

A. Provide workers with personally-issued respiratory equipment approved by NIOSH and suitable for the lead exposure level in the Work Area. Where respirators with disposable filters are employed, provide sufficient filter for replacement as required by the worker or applicable regulation. Each respirator shall be washed whenever the worker wearing it showers or at least daily prior to storage. The following general conditions shall apply to respirator use:

1. All respirators used must be certified by NIOSH and a respirator program shall be established and implemented.

2. Respirators shall be used whenever airborne lead concentrations will exceed, or are likely to exceed, 50 µg/m³, and for any of the Trigger Tasks which have not been demonstrated to be below the PEL by initial monitoring, and for all operations involving the removal of LCP or welding on surfaces with paint or lead contamination regardless of airborne lead concentrations.

3. Prior to initial monitoring, the level of protection shall follow CAL/OSHA requirements for the specific Trigger Task. Otherwise, the respirators worn shall be selected based on measured or reasonably expected airborne concentrations of lead as follow:
   a. Half-face negative pressure air purifying respirator: up to 500 µg/m³
   b. Powered air purifying respirators: up to 50,000 µg/m³
   c. Type C supplied air respirator full face piece pressure demand mode: up to 100,000 µg/m³

4. Disposable respirators are not acceptable at any time. It is always permissible to upgrade to a more protective type of respirator.

5. During all segments of LCP removal and clean up activities and hot work on LCP coated surfaces, respirator usage shall be required of all persons within October 13, 2014 02080 - 15 Hazardous Material Requirements DSA-Approved Projects
the designated Work Areas at all times regardless of airborne lead concentrations.

B. The Contractor is responsible for determination of airborne lead concentration levels for the Contractor's personnel and for providing and enforcing use of appropriate personnel respirator protection based upon airborne lead concentrations and this specification.

C. Respirators shall not be removed inside the Work Area. Workers shall proceed to the designated washing area and clean the external surface of the respirator body before removing the respirator.

2.10 TOOLS AND EQUIPMENT

A. Provide suitable tools for the removal of LCP and LCCM contamination including required HEPA exhaust systems, HEPA exhausted portable welding fume control systems, HEPA vacuums, ground fault circuit interrupters (GFCIs), ladders, scaffold, garden sprayers and portable eyewash systems. All tools and equipment brought onsite shall be clean and free of lead and other hazardous material contaminants. HEPA vacuums shall be labeled with a lead warning label and dedicated to LCP work to prevent commingling of lead wastes with asbestos or other wastes. HEPA filtered exhaust systems shall be DOP tested on site to verify 99.97% effectiveness as an installed system and shall have accurate magnahelic gages to indicate filter performance while in use. Provide sufficient back-up equipment for use in the event of equipment failure. Ensure all equipment has been fitted with any necessary feasible noise attenuators to meet occupational and environmental noise standards for building occupants.

B. Provide enough support equipment, including but not limited to, lumber, nails, hardware, shower stalls, hoses, plumbing, drain pans, sump pumps, and waste water storage drums to construct and operate the required hand washing system and portable Wash Room with showers. The number of showers shall be sufficient for the number of workmen scheduled on the job. The water hose used to connect the drain to the showers will not be used for any other purpose. The supply side water hose shall have a check valve to prevent back-flow under any circumstance.

PART 3 - EXECUTION

3.1 GENERAL

A. Public Warning and Safety Information to be Posted

1. Post signs at all approaches to the lead Work Area entrance to read "Caution Lead Hazard Keep Out Unless Authorized." In addition, post the CAL/OSHA Lead Hazard Warning Poster at the immediate Work Area entrance.

2. A list of phone numbers for the local hospital and for emergency squad, the local fire department, a representative of the Contractor who may be reached
24 hours a day, the Contractor's main office, the District and the District's Environmental Consultant and any other professional Consultants directly involved in the project.

### 3.2 GENERAL PREPARATION FOR INTERIOR LEAD REMOVAL AND LEAD-RELATED CONSTRUCTION

A. Move all non-fixed objects out of the Work Areas. Such items shall be moved at least five (5) feet from Work Areas.

B. Pre-clean entire floor area and all horizontal surfaces inside and within five (5) feet of the Work Area using HEPA vacuums and wet methods.

C. Cover all non-moveable objects within five (5) feet of the Work Area with six (6) mil polyethylene sheeting and seal with duct tape.

D. Cover all floor, deck, scaffold or work platforms within the Work Area with two layers of six (6) mil polyethylene sheeting and seal with duct tape. Shut down, lock out, isolate the HVAC systems that supply, exhaust or pass through the lead control area. All heater vents and registers shall be sealed with six (6) mil plastic sheeting and duct tape.

E. Contain lead paint and ceramics removal operations and hot work where lead containing paint is not completely removed at least 12" from welding or torch cutting in all direction with the use of a negative pressure full containment system with at least one change room and with HEPA filtered exhaust.

F. Provide, at minimum, 10 foot candle illumination lighting to the Work Area.

G. Install lead caution signage at each approach to the lead-related construction Work Area and lead warning signage just outside each Work Area entry/exit point.

H. When Work Area preparation is complete, notify the District's Environmental Consultant and request an inspection. No work is to proceed in any Work Area until the general Work Area preparation materials, methods, and procedures have been inspected and approved by the District's Environmental Consultant.

### 3.3 GENERAL PREPARATION OF THE EXTERIOR LEAD REMOVAL OR LEAD-RELATED CONSTRUCTION

A. Cordon off the Work Area extending at a minimum of 10 feet horizontally beyond the area of lead-related construction with barrier tape and warning signs as specified herein.

B. Pre-clean visible suspect lead-containing dust and debris around and under areas where LCP or LCCM will be removed. Used HEPA vacuums and wet methods to perform this cleaning which shall include, at minimum, the designated Work Area.
C. Cover ground and horizontal surfaces of Work Area (area within barrier tape) with a minimum of two layers of six (6) mil polyethylene sheeting. Secure the poly on the ground to the largest extent feasible. Horizontal surfaces include scaffolding and/or other work platforms. Extend the plastic from the foundation to 10 feet beyond the Work Area. Seal all seams with tape and secure plastic to prevent undesired movement. Protection of horizontal surfaces shall be constructed to contain any water used to prepare exterior surfaces for re-painting.

D. Protect windows, doors, and openings within the regulated area to the interior of the building with a minimum of one layer of 6-mil poly.

E. Where LCP or LCCM components are likely to generate airborne dust or paint chips, devise a suitable containment to contain such dust and prevent dispersal by wind. Exterior removal which generates LCCM or LBP dust and debris shall not be attempted when wind is greater than 15 mph. To conduct exterior removal under windy conditions, the Contractor shall implement special, safe and effective countermeasures to ensure containment of LCP or LCCM dust and debris. These countermeasures include but are not limited to protective shrouds, mini-containment, or full scale containments on work platforms or scaffold.

F. Provide a designated entry/exit point to Work Areas suitable for workers to properly decontaminate and exit from the Work Area as specified herein. Install lead caution and warning signage as specified above.

G. Notify the District's Environmental Consultant when the Work Area is ready for inspection at the startup of each lead-related construction process not previously evaluated and approved by the District's Environmental Consultant. Lead-related construction work shall not initially proceed until the District's Environmental Consultant has checked and approved Work Area preparations.

3.4 WORKER PROTECTION AND DECONTAMINATION PROCEDURES

A. The Contractor shall use only workers medically-qualified and trained for lead-related, hot work on LCCM surfaces, and respirator usage.

1. Medically-qualified shall mean that the worker has had an occupational medical exam for lead exposure and respirator usage within 12 months of abatement start-up.

2. The contents of the exam must be in conformance with Title 8 CCR 1532.1. In addition, each worker shall have had a blood-lead test within 30 days of starting work on the project. At no time shall the worker exceed six months between each blood-lead testing.

3. Each abatement worker shall have successfully completed formal documented training in lead hazards and lead abatement methods meeting Title 17 California Department of Public Health (DPH) requirements. Non-abatement workers performing lead-related construction work shall have documented lead training in accordance with Title 8 CCR 1532.1.
4. The Contractor's Competent Person for lead-related construction shall have received at least 40 hours of formal training by a Recognized Training Education Institution in lead hazards and lead abatement.

5. The Contractor shall ensure that no worker is allowed onsite to perform lead removal or lead-related construction work until the District's Environmental Consultant has received and approved all of the worker's medical, training and fit testing certifications.

6. Each worker and Authorized Visitor shall, upon entering the job site, enter the designated clean change room area and put on an inner and outer set of full body reusable or disposable coveralls, booties or shoe covers, respirator with HEPA filters, and gloves before entering the Work Area.

7. Each worker and Authorized Visitor shall HEPA vacuum contamination from protective clothing and then remove shoe covers before leaving one Work Area for another Work Area inside the same building unless the Work Areas have been interconnected with a secured plastic sheet runway at least three feet wide.

8. When exiting a Work Area, proceed to vacuum off all reusable work clothing and dispose of outer disposable protective clothing as suspect lead waste. Proceed to a designated wash area, remove and clean the respirator and store in a clean container.

9. At the end of the work day, all workers are to do the following in addition to those procedures described above: Place disposable outer garments and shoe covers in separate labeled waste containers dedicated to PPE for proper waste characterization; remove inner disposable clothing and place in waste containers; clean protective gear including respirator, shower or wash hands and face at minimum, and put on clean street clothes in the clean room area.

10. All tools and equipment shall be decontaminated by HEPA vacuuming and wet wiping prior to being taken out of the Work Area. Tools and equipment with inaccessible internals shall be externally wet-wiped, bagged and sealed prior to being removed from the Work Area.

11. Workers shall not eat, drink, smoke, or chew gum or tobacco at the work site within 20 feet of any Work Area as specified by the District or the District's Environmental Consultant.

12. Provide and post the decontamination and work procedures to be followed by workers in the clean area.

13. Each worker shall have a final medical blood-lead laboratory test within one week of job completion and before engaging in other lead-related work.

3.5 REMOVAL OF LEAD-CONTAINING PAINT BY CHEMICAL REMOVAL

A. Removal of LCP using Chemical Removal system shall be approved for use by the District's Environmental Consultant.

B. The Contractor shall provide additional security measures as necessary to ensure occupants cannot gain access to chemicals and chemically-treated surfaces.
C. Material safety data sheets for each chemical substance and product used shall be onsite at all times and available for review by the workers and District's Environmental Consultant.

D. The Competent Person shall review the contents of the material safety data sheets and the safe removal procedures with the workers prior to chemical removal.

E. Workers shall wear chemical goggles, face shields, impervious gloves, aprons, and booties over the standard protective clothing prior to starting chemical removal.

F. Stage or install temporary emergency eyewash capable of providing a 15-minute flush within the immediate Work Area if corrosive organic or corrosive inorganic paint removal (stripping) products are used. In addition, an emergency shower shall be available onsite within 50 feet of the removal operation.

G. Chemical stripping agents (and neutralizers) shall be applied in accordance with the recommendations of the manufacturer. Remove all paint down to the bare substrate. Ensure that the chemicals used and the associated removal methods leave a clean and smooth surface capable of accepting a suitable primer/sealer coating after final cleaning. No paint or chemical residue shall be visible on the bare metal surfaces to be welded. All chemical residues shall be removed from surface applied.

H. Containerize all paint and chemical waste in impervious containers labeled as hazardous waste.

I. Package all contaminated rags and protective equipment, and disposable cleaning items and plastic sheets in labeled impervious containers and transfer waste containers to secure waste storage units. The Contractor shall assume all such waste to be hazardous unless proven otherwise by objective waste characterization data.

J. Clean and decontaminate the Work Area in accordance with the procedures outlined herein.

K. Decontaminate all tools and equipment before removing them from the Work Area. Seal or bag-up such equipment for transfer to the next Work Area or operation.

3.6 REMOVAL OF LCP BY MECHANICAL REMOVAL

A. All mechanical removal equipment and systems shall be approved by the District's Environmental Consultant. Such equipment includes but is not limited to needle guns, abrasive wheels, and rotopeen equipment.

B. All power tools shall be designed and equipped with effective HEPA-filter exhaust systems.

C. The Contractor shall submit a separate work plan for containment of lead dust and debris emissions released by vacuum assisted power tools.
D. Work Area preparation and LCP removal shall be in accordance with the approved work plan.

3.7 LCP REMOVAL BY ABRASIVE BLASTING METHODS

A. All abrasive blasting equipment shall be of the vacublast type with effective capture and control of dust and debris using a built-in local HEPA Exhaust System. Alternative abrasive blasting systems are subject to approval by the District's Environmental Consultant.

B. The Contractor shall submit a separate work plan for containment of fugitive dust and debris emissions. The plan shall include all equipment and products to be used.

C. The Contractor shall be responsible for all permits and notices required for full compliance with local Air Pollution Control District rules and regulations.

D. No work shall proceed until an approved abrasive blasting containment plan is approved and in place.

E. Upon approval of a work plan and completion of Work Area preparation the Contractor shall conduct a pilot test to demonstrate the effectiveness of the hazardous control measures and the acceptability of the final product.

F. The District's Environmental Consultant shall review the results of the pilot test prior to approving this method for remaining abatement work.

3.8 CLEANING AND DECONTAMINATION OF REMOVAL WORK AREAS

A. Daily Clean up: Perform the following clean up procedures daily.

1. Clean Work Areas until they are free of loose dust and debris to the satisfaction of the District's Environmental Consultant using HEPA and/or wet-wiping after pick-up of large debris.

2. Wet debris with a fine mist of water and collect material. All material to be properly segregated, bagged in 6-mil plastic bags, sealed, and moved to a designated, secure, waste storage area for waste characterization.

3. At the end of each work day the Contractor's Competent Person shall inspect work performed that day to ensure the work has been completed and no dust or residue remains on the areas removed and/or in the Work Area. The District's Environmental Consultant shall be included in that inspection process when and if they request inclusion.

B. Final Clean up and Decontamination of Abatement Work Areas: At completion of abatement perform cleaning as follows:

1. Remove all visible dust and debris as specified above.

2. Clean all Work Areas where abatement was performed by vacuuming all surfaces with a HEPA vacuum followed by wet-wiping with a high phosphate (trisodium phosphate) wash or equivalent. The Contractor shall spray surfaces
with a 5-10 percent trisodium phosphate (or approved equivalent) cleaning solution applied with a garden sprayer and wipe or mop surfaces with frequently changed clean towels, rags or mops.

3. Disassemble and remove containment barriers at each Work Area location after cleaning as specified above. Place polyethylene sheeting and tape into waste bags and remove to the temporary waste storage area.

4. Remove six (6) mil polyethylene sheeting on immovable objects and floors (where present) after misting with a high phosphate wash and wet-wiping. Place polyethylene sheeting and waste rags in segregated six (6) mil plastic bags, seal and store in a designated, secure, waste storage area for waste characterization.

5. The cleaning procedure used shall prevent spread of contamination and effectively clean surfaces while producing minimal waste.

6. All tools and equipment shall be sealed in six (6) mil plastic bags after being decontaminated using a high phosphate wash and wet-wiping prior exiting the Work Area.

7. Liquid cleaning wastes shall be filtered prior to containerizing for temporary storage pending hazardous waste characterization. Filter systems shall be able to remove particulate two microns and larger in diameter. Permits, if required, are the responsibility of the Contractor.

8. At least eight hours prior to completion of the first Work Area and again upon completion of final clean up and decontamination, notify the District’s Environmental Consultant to obtain a final clearance inspection and testing.

3.9 FINAL CLEARANCE INSPECTION AND TESTING OF REMOVAL WORK AREAS

A. Interior Clearance Inspection and Testing.

1. After the final clean-up of each Work Area by the Contractor, the District’s Environmental Consultant may conduct a visual inspection to ensure that all visible dust and debris has been removed. Contractor shall provide the District’s Environmental Consultant at least eight hours notice prior to scheduling final inspections of each Work Area. If the results of the final visual inspection are satisfactory, the District’s Environmental Consultant may proceed to collect clearance dust wipe samples.

2. If the Work Area is not visibly clean, as determined by the District’s Environmental Consultant, the Contractor shall re-clean and decontaminate the Work Area as described herein at his own cost until the Work Area passes inspection.

3. The visibly clean Work Area shall not contain surface lead contamination at or in excess of 40 micrograms of lead per square foot for interior floor surfaces and 400 (ug/ft²) of surface sampled for exterior surfaces. Dust wipe samples will be taken using the HUD sampling protocol by the District’s Environmental Consultant prior to or subsequent to the lead abatement or lead-related construction activities to assess adequacy of the Contractor’s cleaning and
decontamination procedures at the discretion of the District's Environmental Consultant.

4. Dust wipe samples will be collected using commercial wipes moistened with a non-alcohol wetting agent. Areas of approximately one square foot will be selected from horizontal surfaces below or adjacent to where LCCM's components or paint has been removed.

5. At a minimum, one dust wipe sample will be collected per representative abated area and sent under proper chain of custody protocol to an AIHA or ELLAP accredited laboratory or equivalent as specified by the District's Environmental Consultant.

6. All dust wipe samples will be analyzed for lead using either AAS or ICP-AES for lead and results will be provided to the Contractor within two days of receipt of sample results.

7. If any of the dust wipe samples exceed the clearance criteria, the entire Work Area must be cleaned and re-tested until the clearance criteria are met.

8. If a Work Area fails the clearance criteria specified above, the Contractor shall re-clean the entire Work Area at no additional cost and shall be responsible for any additional cost incurred by the District's Environmental Consultant for failed clearance tests. The Contractor shall pay all laboratory and delivery charges for additional dust wipe samples taken in each Work Area upon clearance failure.

B. Exterior Clearance Inspection. After the final clean-up by the Contractor, the District's Environmental Consultant shall conduct a visual inspection to ensure that all visible dust and debris has been properly removed. The Contractor must provide the District's Environmental Consultant at least eight hours notice prior to scheduling final inspections. If the results of the final visual inspection are satisfactory to the District's Environmental Consultant, then the exterior Work Area shall be released for unrestricted access. If the results of the inspection are unsatisfactory the contractor shall re-clean and decontaminate the Work Area prior to requesting another inspection by the District's Environmental Consultant.

3.10 LEAD-RELATED CONSTRUCTION WORK

A. Where the Contractor's work requires demolition of lead containing materials, materials coated with LCP the Contractor shall take the following precautions:

1. Cordon off the work area with caution tape and lead warning signs.

2. Protect workers in conformance with Title 8 CCR 1532.1.

3. Place a plastic drop cloth below the area where LCP paint chips or dust is likely to be released.

4. Remove components using wet methods and/or HEPA vacuuming to control dust generated by mechanical cutting and/or disassembly. If torch cutting is required, remove the existing paint on all surfaces back at least 12 inches or more in each direction from the hot work as specified herein.
5. Clean-up lead containing paint chips, dust, and debris as the removal proceeds and at the completion of work using HEPA vacuums and/or wet wiping. Clean all tools and equipment prior to removing them from the Work Area. Clean all polyethylene sheeting and horizontal surfaces prior to removing the sheeting.

6. Special precautionary controls shall be used as necessary to prevent lead dust, debris or fume from being carried or blown out of the controlled area by wind or air currents. Torch cutting of components with inaccessible paint shall be done with HEPA filtered local exhaust ventilation to capture fumes unless monitoring data reviewed and accepted by the District's Environmental Consultant indicates local exhaust is not necessary.

3.11 LEAD CONTAMINATION OF BUILDING INTERIOR OR ENVIRONMENT

A. In the event that removed LCCM paint, dust, or debris is not properly contained within the Work Area and thereby escapes, bypasses or penetrates established barriers, the Contractor shall stop work immediately, notify the District's Environmental Consultant immediately, and commence clean-up and decontamination procedures as described herein or directed by the District's Environmental Consultant.

3.12 WASTE STORAGE, SEGREGATION, AND CHARACTERIZATION

A. The Contractor shall provide for secure onsite temporary storage of LCP or LCCM related waste. Waste storage location, equipment, containers and methods are subject to prior approval by the District and the District's Environmental Consultant.

B. All lead-related waste streams and waste categories shall be considered hazardous until proven otherwise through testing by the Contractor. The Contractor shall be responsible for segregating waste into the below listed categories at minimum. If the Contractor allows different waste stream to become co-mingled, the waste will be classified as hazardous if any single component waste stream is hazardous.

1. LCP removed by chemical stripping.
2. LCP removed by mechanical methods.
3. Demolition debris including painted plaster, wood, and metal with lead containing paint.
4. Lead containing ceramic tile
5. Paint (LCP) chips, dust and debris, HEPA vacuum waste.
6. Plastic sheeting and tape.
7. Disposable Protective Clothing and Equipment (PPE).
8. Cleaning Rags.

C. Intact LCP components: Architectural debris with intact LBP shall be considered hazardous until proven otherwise through testing.
D. Each lead-related waste produced shall be placed in properly segregated, labeled and sealed, impervious containers.

E. Removed intact LCP components shall be properly segregated, wrapped in six-mil polyethylene sheeting, labeled and securely sealed with duct tape or placed in a lined bin.

F. All waste containers, bags, and packaged waste shall be stored in a designated, secure, locked waste storage area and be labeled with the following information:
   1. Waste Category: Lead
   2. Date Accumulated: (Insert Date)
   3. Name, address: (Insert Facility Name and Address)
   4. Origin of waste: (Insert Waste Stream Name, i.e. Paint Chips, Vacuum Bags)

G. HEPA vacuum and wet-wipe the exterior of all waste containers prior to removing them from the Work Area to the designated storage area.

H. Each category of waste, except components with intact paint, will be tested and characterized by the District's Environmental Consultant using one or more of the following testing protocols:
   1. CAL/EPA testing protocol: Criteria
      a. Total Threshold Limit Concentration (TTLC): 1,000 ppm lead
      b. Soluble Threshold Limit Concentration (STLC): 5 ppm lead
   2. Federal-EPA testing protocol:
      a. Toxicity Characteristic Leaching Procedure (TCLP): 5 ppm lead

I. Based on the testing protocols, any waste greater than or equal to five (5) ppm lead using STLC or TCLP tests or any waste greater than or equal to 1,000 ppm lead using the TTLC test shall be considered a hazardous waste.

J. When the TTLC test result is less than 50 ppm lead, no further testing is required for that waste category sampled unless the waste stream or waste generating process changes. A minimum of four samples will be taken to represent each category of waste generated. It will be the responsibility of the District's Environmental Consultant to ensure representative samples are taken by the Contractor from each category of segregated waste.

K. The Contractor shall package, store, handle, transport and dispose of each category of waste generated based on the testing results unless specific written direction is provided by the appropriate regulatory agency and reviewed and approved by the District's Environmental Consultant. In all cases, the landfill shall be subject to approval by the District's Environmental Consultant.

L. Upon verbal request of the District's Environmental Consultant, the Contractor shall provide samples of lead related waste to the District's Environmental Consultant. The Contractor shall provide samples within full view and presence of the District's Environmental Consultant.
M. The cost of waste characterization or waste profiling required by the approved landfill will be the responsibility of the Contractor.

3.13 HAZARDOUS WASTE DISPOSAL:

A. Site Storage and Handling:
   1. The Contractor shall pay strict attention to the requirements of 40 CFR 262 and 265 and Title 22, Chapter 30 for the onsite handling of lead waste/debris, with special attention given to the time of storage, amount of material stored at any one time, use of proper containers, and personnel training. All waste shall be stored in secure, locked, labeled, sealed impervious containers and not placed on the unprotected ground. All containers shall be shielded adequately to prevent dispersion of the debris by wind or rain and shall be labeled as hazardous waste. Any evidence of improper storage shall be cause for immediate shutdown of the project until a corrective action is taken.

B. Transportation and Disposal of Waste:
   1. The Contractor shall arrange to have the LCP waste and debris transported from the site in accordance with the requirements of 40 CFR 263 and 264, and disposed of properly in accordance with 40 CFR 268, GISO 8 CCR Articles 40 and 41, 49 CFR Parts 172, 173, 178, and 179 and Title 22, Chapter 30, Articles 5, 6, 6.5 and 8.
   2. The Contractor shall submit to the District and the District's Environmental Consultant the Name, Class, and EPA I.D. Number of the waste disposal site(s) to be used for each waste category which has been determined by testing to exceed the hazardous waste thresholds provided herein.
   3. The Contractor shall prepare waste shipping manifests for review by the District and the District's Environmental Consultant. Upon waste or material pickup by the selected waste transporter, manifests shall be signed by the District and copies retained to verify that all steps of the handling and disposal process have been completed properly.
   4. Copies of the landfill weight tickets shall be provided to the District and the District's Environmental Consultant to verify the amount of waste disposed of at that site. The Contractor shall be responsible for all costs associated with transportation and disposal of all wastes generated at the result of this work.

C. No waste characterized as hazardous waste shall be stored onsite for more than 90 days prior to being properly transported for disposal.

D. All equipment, materials, and waste generated on this project must be removed offsite to their proper locations by the Contractor within 14 calendar days from removal and lead-related construction work completion.

E. Containers to be loaded for transportation from the storage area must be removed by workers who have entered from uncontaminated areas, dressed in clean coveralls.
3.14 STOP WORK ORDERS

A. The District and/or the District's Environmental Consultant has the authority to stop work if it is determined that conditions or procedures are not in compliance with the specifications and/or applicable regulations; to the extent of potential endangerment of building users, workers, building occupants, District employees, the public or environment. The work stoppage shall remain in effect until conditions have been corrected and corrective measures have been taken to the satisfaction of the District and the District's Environmental Consultant. All standby time and testing costs required to correct the above mentioned problems shall be borne solely at the Contractors expense. Examples of such conditions that might result in a work stoppage include but are not limited to:

1. Uncontrolled visible emissions which escape the established Work Area or breach physical protective barriers within the Work Area; and/or,

2. Ambient airborne levels of lead outside the construction area at more than 15 micrograms per cubic meters of air (ug/m³) of lead averaged over an eight-hour work period or 5.0 ug/m³ for any 24 hour period. Measurements of the ambient airborne lead levels shall be made outside the immediate Work Area and at the nearest occupied areas.

3. Unsecured Waste Storage Area and/or improper containment of lead abatement waste or LCP contamination.

3.15 CLOSEOUT

A. Prior to approval of payment request, the Contractor must provide the following information:

B. Copies of workers' post-abatement medical test results and performed in accordance with Title 8 CCR 1532.1 Lead.

C. Copies of hazardous waste manifest, profile sheets and weight tickets for all hazardous waste and for all non-hazardous waste or waste recycle receipts.

D. All surface damages during the work must be restored to their original condition except those surfaces scheduled for demolition as part of the renovation project.

END OF SECTION 02081
ATTACHMENT A
LEAD-RELATED WORK PLAN OUTLINE

In accordance with the contract documents, Cal-OSHA Lead in Construction Standard (Title 8 CCR 1532.1) and DHS (17 CCR Division 1, Chapter 8), the Contractor is required to prepare a written, site-specific Lead Compliance Plan, and submit to the District for approval prior to start of work. This plan is required for the contractor to meet Cal-OSHA and DPH requirements as well as the contract documents, and shall describe work procedures and control methods that will protect the District's facilities and the environment. All contractors performing lead-related construction work shall prepare plans.

I. Location of Work:
The work to be completed under this work plan will be completed at:
(Building name)
(Location within building)

II. Description of Work:
Describe the anticipated work scope, including:
A. Paint removal (list paints or coatings, and locations)
B. Paint stabilization or encapsulation (list paints or coatings, and locations)
C. Removal and/or replacement of lead-coated components (list components and locations)
D. Dust/residue removal or decontamination (list materials and locations)
E. Demolition of lead-coated components
F. Any other activities that will or may result in worker exposures to lead

III. Schedule:
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<thead>
<tr>
<th>Phase/Task</th>
<th>Anticipated Date(s)</th>
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<tr>
<td>Mobilization</td>
<td></td>
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<tr>
<td>Set-up of work area(s), containments</td>
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<tr>
<td>Lead-related construction</td>
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<tr>
<td>Final Cleaning</td>
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<tr>
<td>Visual Inspection</td>
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<td>Final Clearance (visual and sampling)</td>
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<td>Teardown</td>
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<td>Demobilization</td>
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The competent person, ________________, will conduct worksite visual inspections on a daily basis, or more often as necessary.

IV. Equipment and Materials
List all equipment and materials to be used, such as the following:
HEPA Vacuums                      Negative air filtration units
Scrapers                          Manometers
Power saws                        Shower facilities
Pry bars                          Airless sprayers/compressors
Cutting shears  Cleaning detergents  
Other hand tools  Solvents (must be approved by District)  
Encapsulants/sealants  Roller/brushes  
Gloves  Disposable coveralls  
Respiratory protection  Eye & foot protection

V. Crew
List all workers and supervisors with emergency contact names and phone numbers.

Clearly identify the supervisor and competent person who have authority for all safety and health.

VI. Control Measures and Work Practices
Describe in a narrative format specific work procedures, exposure/contamination controls, and engineering controls. This description should include, but not be limited to, the following:

- Location, size, layout & detail of work
- Negative pressure enclosure
- Respiratory protection
- Vacuum assisted blasting
- Containment (i.e., poly barriers)
- Methods to assure safety of bldg occupants
- Removal method to reduce lead dust generation

VII. Technology To Be Used In Meeting the OSHA PEL
List all or any specialized equipment to be used to meet the PEL.

VIII. Respiratory Protection and Protective Clothing/Personal Protective Equipment
List all respiratory protection including types and manufacturers which are anticipated for this project. Identify the phases of the project for which respirators will be required or likely to be required. List all personal protective equipment anticipated to be used on the project.

IX. Decontamination/Hygiene Facilities
Identify the types and locations of decontamination or hygiene facilities to be used on this project. Specify use of disposable towels, soap, hot and cold water, and other supplies. Specify the required use of the facilities, including use of the facilities prior to eating, drinking, smoking and before leaving the project site. Describe handling or treatment of lead-contaminated solid waste and wastewater.

X. Air Monitoring Data
Identify general worker air monitoring protocols to be followed on this project, including worker category classifications, frequency of monitoring, anticipated laboratory to be used for analysis, pump calibration techniques, etc. Identify the competent person responsible for conducting personal air monitoring.

XI. Medical Surveillance Program
SECTION 02082

PCB CONTAINING MATERIALS ABATEMENT AND DISPOSAL

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

A. The General Conditions and Division I General Requirements shall be included in and made part of this Section.

B. Examine all other Sections of the Specifications for requirements therein affecting the work of this Section of the Specifications.

1.02 COMPLIANCE AND INTENT

A. This Section specifies requirements for abatement of Polychlorinated Biphenyl (PCB) containing materials. The Contractor shall coordinate all abatement work with the specifications. During all work, provide monitoring and worker protective equipment in accord with the California Occupational Safety and Health Administration (Cal-OSHA) and as required by this section and all other sections of the Specifications. Where there is conflict, the most stringent requirement shall apply.

B. The work covered by this specification includes the removal of PCB containing materials including lighting ballasts of fixtures that will not be reinstalled.

C. All work shall comply with Environmental Protection Agency (EPA) rules and regulations governing PCBs: 40 CFR 761, as published in the most recent edition of the Federal Register. Additionally, all work and work related practices shall comply with applicable Federal, State and local rules and regulations including, but not limited to, the California Department of Industrial Relations, California Code of Regulations (CCR) Title 8; Department of Health Services, CCR Title 22 and California Health and Safety Code, Division 20. Where conflicts occur, compliance shall be based upon the most stringent requirements.

D. Workers involved in the removal of PCBs shall have received specific training on the hazards, appropriate personal protection and decontamination procedures associated with PCBs.

E. Furnish all labor, materials, facilities, equipment, services, employee training, medical monitoring, permits and agreements necessary to perform the work required for PCB abatement in accordance with this section of the Specifications, other sections of the Specifications and other documents included in the contract.

F. Perform all work specified herein with competent persons trained, knowledgeable and qualified in state-of-the-art techniques relating to hazardous materials abatement, handling, and the subsequent cleaning of contaminated areas.

G. Perform appropriate waste profile testing for all PCB contaminated waste as required by the Specifications, the regulations, and the selected landfill(s). All testing shall be done in the presence of the District or District’s designated representative. Chain-of-custody forms shall be provided to the District within one (1) day following sample delivery to the laboratory.

H. During removal activities, the Contractor shall protect against contamination of soil, water, plant life, adjacent building areas, and shall ensure that there is no release of hazardous materials and dusts. The Owner or Owner’s designated representative may collect air,
bulk, and/or wipe samples in adjacent areas to evaluate the Contractor's performance. Evidence of settled dust or airborne levels of contaminants above background will require the implementation of additional controls at no increase to contract price.

I. It is the Contractor's responsibility to determine the quantities of hazardous materials impacted by the planned work. The Contractor shall conduct a site visit to determine exact locations of materials impacted by the work.

J. Hazardous materials removed during the abatement activities shall be handled, transported and disposed of in accordance with all applicable federal, state and local regulations.

1.03 DEFINITIONS

A. Certificate of Disposal: The document provided to the generator certifying that the PCB wastes were disposed of in strict accordance with all applicable Federal, State and Local regulations.

B. Chain-of-Custody: A legal concept involving documentation of the physical possession of a sample/samples from the moment it is collected, transported, analyzed, and ultimately stored in an archive.

C. Competent Person: One who is capable of identifying existing and predictable hazards and who has the authority to take prompt corrective measures to eliminate them.

D. Decontamination Area: Area which is constructed to provide the means for workers to store clothing, equipment and other articles, and to properly remove contamination upon concluding work activities that result in exposure to these hazardous materials.

E. DOP: Dioctylphthalate, the challenge aerosol used to perform on-site leak testing of HEPA filtration equipment.

F. Decontamination Unit: Refers to system of airlocks used to decontaminate personnel, waste bags, equipment, etc. when exiting the work area. A decontamination unit shall be set up for each containment area.

G. Equipment Decontamination Enclosure System: A decontamination enclosure system for materials and equipment, typically in a designated area of the work area, and including a washroom, a holding area, and an uncontaminated area.

H. HEPA: High Efficiency Particulate Air filter capable of filtering out airborne particulate 0.3 microns or greater in diameter at 99.97 percent efficiency.

I. Manifest: The document authorized by both Federal and State authorities for tracking the movement of PCB containing wastes.

J. PCB Liquid Waste: Any liquid identified to contain PCB through laboratory analysis at a concentration equal to or exceeding 500 PPM.

K. PCB Solid Waste: Any solid that comes in direct contact with PCB liquids which cannot be decontaminated and any solid materials generated as the result of PCB Spill clean-up operations.

L. PCB-Contaminated Liquid Waste: Any liquid identified to contain PCB through laboratory analysis at a concentration greater than or equal to 50 PPM and less than or equal to 499 PPM or those liquids the USEPA requires to be assumed at 50-499 PPM in the absence of testing.

M. PCB Contaminated Solid Waste: Any solid that comes into direct contact with PCB Contaminated liquids which cannot be decontaminated and any solid materials generated as the result of PCB Contaminated spill clean-up operations.
N. PCB Containing Wastes: Any wastes either tested and found to contain PCB greater than or equal to 50 PPM or those requiring assumption under 40 CFR 761. These wastes include both PCB and PCB-contaminated liquids (including all flushing wastes) and solids.

O. PCB Bulk Product Waste: Materials (such as sealants) found to contain PCBs greater than or equal to 50 PPM.

P. PCB Remediation Waste: Building materials impacted with PCBs from direct contact with a PCB containing material.

Q. PCB Spill: The intentional and/or unintentional spills, leaks, and other uncontrolled discharges where the release results in any quantity of PCB, running off or about to run off the external surface of the equipment; and the contamination resulting from those releases.

R. Polychlorinated Biphenyl (PCB): Any chemical substance that is limited to the biphenyl molecule that has been chlorinated to varying degrees or any combination of substances which contains such substance.

S. Powered Air Purifying Respirator (PAPR): A full facepiece respirator that has the breathing air powered to the wearer after it has been purified through a filter.

T. Respirator: A device designed to protect the wearer from the inhalation of harmful atmospheres.

U. Returned Manifest: An original duplicate copy of the manifest provided to the PCB Waste generator within forty-five (45) days of the transport date which acknowledges the receipt of the material at the disposal facility.

V. Visual Inspection: A visual inspection by Environmental Consultant, of the work area under adequate lighting to ensure that the work area is free of visible PCB material, debris, and dust.

1.04 PCB CONTAINING MATERIALS

A. Suspect-PCB containing materials must be removed prior to removal of lighting fixtures that will not be scheduled for reuse. Coordinate ballast verification and removal with the contract documents. Contractor shall be responsible to verify quantities of suspect PCB containing ballasts scheduled for removal.

1.05 SUBMITTALS PRIOR TO START OF WORK

A. The reviews by the Owner or Owner's designated representative are intended to be only for general conformance with the requirements. The Owner or the Owner's designated representative assumes no responsibility for permits, licenses, notices, materials and methods, equipment or temporary construction required to execute the work described in this Section of the Specification or in other Sections of the Specification or in other documents included in the contract documents.

B. The following items shall be submitted to, and approved by, the Owner or Owner's designated representative before commencing work involving the PCB abatement.

1. Provide a detailed work plan for PCB abatement and disposal that follows Attachment A – PCB Work Plan Outline.

2. Provide a site safety plan for PCB abatement prior to project initiation. The site safety plan shall deal with, at a minimum: Personal protective equipment; Site
safety and health hazards; PCB Spills; Medical emergency; materials handling procedures; Contractor's internal administrative and inspection procedures; Earthquakes and/or fire emergency procedures; Protocol for responding to complaints or questions from interested parties; 24-Hour emergency telephone numbers for Company Officers with authority to respond to emergencies.

3. The Contractor performing the work shall develop together with applicable subcontractors, a contingency plan covering accidental spills and work exposure to PCBs. The plan shall be submitted to the Owner or Owner's designated representative prior to commencing PCB-related work. The submittal shall also include a separate section to describe the hauler's spill contingency plan and avoidance procedures.

4. Workers: Demonstrate education and specialized training

5. Licenses: Submit copies of state and local licenses, evidence of Cal-OSHA registration and permits necessary to carry out the work of this contract.

6. Respiratory Protection Program (RRP) in compliance with Title 8 CCR 5144.

7. Proof of Respirator Fit Testing: Provide proof of respirator fit testing. Fit testing records must be less than eleven (11) months old and document testing on the type of respiratory protective equipment used for this project.

8. Material Safety Data Sheets/Specification Sheets: The Contractor shall submit Material Safety Data and Specification Sheets for all chemicals, encapsulants, etc. to be used for this project.

9. Rental Equipment: When rental equipment is to be used in the abatement areas or to transport hazardous waste, the Contractor shall provide written notification regarding intended use of the rental equipment to the rental agency before use, with copies to the Owner or Owner's designated representative.

Submittals at the Completion of the Project

A. Upon completion of on-site work, Contractor shall provide a detailed project summary that will include each of the items listed below. The project Summary shall be submitted and approved by the Owner's representative prior to acceptance of final pay request and shall include the following:

1. Copies of the Security and Safety Logs showing names of persons entering the work areas. The logs shall include date and time of entry and exit, supervisor's record of any accident (detailed description of accident).

2. Emergency evacuations and any other safety or health incident.


4. Project Summary including, but not limited to, the following: type, location, and approximate quantity of PCB ballasts removed, hazardous waste hauler certifications, name of disposal facility, waste disposal/recycling facility certification and/or receipt of disposal or destruction, dates of commence and completion of on-site work.
PART 2 - PRODUCTS

2.01 SIGNS AND LABELS:
A. Warning signs for work areas shall be approximately 18 inches square with yellow background and 1 inch black letters. Signs shall read "DANGER - KEEP OUT - PCB HAZARD WORK AREA".
B. Location of Caution Signs and Labels: Provide bilingual caution signs at all approaches to work areas in languages used by the Contractor’s employees. Locate signs at such a distance that personnel may read the sign and take the necessary protective steps required before entering the area.

2.02 PLASTIC SHEETING:
A. Use fire-retardant (FR) polyethylene (poly) film manufactured by PolyAmerica, Grand Prairie, Texas 75051, or equal.
   1. Thickness - 6-mil, minimum, NO EXCEPTIONS.
   2. Flame Resistance/Flame Spread Rate <25.
   3. Conforms to NFPA #701 and Tested in accordance with ASTM E-84.
   4. Spray adhesive for sealing polyethylene to polyethylene shall contain no methylene chloride or methyl chloroform (1,1,1-trichloroethane) compounds.

2.03 VACUUM EQUIPMENT:
A. All vacuum equipment used in the work area shall use HEPA filtration systems and be of the wet-dry type. The Contractor shall provide on-site DOP testing to document the effectiveness of the vacuum units. The test results shall be signed by the individual performing the testing.
B. All filter media must be disposed as PCB-contaminated waste at the end of filter life or conclusion of the PCB remediation work at the site.

2.04 LOCAL EXHAUST SYSTEM: VACUUM EQUIPMENT:
A. Sufficient High Efficiency Particulate Absolute (HEPA) ventilation units shall be used to maintain negative pressure in each work area at 0.02 inches of water column and a minimum of four (4) air changes per hour for all dust producing work.
B. Contractor shall provide on-site independent DOP testing to document the effectiveness of the air filtration units. The test results shall be signed by the individual performing the testing. Provide documentation to the District or District’s designated representative.
C. All filter media must be disposed as PCB-contaminated waste at the end of filter life or conclusion of the PCB remediation work at the site.
2.05 OTHER TOOLS AND EQUIPMENT:

A. The Contractor shall provide other suitable tools for the removal and disposal activities.

B. All PCB fluids, PCB-contaminated fluids, including flush and cleaning solvents and mixtures, shall be stored in sealed DOT 17E closed top drums or other waste container approved for storage of these materials.

C. All PCB solid wastes and items including disposable items used in the course of the work such as rags, absorbents, protective clothing, etc., shall be stored in sealed DOT 17C open type drums or other waste container approved for storage of these materials.

D. Any PCB Article Container, other than approved DOT drums, specified in this specification, intended for storage, shall be submitted to the Owner or Owner's designated representative for approval.

E. If ballast fluids are present on fixture or in ballast try use an appropriate solvent in which PCBs are shown to be at least 5-percent soluble by weight. Solvents specified by the U.S. EPA include kerosene, diesel fuel, terpene hydrocarbons and mixtures of terpene hydrocarbons and terpene alcohols. Care should be taken to limit the complexity of the waste stream. In all cases where solvents are used in the course of work, proper ventilation shall be provided by the Contractor to insure that resulting fumes/vapors are not dispersed to occupied building areas either as a result of natural convection or via air intakes for building ventilation systems. The manufacturer's recommendations for application and requirements of Cal-OSHA shall be strictly observed.

F. Use an appropriate cleaning agent in which PCBs are shown to be at least 5-percent soluble by weight for removal of ballast fluids. Care should be taken to limit the complexity of the waste stream. Numerous, non-toxic, cleaning agents shown to meet or exceed the solubility requirement above are commercially available. In all cases where cleaners are used in the course of work, proper ventilation shall be provided by the Contractor to insure that resulting fumes/vapors are not dispersed to occupied building areas either as a result of natural convection or via air intakes for building ventilation systems. The manufacturer's recommendations for application and requirements of Cal-OSHA shall be strictly observed.

G. Absorbents: “Safestep” as manufactured by Andesite of California, Inc., or approved equal for cleanup or packaging of leaking ballasts

PART 3 - EXECUTION

3.01 SAFETY PROCEDURES AND WORKER PROTECTION

A. Take all precautions and measures required to protect employees, inspection personnel, Owner's on-site personnel and the general public from exposure to PCB solids, liquids and vapors.

1. All personnel authorized for entry in work areas shall be instructed in the proper procedures for working with or around electrical hazards and PCB containing/contaminated materials.

2. All electrical equipment upon which PCB related activities are to be performed shall be de-energized, locked out/tagged out and permanently disconnected from any power source prior to the commencement of the work.

3. Consumption of food or tobacco products shall not be permitted in any of the project work areas where PCBs, volatile solvents and/or other hazardous
materials are present. Additionally, no open flames will be permitted in these same areas. Signage to this effect shall be provided for each work area.

4. The Contractor performing the work of this Contract shall develop, together with applicable subcontractors, a contingency plan covering accidental spills and work exposure to PCBs. The plan shall be submitted to the Owner or Owner’s designated representative prior to commencing PCB-related work. The submittal shall also include a separate section to describe the hauler’s spill contingency plan and avoidance procedures.

B. Work Area Protection and Marking: Prior to commencing any PCB-related work activities provide barricades and warning signs to clearly identify and effectively guard against unauthorized entry into the work areas. The Owner or Owner’s designated representative will inspect and approve all work area preparation. The Contractor shall be responsible for all costs associated with the clean-up and testing resulting from contamination beyond established work areas.

1. Place barricades to maintain a minimum of 25 feet from all perimeters of the work being conducted to the barricades, where feasible.

2. All equipment such as tools, containers, etc., shall be confined to the work area until work is complete, containers are sealed and equipment properly decontaminated and safely stored for transport.

3. Secure a 6-mil poly drop sheet under each fixture prior to removal of ballast tray to prevent the spread of any ballast fluids from damaged or overheated ballast on to building surfaces.

C. Protective Clothing and Equipment: At all times when suspect PCB fluids or mixtures in any volume are not sealed in drums, containers or electrical equipment, workers shall wear:

1. Gloves impermeable to both PCBs and the solvent and/or clean up agent in use.

2. Disposable, full body suit, impermeable to both PCBs and the solvent and/or clean up agent in use for removal and cleanup of leaking ballasts.

3. Appropriate eye protection to insure that eyes are protected from liquid splatter or exposure to concentrated vapors or fumes.

4. Respiratory protection appropriate for the concentration of the hazardous material(s) and atmosphere present. Establish a respiratory protection program as outlined and required by Cal/OSHA. Select respirators from those approved by the National Institute for Occupational Safety and Health (NIOSH).

D. Personnel Protection and Procedures: The PCB work area shall at no time be left unattended from the commencement of remediation work and until all PCBs and incidentals have been sealed in approved containers. If immediate transportation to the PCB storage facility or disposal facility is not feasible the work area must be secured in a manner approved by the Owner or Owner’s designated representative.

1. During work procedures and at all times when PCB containing/contaminated fluids in any volume are not sealed in drums, containers, or electrical equipment all personnel entering the regulated work area must don protective clothing and equipment. Upon exiting the work area, all disposable protective
clothing shall be placed in appropriate waste storage drums and sealed, for subsequent transportation to the on-site storage facility or disposal facility.

2. Workers with cuts or scratches shall seal these wounds sufficiently to prevent accidental contact of the hazardous materials within the regulated work area prior to entering the regulated work area. Similarly, workers who accidentally incur minor cuts or scratches in the course of work activities shall immediately leave the work area, cleanse the wound with medical grade soap and seal the wound before returning to the work area.

3.02 PERSONNEL PROTECTION

A. Informed Workers:

1. All workers shall be informed of the hazards of PCBs and any other hazardous materials exposure. Workers shall also be instructed in the use and fitting of respirators, protective clothing (blue in color), decontamination procedures, and all other aspects associated with the abatement work.

B. Personal Hygiene Practices:

1. The Contractor shall enforce and follow good personal hygiene practices during the abatement of hazardous materials. These practices will include but not be limited to the following:

   a. No eating, drinking, smoking or applying cosmetics in the work area. The Contractor shall provide a clean space, separated from the work area, for these activities.

   b. If data gathered by the Owner or Owner’s designated representative in areas adjacent to the work areas shows exposure to PCBs or other hazardous materials exceeding Cal-OSHA criteria, that area will become regulated and workers must wear protective clothing and approved respirators and must have a shower facility provided to them.

3.03 PCB REMOVAL

A. The Contractor shall remove all suspect-PCB containing ballasts associated with lighting equipment that will not be reinstalled.

3.04 CLEARANCE INSPECTIONS

A. Initial Visual Inspection: Contractor shall notify the Owner or Owner’s designated representative when the decontamination process in each containment area is complete. Evidence of dust or debris will require additional clean up by the Contractor. Contractor shall be responsible for re-cleaning all areas found to be deficient.

B. If the District or District’s designated representative determines that the work area is sufficiently clean, the Contractor may proceed. If the Owner or Owner’s designated representative determines that certain areas require additional cleaning, the Contractor shall re-clean the work area and request a second inspection of the re-cleaned area. All costs incurred by the Owner for inspections required after the second inspection will be charged to the Contractor.

3.05 HAZARDOUS MATERIALS DISPOSAL

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A. It is the responsibility of the Contractor to coordinate waste handling, labeling, transportation, and disposal. The Contractor must comply fully with these Specifications, local, state, and federal regulations and provide documentation of the same.

B. Contractor shall provide at minimum three (3) day advance notification to the Owner when signatures are required on manifest(s). The Contractor shall ensure that the Hazardous Waste Manifest is correctly filled out. The Contractor shall give the appropriate copies to the Owner.

END OF SECTION
ATTACHMENT A
PCB WORK PLAN OUTLINE

In accordance with the contract documents, the Contractor is required to prepare a written, site-specific PCB Work Plan, and submit to the Owner for approval prior to start of work. This plan is required for the contractor to meet Cal-OSHA requirements as well as the contract documents, and shall describe work procedures and control methods that will protect the Owner's facilities and the environment.

I. Location of Work:
The work to be completed under this work plan will be completed at:
(Building name)
(Location within building)

II. Description of Work:
Describe the anticipated work scope

III. Schedule (days and hours of operations):
Phase/Task Anticipated Date(s)
Mobilization
Set-up of work area(s), containments
Abatement
Final Cleaning
Visual Inspection
Teardown
Demobilization

IV. Equipment and Materials
List all equipment and materials to be used, such as the following:

- HEPA Vacuums
- Hand tools
- Solvents
- Absorbents
- Eye & foot protection
- Gloves
- Cleaning Agents
- Respiratory Protection
- Disposable coveralls

V. Crew
List all workers and supervisors with emergency contact names and phone numbers.

Clearly identify the supervisor and competent person who have authority for all safety and health.

VI. Control Measures and Work Practices

Describe in a narrative format specific work procedures, exposure/contamination controls, and engineering controls.

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VII. Respiratory Protection and Protective Clothing/Personal Protective Equipment

List all respiratory protection including types and manufacturers which are anticipated for this project. Identify the phases of the project for which respirators will be required or likely to be required. List all personal protective equipment anticipated to be used on the project.

VIII. Decontamination/Hygiene Facilities

Identify the types and locations of decontamination or hygiene facilities to be used on this project. Specify use of disposable towels, soap, hot and cold water, and other supplies. Specify the required use of the facilities, including use of the facilities prior to eating, drinking, smoking and before leaving the project site. Describe handling or treatment of solid waste and wastewater.

IX. Air Monitoring Data

Identify general worker air monitoring protocols to be followed on this project, including worker category classifications, frequency of monitoring, anticipated laboratory to be used for analysis, pump calibration techniques, etc. Identify the competent person responsible for conducting personal air monitoring.

X. Containment Diagram

Include a diagram (hand written is acceptable) of the containment(s) showing the containment perimeter in relation to the surrounding areas and decontamination areas.

XI. Waste

Describe how all waste on this project will be packaged, labeled, stored, transported, manifested and dispose. Provide name of transportation vendor and disposal vendor, location of disposal vendor if not specified by the owner.

XII. Preparation of PCB Work Plan

Date Prepared and Prepared By (signature, name and title)
PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. The General Conditions and Division I General Requirements shall be included in and made part of this Section.

B. Examine all other Sections of the Specifications for requirements therein affecting the work of this Section of the Specifications.

1.2 COMPLIANCE AND INTENT

A. This Section specifies requirements for removal of Universal Waste (UW) materials. The Contractor shall coordinate all abatement work with the specifications. During all work, provide monitoring and worker protective equipment in accord with the California Occupational Safety and Health Administration (Cal-OSHA) and as required by this section and all other sections of the Specifications. Where there is conflict, the most stringent requirement shall apply.

B. The work covered by this specification includes the removal of UW including, but not limited to fluorescent light tubes and high intensity discharge (HID) bulbs.

C. All work shall comply with Environmental Protection Agency (EPA) rules and regulations governing UW: 40 CFR 273, as published in the most recent edition of the Federal Register. Additionally, all work and work related practices shall comply with applicable Federal, State and local rules and regulations including, but not limited to, the California Department of Industrial Relations, California Code of Regulations (CCR) Title 8, Division 1, Chapter 4; Department of Health Services, CCR Title 22, Division 4.5 and California Health and Safety Code, Division 20. Where conflicts occur, compliance shall be based upon the most stringent requirements.

D. Workers involved in the removal of UW shall have received specific training on the hazards, appropriate personal protection and decontamination procedures associated with UW.

E. Furnish all labor, materials, facilities, equipment, services, employee training, medical monitoring, permits and agreements necessary to perform the work required for UW abatement in accordance with this specification.

F. Perform all work specified herein with competent persons trained, knowledgeable and qualified in state-of-the-art techniques relating to UW abatement, handling, and the subsequent cleaning of contaminated areas.
G. Perform appropriate waste profile testing for all potential hazardous UW waste as required by this specification, the regulations, and the selected disposal/recycling facility. All testing shall be done in the presence of the District or District's Environmental Consultant. Chain-of-custody forms shall be provided to the District within one (1) day following sample delivery to the laboratory.

H. During removal activities, the Contractor shall protect against contamination of soil, water, plant life, and adjacent building areas, and shall ensure that there is no release of hazardous materials.

I. It is the Contractor's responsibility to determine the quantities of UW impacted by the planned demolition work. The Contractor shall conduct a site visit to determine exact locations of materials.

J. UW removed during the abatement activities shall be handled, transported and disposed/recycled in an approved manner complying with all applicable federal, state, and local regulations.

1.3 DEFINITIONS

A. Certificate of Disposal: The document provided to the generator certifying that the UW wastes were disposed/recycled in strict accordance with all applicable Federal, State and Local regulations.

B. Chain-of-Custody: A legal concept involving documentation of the physical possession of a sample/samples from the moment it is collected, transported, analyzed, and ultimately stored in an archive.

C. Competent Person: One who is capable of identifying existing and predictable hazards and who has the authority to take prompt corrective measures to eliminate them.

D. Decontamination Area: Area which is constructed to provide the means for workers to store clothing, equipment and other articles, and to properly remove contamination upon concluding work activities that result in exposure to these hazardous materials.

E. DOP: Diocylphthalate, the challenge aerosol used to perform on-site leak testing of HEPA filtration equipment.

F. Decontamination Unit: Refers to system of airlocks used to decontaminate personnel, waste bags, equipment, etc. when exiting the work area. A decontamination unit shall be set up for each containment area.

G. District: Contra Costa Community College District

H. District's Environmental Consultant: Environmental Consulting firm and its representatives retained to provide compliance oversight and monitoring for the Contractor's universal waste abatement work activities.
I. Equipment Decontamination Enclosure System: A decontamination enclosure system for materials and equipment, typically in a designated area of the work area, and including a washroom, a holding area, and an uncontaminated area.

J. HEPA: High Efficiency Particulate Air filter capable of filtering out airborne particulate 0.3 microns or greater in diameter at 99.97 percent efficiency.

K. Manifest: The document authorized by both Federal and State authorities for tracking the movement of hazardous wastes.

L. Powered Air Purifying Respirator (PAPR): A full facepiece respirator that has the breathing air powered to the wearer after it has been purified through a filter.

M. Respirator: A device designed to protect the wearer from the inhalation of harmful atmospheres.

N. Returned Bill of Lading: An original duplicate copy of the bill of lading provided to the waste generator within forty-five (45) days of the transport date which acknowledges the receipt of the material at the disposal facility.

O. Universal Waste: This waste has three categories: CRTs, thermostats, batteries and lamps (fluorescent tubes, discharge lamps, mercury vapor lamps, batteries (not auto), and mercury thermostats.

P. Visual Inspection: A visual inspection by Environmental Consultant, of the work area under adequate lighting to ensure that the work area is free of visible material, debris, and dust.

1.4 UNIVERSAL WASTE MATERIALS

A. The following Universal Waste must be removed and disposed as required by other sections: Fluorescent light tubes and HID bulbs that will not be reinstalled following the library classroom project.

1.5 SUBMITTALS PRIOR TO START OF WORK

A. The reviews by the District or District's Environmental Consultant are intended to be only for general conformance with the requirements. The District or District's Environmental Consultant assumes no responsibility for permits, licenses, notices, materials and methods, equipment or temporary construction required to execute the work described in this Section of the Specification or in other Sections of the Specification or in other documents included in the contract documents.

B. The following items shall be submitted to, and approved by, the District or District's Environmental Consultant before commencing work involving the UW abatement.

1. Provide a detailed work plan for UW that follows Attachment A – Universal Waste Work Plan Outline.

2. Provide a site safety plan for UW abatement prior to project initiation. The site safety plan shall deal with, at a minimum: personal protective equipment; site

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safety and health hazards; UW spills; control of water leakage or discharge within and/or from the work area; medical emergency; materials handling procedures; contractor's internal administrative and inspection procedures; earthquakes and/or fire emergency procedures; protocol for responding to complaints or questions from interested parties; 24-hour emergency telephone numbers for company officers with authority to respond to emergencies.

3. Workers: Demonstrate education and specialized training

4. Licenses: Submit copies of state and local licenses, evidence of Cal-OSHA registration and permits necessary to carry out the work of this contract.

5. Material Safety Data Sheets/Specification Sheets: The Contractor shall submit Material Safety Data and Specification Sheets for all materials and equipment to be used for this project.

6. Rental Equipment: When rental equipment is to be used in the abatement areas or to transport hazardous waste, the Contractor shall provide written notification regarding intended use of the rental equipment to the rental agency before use, with copies to the District or District’s Environmental Consultant.

1.6 SUBMITTALS AT THE COMPLETION OF THE PROJECT

A. Upon completion of on-site work, Contractor shall provide a detailed project summary that will include each of the items listed below. The project Summary shall be submitted and approved by the District or District’s Environmental Consultant prior to acceptance of final pay request and shall include the following:

1. Copies of the Security and Safety Logs showing names of persons entering the work areas. The logs shall include date and time of entry and exit, supervisor's record of any accident (detailed description of accident).

2. Emergency evacuations and any other safety or health incident.


4. Project Summary including, but not limited to, the following: location and approximate quantity of UW removed, hazardous waste hauler certifications, waste disposal/recycling facilities, dates of commence and completion of on-site work.

PART 2 - PRODUCTS

2.1 SIGNS:

A. Warning signs for work areas shall be approximately 18 inches square with yellow background and 1 inch black letters. Signs shall read "DANGER - KEEP OUT - TOXIC CHEMICAL WORK AREA".

B. Location of Signs: Provide bilingual Signs at all approaches to work areas in languages used by the Contractor's employees. Locate signs at such a distance that personnel may read the sign and take the necessary protective steps required before entering the area.
2.2 PLASTIC SHEETING:

A. Use fire-retardant (FR) polyethylene (poly) film.
   1. Thickness - 6-mil, minimum, NO EXCEPTIONS.
   2. Flame Resistance/Flame Spread Rate <25.
   3. Conforms to NFPA #701 and Tested in accordance with ASTM E-84.
   4. Spray adhesive for sealing polyethylene to polyethylene shall contain no methylene chloride or methyl chloroform (1,1,1-trichloroethane) compounds.

2.3 VACUUM EQUIPMENT:

A. All vacuum equipment used in the work area shall use HEPA filtration systems and be of the wet-dry type. The Contractor shall provide on-site independent DOP testing to document the effectiveness of the vacuum units. Vacuums shall not be used for any mercury spill cleanup.

2.4 MATERIALS AND EQUIPMENT:

A. Storage Containers:
   1. All UW fluids, UW-contaminated fluids, including flush and cleaning solvents and mixtures, shall be stored in sealed DOT 17E closed top drums or other waste container approved for storage of these materials.
   2. All UW solid wastes and items including disposable items used in the course of the work such as rags, absorbents, protective clothing, etc., shall be stored in sealed DOT 17C open type drums or other waste container approved for storage of these materials.
   3. Any UW Article Container, other than approved DOT drums, specified in this specification, intended for storage, shall be submitted to the District or District's Environmental Consultant for approval.

B. Solvents, Cleaning Agents and Absorbents:
   1. Solvents: An appropriate solvent in which UWs are shown to be soluble in. Care should be taken to limit the complexity of the waste stream. In all cases where solvents are used in the course of work, proper ventilation shall be provided by the Contractor to insure that resulting fumes/vapors are not dispersed to occupied building areas either as a result of natural convection or via air intakes for building ventilation systems. The manufacturer's recommendations for application and requirements of Cal-OSHA shall be strictly observed.
   2. Cleaning Agents: An appropriate cleaning agent in which UWs are shown to be soluble in. Care should be taken to limit the complexity of the waste stream. Numerous, non-toxic, cleaning agents shown to meet or exceed the solubility requirement above are commercially available. In all cases where cleaners are used in the course of work, proper ventilation shall be provided by the Contractor to insure that resulting fumes/vapors are not dispersed to occupied
building areas either as a result of natural convection or via air intakes for building ventilation systems. The manufacturer's recommendations for application and requirements of Cal-OSHA shall be strictly observed.

3. Absorbents: “Safestep” as manufactured by Andesite of California, Inc., or approved equal.

PART 3 - EXECUTION

3.1 SAFETY PROCEDURES AND WORKER PROTECTION

A. Take all precautions and measures required to protect employees, inspection personnel, District’s on-site personnel and the general public from exposure to UW solids, liquids and vapors.

1. All personnel authorized for entry in work areas shall be instructed in the proper procedures for working with or around electrical hazards and UW containing/contaminated materials.

2. All electrical equipment upon which UW related activities are to be performed shall be de-energized, locked out/tagged out and permanently disconnected from any power source prior to the commencement of the work.

3. Consumption of food or tobacco products shall not be permitted in any of the project work areas where UWs, volatile solvents and/or other hazardous materials are present. Additionally, no open flames will be permitted in these same areas. Signage to this effect shall be provided for each work area.

4. The Contractor performing the work of this Contract shall develop, together with applicable subcontractors, a contingency plan covering accidental UW spills and work exposure to UWs. The plan shall be submitted to the District or District’s Environmental Consultant prior to commencing UW-related work. The submittal shall also include a separate section to describe the hauler’s spill contingency plan and avoidance procedures.

B. Work Area Protection and Marking: Prior to commencing any UW-related work activities provide barricades and warning signs to clearly identify and effectively guard against unauthorized entry into the work areas.

1. Place barricades to maintain a minimum of 25 feet from all perimeters of the work being conducted to the barricades, where feasible.

2. All equipment such as tools, containers, etc., shall be confined to the work area until work is complete, containers are sealed and equipment properly decontaminated and safely stored for transport.

3. Place 6 mil poly drop sheeting directly below fixtures scheduled for bulb or tube removal. Drop poly shall be large enough to capture debris from possible breakage.
C. Protective Clothing and Equipment: At all times when UW fluids or mixtures in any volume are not sealed in drums, containers or electrical equipment, workers shall wear:

1. Gloves impermeable to both UWs and the solvent and/or clean up agent in use.
2. Disposable, full body suit, impermeable to both UWs and the solvent and/or clean up agent in use.
3. Appropriate eye protection to insure that eyes are protected from liquid splatter or exposure to concentrated vapors or fumes.
4. Respiratory protection shall be used for any mercury cleanup that has not been previously assessed.
   a. The Contractor shall provide protective clothing, eye protection, and breathing apparatus as required for authorized inspection personnel upon request.
   b. Cleanup of broken mercury containing products (mercury vapor producing materials): NIOSH-approved, half-face Organic Vapor/HEPA cartridges.

D. Personnel Protection and Procedures: The UW work area shall at no time be left unattended from the commencement of remediation work and until all UWs and incidentals have been sealed in approved containers. If immediate transportation to the UW storage facility or disposal facility is not feasible the work area must be secured in a manner approved by the District or District's Environmental Consultant.

1. During work procedures and at all times when UW containing/contaminated fluids in any volume are not sealed in drums, containers or electrical equipment, all personnel entering the regulated work area must don protective clothing and equipment. Upon exiting the work area, all disposable protective clothing shall be placed in appropriate waste storage drums and sealed, for subsequent transportation to the on-site storage facility or disposal facility.
2. Workers with cuts or scratches shall seal these wounds sufficiently to prevent accidental contact of the hazardous materials within the regulated work area prior to entering the regulated work area. Similarly, workers who accidentally incur minor cuts or scratches in the course of work activities shall immediately leave the work area, cleanse the wound with medical grade soap and seal the wound before returning to the work area.

3.2 SPILL CLEAN-UP, CONTAINERIZATION AND MARKING

A. Clean-up of Work Area, UW Articles and Spills:

1. Equipment and Tools: After the last UW has been removed and all fluids and solids cleaned from fixture, all tools and equipment used in the work shall be decontaminated and properly stored for reuse. All tools that may have come in contact with UW at any concentration shall be thoroughly double washed/rinsed with an appropriate cleaning agent, wiped clean and properly stored.
2. UW Contaminated Articles: All exterior surfaces of equipment that may have come in contact with UW or contaminated solids or fluids either during the course of work activities or due to past leaks shall be double washed/rinsed, at a minimum, with an appropriate cleaning agent and wiped clean.

3. Solid Impenetrable Surfaces: All metal surfaces and surfaces with impervious liners which have come in contact with UW or UW mixtures in the course of the work or as a result of past leaks shall be thoroughly cleaned using a combination of absorbents and solvents or cleaning agents. Minimum cleaning requirements for these surfaces include removal of bulk material and two rinses with the cleaning agent of the surfaces, which come in contact with UW or UW mixtures in the course of the work or as a result of past leaks. The work area shall be effectively ventilated during operations such that vapors used in decontamination and cleaning are not vented to occupied building areas. Upon completion of UW-related activities, if fumes or vapors are still present in levels, which could impede breathing or be considered toxic under State and/or NIOSH standards, the Contactor shall provide additional ventilation to accelerate drying. Auxillary breathing apparatus may only be used by personnel trained in the use of this equipment and experienced in conducting electrical work while wearing equipment, which could impede safe work practices.

4. Soils and Porous Materials: The U.S. EPA, Region IX, regards soil, asphalt, wood, cement and concrete as porous materials that absorb UW. Where practicable, these materials must be removed when they are within the spill or contamination boundary.

5. Decontamination Verification: Completion of decontamination activities will be verified by the District or District's Environmental Consultant.

B. Containerization and Marking:
1. All liquid generated as a result of work activities and clean up operations shall be placed in appropriate waste containers and the containers sealed.

2. All solids such as absorbents, rags, disposable protective clothing, soils, and other incidentals shall be placed in appropriate waste containers and the containers sealed.

3. All drums shall be permanently marked as to specific contents and dated. In addition, each drum (and container) shall be marked with appropriate EPA, UW label(s) that comply with Federal and State Regulations.

3.3 HANDLING AND TRANSPORTATION TO STORAGE FACILITIES

A. Drums: All closed and open top drums must be permanently sealed, marked and labeled prior to loading on transport vehicle. Filled drums shall be loaded on the transport vehicle by any of the following methods.

1. Hoist or lift truck utilizing a two-point drum lifter

2. Hoist or lift truck provided with a band-around type drum lifter
3. Lift truck lifting the drums from underneath by a pallet attached to the drum by a banding arrangement.

B. Drums shall not be lifted by the following methods.
   1. Any rope, chain or cloth slings tied about the drum.
   2. Placement of drums on bare lift truck forks.
   3. Forcing drums between forks of a lift truck.
   4. Any commercial drum lifters exerting force of the sides of a drum.

C. All drums or article containers shall be secured to the transport vehicle to prevent movement in transport.

3.4 TRANSPORTATION TO DISPOSAL FACILITY

A. General: All UW Articles removed and all drums containing liquids, solids and incidentals shall be transported to the off-site District approved recycling/disposal facility utilizing District approved haulers.
   1. The Contractor performing the work of this section shall be licensed for the transportation and hauling of extremely hazardous wastes. The Contractor shall provide a route plan, which clearly identifies the routes proposed while transporting UW items from the work site to the off-site facilities.
   2. A minimum of two operators shall be in attendance at all times when UW items are being transported, loaded and unloaded.

B. The rules in this section apply to each motor carrier engaged in the transportation of hazardous materials by a motor vehicle, which must be marked or placarded in accordance with DOT 177.

C. Every motor vehicle transporting or storing Articles and items containing UWs or hazardous materials must be operated in compliance with the laws, ordinances and regulations of the state jurisdiction of which it is being operated in, unless they are at variance with specific regulations of the Department of Transportation which are applicable to the operation of that vehicle which impose a more stringent obligation or restraint.

D. No person may smoke within 25 feet of any Contractor's vehicles, which contains flammable materials (flushing solvents), or an empty tank motor vehicle, which has been used to transport flammable materials.

E. When a motor vehicle, which contains hazardous materials is being fueled its engine must not be operated.

F. Motor vehicles transporting UWs or hazardous materials must have all containers properly secured in place to insure that no equipment items or containers can be loose or unsafely placed into the transport vehicle. This may include chaining, roping or strapping and winching. The driver of the vehicle must stop the vehicle in a safe location at least once during each two hours or one hundred miles of travel.
whichever is less and inspect the contents of the shipment. At the time of inspection if any form of binding is found to be loose the driver shall immediately take action to remedy the situation for safe transportation.

G. Any equipment, drums or other Articles carried in an open, flatbed or stake type truck shall be covered with a tarp to protect it from the elements.

H. A motor carrier that transports hazardous waste must furnish the driver of each motor vehicle in which the waste is transported with the following documents.
   1. A copy of this specification section
   2. A document containing instructions on procedures to be followed in the event of accident or delay. The documents must include the names and telephone numbers of persons to be contacted, and the substances of the hazardous wastes being transported, and the precautions to be taken in emergencies such as fires, accident or leakages.
   3. Bill of Lading and permit documents described in this specification and required for waste transport.

I. A motor vehicle being operated must be marked if that vehicle is transporting UWs or hazardous materials of a kind that require the vehicle to be marked or placarded in accordance with DOT 177.

3.5 UW DISPOSAL

A. The Contractor shall treat and dispose of all collected UW wastes collected and generated during the execution of this Contract including Articles, fluids, etc. as set forth this specification.

B. Except as may be otherwise specifically directed by the District or District's Environmental Consultant, the Contractor shall treat and dispose of the waste UW materials as governed by 40 CFR 273, California State regulations, local regulations and subsequent amendments.
   1. By incineration or recycling at a facility approved for such use by the U.S. EPA, and all other controlling regulatory agencies and bodies of the state, county and municipality of that facility's location all UW fluids, flushing fluids, and other UW contaminants. If preapproved by the District, waste contaminated solids may also be incinerated as suitable and allowed for this type of disposal.

C. All UW wastes generated as part of these operations will be disposed of by the Contractor in a legal manner.

D. The Contractor shall not sell, transfer or recover any material from the wastes received from the District without their prior written consent.

3.6 BILL OF LADING AND RECORDS
A. The Contractor shall provide the District or District's Environmental Consultant with a certificate of disposal verifying that all waste received by it has been properly treated and disposed.

B. The Contractor shall provide the District or District's Environmental Consultant copies of all Bill of Ladings, permits or other documents currently in effect relating to the specific UW wastes to be transported, treated and disposed hereunder except as otherwise stated in this Section. The Contractor shall also promptly furnish to the District or District's Environmental Consultant copies of all new or renewal permits or other documents applicable to this agreement as soon as the Contractor receives same.

C. The Contractor shall furnish complete Bill of Ladings for all UW Articles to be collected from the facility at which the removal and decontamination occurred. The District or District's Environmental Consultant shall sign the Bill of Ladings. These Bill of Ladings shall accompany the waste loads to disposal and be properly completed by the hauler and disposal agent as required by Federal and State hazardous waste management law. The final Bill of Lading shall then be returned by registered mail to the District or District’s Environmental Consultant within 30 days.

D. The contract work will not be considered complete nor will the District make final payment until the District or District’s Environmental Consultant receives certifications of incineration (for fluids) and/or recycling.

3.7 PLACEMENT IN STORAGE AND RECORDS

A. Drums and Articles shall be placed in the storage facility in locations as directed by the District or District’s Environmental Consultant.
   1. Articles shall be placed such that ample clearance is provided around equipment to facilitate future inspection.
   2. Drums shall be placed on pallets of sufficient strength to withstand double stacking. Drums shall not be stacked at time of storage unless space is limited as determined by the District or District’s Environmental Consultant. Where stacking of drums is necessary, pallets shall be placed between the drum layers.
   3. Immediately following unloading of the UW transport vehicle, the cargo area shall be inspected to check for fluid leaks. If any fluids are found, the source of the leaking drum or items shall be identified and sealed. The contamination cargo area shall be thoroughly double washed/rinsed clean with absorbents, solvents and liquid cleaner. Cleaning agents, solvents and solids shall be placed in proper drums for disposal.

B. Records: Upon completion of all UW work related activities the Contractor shall provide a complete record of such activities and storage data to the Safety Officer or other administrator responsible for UWs at the site. In addition, two copies of the record shall be transmitted to the District or District’s Environmental Consultant. The record shall include the following data:
1. Name of the firm performing the work of this Section and technician in charge.
2. Drum sizes (30 or 55 gallon)
3. Identification of contents (liquids, flushing solvent, cleaning solvents for solids, rags, absorbents, soil, etc.)
4. Weight in kilograms and gallons of contents of each drum or container.
5. Date placed in storage.

END OF SECTION 02085
ATTACHMENT A
UNIVERSAL WASTE WORK PLAN OUTLINE

In accordance with the contract documents, the Contractor is required to prepare a written, site-specific Universal Waste Work Plan, and submit to the District for approval prior to start of work. This plan is required for the contractor to meet Cal-OSHA requirements as well as the contract documents, and shall describe work procedures and control methods that will protect the District’s facilities and the environment.

I. Location of Work:
The work to be completed under this work plan will be completed at:
(Building name)
(Location within building)

II. Description of Work:
Describe the anticipated work scope

III. Schedule:
<table>
<thead>
<tr>
<th>Phase/Task</th>
<th>Anticipated Date(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mobilization</td>
<td></td>
</tr>
<tr>
<td>Set-up of work area(s), containments</td>
<td></td>
</tr>
<tr>
<td>Abatement</td>
<td></td>
</tr>
<tr>
<td>Final Cleaning</td>
<td></td>
</tr>
<tr>
<td>Visual Inspection</td>
<td></td>
</tr>
<tr>
<td>Teardown</td>
<td></td>
</tr>
<tr>
<td>Demobilization</td>
<td></td>
</tr>
</tbody>
</table>

IV. Equipment and Materials
List all equipment and materials to be used, such as the following:

- HEPA Vacuums
- Hand tools
- Solvents
- Absorbents
- Respiratory Protection
- Eye & foot protection
- Gloves
- Manometers
- Cleaning Agents
- Airless sprayers/compressors
- Disposable coveralls

V. Crew
List all workers and supervisors with emergency contact names and phone numbers.

Clearly identify the supervisor and competent person who has authority for all safety and health.

VI. Control Measures and Work Practices

Describe in a narrative format specific work procedures, exposure/contamination controls, and engineering controls.

VII. Respiratory Protection and Protective Clothing/Personal Protective Equipment

List all respiratory protection including types and manufacturers which are anticipated for this project. Identify the phases of the project for which

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respirators will be required or likely to be required. List all personal protective equipment anticipated to be used on the project.

VIII. Decontamination/Hygiene Facilities

Identify the types and locations of decontamination or hygiene facilities to be used on this project. Specify use of disposable towels, soap, hot and cold water, and other supplies. Specify the required use of the facilities, including use of the facilities prior to eating, drinking, smoking and before leaving the project site. Describe handling or treatment of solid waste and wastewater.

IX. Air Monitoring Data

Identify general worker air monitoring protocols to be followed on this project, including worker category classifications, frequency of monitoring, anticipated laboratory to be used for analysis, pump calibration techniques, etc. Identify the competent person responsible for conducting personal air monitoring.

X. Containment Diagram

Include a diagram (hand written is acceptable) of the containment(s) showing the containment perimeter in relation to the surrounding areas and decontamination areas.

XI. Waste

Describe how all waste on this project will be packaged, labeled, stored, transported, manifested and disposed.

XII. Preparation of Universal Waste Work Plan

Date Prepared and Prepared By (signature, name and title)
SECTION 02300
EARTHWORK

PART 1 - GENERAL

1.01 SUMMARY

A. Work Included: Furnish all labor, materials, equipment and services necessary to complete all earthwork as shown on Drawings and as specified.
   1. Rough grading and fine grading.
   2. Excavating, filling, backfilling and compaction for utilities and foundations.

B. Related Work:
   1. Cutting and Patching: Section 01730.
   2. Selective Demolition: Section 01732.
   4. Earthwork: Section 02300.
   5. Portland Cement Concrete Paving: Section 02520.
   6. Cast-In-Place Concrete: Section 03300.
   7. Miscellaneous Specialties: Section 10900.

1.02 QUALITY CONTROL

A. Testing: Compaction tests shall be performed throughout in accordance with the following:
   2. In-Place Density of soil should be obtained by either:
      a. Test Method for Density and Unit Weight of Soil in Place by the Sand-Cone Method, ASTM D1556; or
      b. Test Methods for Density of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth), ASTM D2922.
   3. Water content of the soil shall be obtained by either:
      c. Test Method for Water content of Soil and Rock in Place by Nuclear Methods (Shallow Depth), ASTM D3017; or

B. Layout The Contractor shall layout the work to the lines and grades shown on the Drawings and as directed by the Architect.

1.03 SUBMITTALS

A. Submit in accordance with the provision of the General Conditions, Article 3.11.

B. Test Results, including gradation and compaction tests, for proposed import materials performed within 60 days prior to submission.
C. Proposed excavation plan(s) for removal of temporary fills.

D. Mix design and materials certification for controlled low strength material.

1.04 PRODUCT HANDLING

A. Protection of Existing Underground Utilities: The locations of all known active sub-surface pipelines, conduits and utilities, have been indicated on the Drawings based upon information provided by the City and the District and utility companies. These locations are not warranted, nor is there any guarantee, expressed or implied, that those underground utility lines may be encountered. Any lines encountered that were not anticipated shall be called to the District who will issue instructions for proceeding with the work. Should old lines be encountered which prove to be out-of service, they shall be removed as part of excavation or, if sufficiently below finish grades and approved by the District may be capped and left in place. Any existing debris, abandoned foundations, pavements, and/or rubble must be removed from the site prior to any grading or additional fill operations. The depressions left by the removal of the above items must be backfilled with acceptable fill material and compacted in accordance with this Section.

B. Dust Control: Dust control shall be in accordance with Division 1.

C. Protect Finished Areas: Protect all finished areas from weather damage by whatever means as required to prevent erosion of graded areas or sloughing off of slopes. Continued use of prepared subgrade for hauling which will cut or deform it from required cross-section of elevations will not be permitted, and the Contractor shall repair and recompact any damage to prepared subgrades caused by such operations. Prior to the acceptance by the District any damaged area shall be repaired at the Contractor’s expense.

1.05 SUPPORT OF EXCAVATIONS

A. Adequately support excavation for trenches and structures to meet all applicable requirements in the current rules, orders and regulations. Excavation shall be adequately shored, braced and sheeted so that the earth will not slide or settle and so that all existing structures and all new pipe and structures will be fully protected from damage. Keep vehicles, equipment, and materials far enough from the excavation to prevent instability.

B. Take all necessary measures to protect excavations and adjacent improvements from running, caving, boiling, settling, or sliding soil resulting from the high groundwater table and the nature of the soil excavated. Attention is directed to Section 832 of the Civil Code of the State of California relating to lateral and subjacent supports, and wherever such excavation may damage structures or improvements adjacent to the excavation, the Contractor shall comply with this law.

C. The support for excavation shall remain in place until the pipeline or structure, the shoring, sheeting and bracing shall be carefully removed so that there
shall be no voids created and no caving, lateral movement or flowing of the subsoils.

1.06 EXISTING FOUNDATIONS

The Drawings may not show existing abandoned foundations and/or pile foundations for existing structures. Notify the District if such foundations are encountered; the District will provide instructions for their removal or abandonment.

1.07 ENVIRONMENTAL REQUIREMENTS:

When unfavorable weather conditions necessitate interrupting filling and grading operations, areas shall be prepared by compaction of surface and grading to avoid collection of water. Adequate drainage shall be provided to prevent erosion. After interruption, compaction specified in last layer shall be reestablished before resuming work.

PART 2 – PRODUCTS

2.01 MATERIALS

A. All fill shall be approved on-site materials from required excavation supplemented by approved imported fill, if necessary.

B. All import material shall comply with this Section.

C. Definition of Terms:
   1. Fill: All soils material placed to raise the existing grade of the site or to backfill excavations.
   2. On-Site Material: That which is obtained from the required excavation on the site.
   3. Import Material: Soil or aggregate is hauled in from off-site borrow areas.
   6. Percent compaction: The ratio, expressed as a percentage, of the dry density of fill material as obtained from a field test to the maximum dry density of the same material determined by ASTM D1557. Field densities shall be determined in accordance with ASTM D1556 or ASTM D2922.
   7. Optimum Water Content: The water content at the maximum dry density of the material (ASTM D1557) as determined by ASTM D2216.

D. Fill Materials:
   1. Imported Structural Fill: Clean, imported free-draining granular soil, free of organic material or other deleterious substances, with the following gradation:
      U.S. Series Percent Passing Sieve
2. On-site Structural Fill: Clean, on-site, free-draining granular soil, free of organic material or other deleterious substances, with the following gradation:

<table>
<thead>
<tr>
<th>Sieve Size (Dry Weight Composition)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2-inches 100</td>
</tr>
<tr>
<td>¾-inch 85-100</td>
</tr>
<tr>
<td>No. 4 40-95</td>
</tr>
<tr>
<td>No. 10 20-80</td>
</tr>
<tr>
<td>No. 20 10-55</td>
</tr>
<tr>
<td>No. 40 5-35</td>
</tr>
<tr>
<td>No. 200 0-10</td>
</tr>
</tbody>
</table>

3. Non-Structural Fill: Imported or on-site material, free of organic material or other deleterious substances, with fines passing the No. 200 Sieve 15 to 40 percent by weight, and free of clods and rocks greater than 2-inches in greatest dimensions.

   a. Demolished asphalt concrete may be recycled as non-structural fill if it is crushed to a maximum size of three inches and mixed with the other materials to prevent nesting.

4. Bedding Material: Imported natural river or bank sand or on-site sand; free of silt, clay, loam, friable or soluble materials, and organic matter; processed and graded as follows:

<table>
<thead>
<tr>
<th>Sieve Size (Dry Weight Composition)</th>
</tr>
</thead>
<tbody>
<tr>
<td>3/8 inch 100</td>
</tr>
<tr>
<td>No. 4 98</td>
</tr>
<tr>
<td>No. 200 12 maximum</td>
</tr>
</tbody>
</table>

   a. Pipe bedding material chloride content not to exceed 40 ppm.

5. Permeable Material: Caltrans Class II Permeable material.

E. Controlled Low Strength Material (CLSM):

1. Materials: Greenbook, Section 201-6.1 to 201-6.5.

2. 28-Day Compressive Strength: 100 to 150 psi.
F. Warning Tape: Three-inch wide, inert, fade-resistant plastic film resistant to acids, alkalis, and other components likely to be encountered in soil. Tape shall be blue, imprinted with "CAUTION WATER MAIN BELOW", Griffolyn Terra Tape or equal. (Addendum No.1)

G. Detection Tape: Plastic metallic type consisting of a blue color coded polyethylene or melinex film, a soil core aluminum foil detection layer and other layers as required. The tape shall be resistant to acids, alkalines and other components likely to be encountered in soils. It shall be designed for both conductive and inductive locating procedures. The tape shall be blue, imprinted with "CAUTION WATER MAIN BELOW". Terra Tape "D" by Griffolyn Company; Detectatape by Allen Systems; or equal.

PART 3 – EXECUTION

3.01 LAYOUT AND PREPARATION

A. Summary: Layout all work, establish grades, locate existing underground utilities, set markers and stakes, and set up and maintain barricades for the protection of utilities and the area of work: all prior to beginning actual earthwork operations.

B. Stockpiles: Protect stockpiles during rainy weather by covering the stockpiles with visquine or similar material and weigh down the protection.

3.02 CLEARING, GRUBBING AND PREPARING BUILDING PAD, PAVEMENT, AND FILL AREAS

Summary: All stockpiled soils, vegetation, concrete and asphalt, debris, rubble, rubbish, loose and/or saturated materials, and stumps and root systems of removed trees shall be removed and disposed of so as to leave the areas that have been disturbed with a neat and finished appearance, free from unsightly debris. Excavations and depressions resulting from the removal of such items, drainage swales, as well as any existing excavations or loose soil deposits as determined by the District's Geotechnical Engineer or his representative, shall be cleaned out to firm undisturbed soil and backfilled with structural fill material in accordance with these Specifications.

A. Subgrade Preparation: The surface upon which fill is to be placed, as well as subgrade of the pavement areas left at existing grade, shall be scarified six inches deep and until the surface is free from ruts, hummocks or other uneven features which would tend to prevent uniform compaction of the equipment to be used. Compact the subgrade to achieve at least 90 percent relative compaction (ASTM D1557), except compact the subgrade for pavement to at least 95 percent relative compaction.

B. Moisture Content of Subgrade: When moisture content of the subgrade is more than two percent below optimum required to achieve the specified density, water shall be added until the proper content is achieved. When the moisture content of the subgrade is more than two percent above optimum,
the subgrade shall be aerated by blading or other methods until the moisture content is satisfactory for compaction.

3.03 EXCAVATION

A. Summary: Excavate all material as necessary to complete the work shown on the Drawings.

B. Reuse of Excavated Material: After stripping, the material obtained from the excavation may be used for fill or backfill to the extent required by the Drawings and as specified herein subject to the approval by the District's Geotechnical Engineer. In the event additional material is required, it shall be imported material approved by the District's Geotechnical Engineer.

C. Depth of Excavation: When excavation has reached required subgrade elevations, notify the District's Geotechnical Engineer who will make an inspection of conditions. In the event it is necessary to remove unsuitable material to depths greater than those shown, the District and City (if applicable) shall first be notified, and equitable adjustment in the contract price will be made. If, for any other cause, or without prior notification to the District, over-excavation is carried below the lines indicated, the over-excavation shall be backfilled with compacted fill as directed, without additional cost to the District.

D. Control of Water: Keep all excavations free from water.

E. Excavation for Sewer, Storm Drain and Utility Trenches

F. Excavate to straight lines and grade as required. Provide all necessary shoring to keep banks vertical in paved areas. If rock is encountered at the elevation required, excavate to a depth of six inches below the required grade and backfill with a layer of bedding material compacted to 95 percent relative compaction. Over-excavated trenches shall be backfilled with bedding material and compacted at 95 percent minimum to the proper elevation.

3.04 COMPACTION

A. Methods: Compaction shall be by suitable compaction equipment of such design that it will be able to compact the fill to the specified dry density. Compaction of each layer shall be continuous over the entire area and the compaction equipment shall make sufficient passes to ensure that the required density has been obtained.

1. Each layer shall be brought to the moisture content within two percent of optimum and compacted to the minimum degree of compaction required for the specified aspect.
   a. Compaction by flooding, ponding, or jetting will not be permitted.

B. Fill:
1. All fill shall be placed under the observation of the Geotechnical Engineer.
2. After compacting the subgrade, all fill shall be placed in loose lifts not exceeding nine inches in uncompacted thickness.
3. Density:
   a. Minimum compaction for fills and subgrade shall be 90 percent except where otherwise specified herein or on the plans.
   b. Fills below structures, the upper two feet below paved surfaces, and the upper six inches of subgrade beneath areas to be paved or receive fill shall be compacted to 95 percent.
   c. Utility trench backfill and bedding shall be as shown in the Drawings.
4. No fill material shall be placed, spread or rolled during unfavorable weather conditions. When the work is interrupted by inclement weather, fill operations shall not be resumed until the Geotechnical Engineer indicates that the moisture content and density of the previously placed fill are as specified.
5. Where fills are to be made and compacted on sloping ground surfaces steeper than 5:1, such slopes shall be benched 8 to 10 feet horizontally into firm native soils as the work is brought up.
6. After surface preparation is completed, the mass filling should commence immediately and proceed until the site is to grade.
7. Overbuild fill slopes three feet and trim back to the compacted core.

3.05 BACKFILLING

A. Procedure: Backfill excavations as construction operations permit, but not before all work to be covered has been inspected and approved, concrete has achieved required strength, and debris has been removed from the excavations.

B. Utility Trench Backfill and Bedding:
   1. Place sufficient bedding material in trench bottom up to grade of bottom of pipe and compact with mechanical equipment.
   2. Shovel slice-bedding material carefully under and beside the pipe, up to the spring-line without moving the pipe. Compact with small, manually-operated vibratory compaction equipment.
   3. Carefully place and compact bedding in eight-inch maximum lifts to six inches above top of pipe.

3.06 GRADING

Grade areas to smooth uniform surface in conformity to contour lines and spot elevations indicated on the Drawings. Grade areas disturbed by the Contractor where existing grades are to remain. Grade level where not otherwise indicated. Round or smooth, abrupt changes in slopes. Refill any settled grades to required levels. Slope ground away from buildings.

3.07 CONTROLLED LOW STRENGTH MATERIAL (CLSM)
CLSM may be substituted for bedding material. Install CLSM in accordance with the Greenbook, Sections 201-6.6 for Placement and 201-6.7 for Replacing Pavement.

3.08 GRADE TOLERANCES

A. Bring all areas to proper grade with allowance for finish materials to the following tolerances.
   1. Building Pad and Pavement Subgrades – Plus 0.00 feet or minus 0.10 feet.
   2. Excavations – Plus or minus 0.20 feet.
   3. All other Areas – Plus or minus 0.10 feet.

B. Landscape areas:
   4. The grading contractor shall backfill all planter areas to within 1½-inches of the adjacent top of the curb or sidewalk, as applicable, with soils free from debris and approved by the Architect.
   5. Mixing with topsoil and adding other landscape ingredients shall be the responsibility of the landscape contractor. In landscape areas which are to be bermed or mounded, the grading contractor shall provide stockpile soils free from debris and approved the Landscape Architect, in sufficient quantity for the berms and mounding as shown upon the landscape plans. This material shall be stockpiled within landscape areas designated by the general contractor (clear of proposed utility trenches).
   6. The spreading, preparation, compaction and final grading and contouring of the stockpiled soil within the bermed and mounded landscape areas shall be the responsibility of the landscape contractor, and shall be subject to the approval of the District's Geotechnical Engineer.

3.09 SURPLUS MATERIAL

Place surplus soil material and unsuitable soil material in accordance to District.

3.010 TEMPORARY FILLS

Construct and remove temporary fills constructed for access or equipment pads in a manner that does not adversely impact permanent facilities, fills, or natural slopes. Submit a plan for their removal to the District.

END OF SECTION
SECTION 03300

CAST-IN-PLACE CONCRETE

PART 1 - GENERAL

1.01 SUMMARY

A. Work Included: Furnish all labor, materials, equipment, and related work necessary to complete cast-in-place concrete for building structural work and flatwork concrete, including formwork, reinforcement, concrete materials, mix design, placement procedures, finishes, welding requirements, and materials and procedures for anchorage to concrete work as indicated in the Drawings and specified herein.

1. Reinforced concrete with existing depressed concrete slab.
2. Reinforced concrete with existing depressed concrete slab over foam fill.
3. Concrete paving and curbs.
4. Cast-in-place stair nosing provided in Metal Fabrication, Section 05500.
5. Concrete site benches.
   a. Finish:
      i. Bench Top and Front Edge: Smooth Rubbed Finish in accordance to Article 3.16B.
      ii. Other Surfaces of Bench: Trowel Finish in accordance to Article 3.16A.
   a. Seal all exposed concrete with 2 coats.
      i. Seal concrete if recommended by the carpet tile manufacture at Computer Lab - Room L148, Room L149 and Room L150, Office - Room L156A.

B. Related Work:

1. Cutting and Patching: Section 01730.
2. Selective Demolition: Section 01732.
3. Earthwork: Section 02300.
   a. Exterior concrete topping.
5. Metal Fabrications: Section 05500.
7. Tiles: Section 09300.
8. Carpet Tiles: Section 09683.
9. Miscellaneous Specialties: Section 10900.
   a. In-ground bike rack.
10. Mechanical: Division 15.
11. Electrical: Division 16.
   a. Cast-in-place cable underfloor ducts and trenches and junction boxes in Computer Laboratory - Room L148, Room L149 and Room L150.
1.02 REFERENCED STANDARDS

A. Requirements of GENERAL CONDITIONS and DIVISION 1 apply to all Work in this Section.

B. Published specifications, standards, tests, or recommended methods of trade, industry, or governmental organizations apply to Work of this Section where cited by abbreviations noted below (latest editions apply).

1. California Building Code 2013 (CBC.)
   a. ASTM A82 Standard Specification for Steel Wire, Plain, for Concrete Reinforcement.
   c. ASTM A370 Standard Test Methods and Definitions for Mechanical Testing of Steel Products.
   d. ASTM A615 Standard Specification for Deformed and Plain Carbon-Steel Bars for Concrete Reinforcement.
   e. ASTM A706 Standard Specification for Low-Alloy Steel Deformed and Plain Bars for Concrete Reinforcement.
   f. ASTM C31 Standard Practice for Making and Curing Concrete Test Specimens in the Field.
   g. ASTM C33 Standard Specification for Concrete Aggregates.
   i. ASTM C42 Standard Test Method for Obtaining and Testing Drilled Cores and Sawed Beams of Concrete.
   j. ASTM C88 Standard Test Method for Soundness of Aggregates by Use of Sodium Sulfate or Magnesium Sulfate.
   k. ASTM C94 Standard Specifications for Ready-Mixed Concrete.
   m. ASTM C143 Standard Test Method for Slump of Hydraulic-Cement Concrete.
   q. ASTM C289 Standard Test Method for Potential Alkali-Silica Reactivity of Aggregates (Chemical Method.)
   r. ASTM C309 Standard Specification for Liquid Membrane-Forming Compounds for Curing Concrete.
u. ASTM C578 Standard Specification for Rigid, Cellular Polystyrene Thermal Insulation
w. ASTM D448 Standard Classification for Sizes of Aggregate for Road and Bridge Construction.
x. ASTM D1751 Standard Specification for Preformed Expansion Joint Filler for Concrete Paving and Structural Construction (Nonextruding and Resilient Bituminous Types.)
z. ASTM D2939 Standard Test Methods for Emulsified Bitumens Used as Protective Coatings.
e. ASTM E1643 Standard Practice for Selection, Design, Installation, and Inspection of Water Vapor Retarders Used in Contact with Earth or Granular Fill Under Concrete Slabs.
f. ASTM E1745 Standard Specification for Plastic Water Vapor Retarders Used in Contact with Soil or Granular Fill under Concrete Slabs

3. American Concrete Institute:
b. ACI 301 Specification for Structural Concrete for Buildings.
c. ACI 304Recommended Practice for Measuring, Mixing and Placing Concrete.
d. ACI 305Recommended Practice for Hot Weather Concreting.
e. ACI 306Recommended Practice for Cold Weather Concreting.
g. ACI 318 Building Code Requirements for Reinforced Concrete.
h. ACI 347 Guide to Formwork for Concrete.

a. CMM California Test 217: Method of Test For Sand Equivalent.
b. CMM California Test 227: Method of Test For Evaluating Cleanness Of Coarse Aggregate.
5. State of California Department of Transportation Standard Specifications (Caltrans Specifications-CS.)


7. Concrete Reinforcing Steel Institute (CRSI):
   a. Recommended Practice for Placing Reinforcing Bars.


10. Department of the State Architect (DSA): Interpretation of Regulations:
    a. IR 17-3 Welding Inspections.
    b. IR 17-10 Sampling, Testing and Tagging of Reinforcing Bars.


12. Forest Stewardship Council (FSC.)

1.03 QUALITY ASSURANCE

A. Before starting concrete work, Contractor shall provide the Testing Laboratory with all materials and/or information regarding materials, he proposes to use in the work. The Testing Laboratory will determine the mix or mixes with slumps as specified.

B. Requirements of ACI 301 shall govern work, materials and equipment related to this Section; specifications herein set minimum results required, and references to procedures are intended to establish minimal guides.

C. The Contractor shall be responsible for quality of concrete in place and shall bear burden of proof that concrete meets minimum requirements.

D. Placing of concrete by means of pumping will be an acceptable method of placement providing that the Contractor can demonstrate that:
   1. Specified concrete strengths will be met.
   2. Equipment has a record of satisfactory performance under similar conditions and using a similar mix.
   3. Trial batches have been made.

E. Aggregate tests per CBC Section 1903A and ACI 318, Section 5.2 and 5.3.
   1. Test aggregates in accordance with ASTM C131 for compliance with requirements of ASTM C33 (maximum 50% abrasion loss).
   2. Test aggregates in accordance with ASTM C289 for alkali reactivity.

F. District's Testing Agency will perform concrete compression tests and other quality control testing and inspection as indicated.

G. Batch Plant Inspection will be provided in accordance with CBC Section 1901A.4, CBC Section 1705A.3.2 and CBC Section 1705A.3.3. Waiver of
Batch Plant inspection shall be subject to the requirements of CBC Section 1705A.3.3, Item 1.

**H. Installer Qualifications:** An experienced installer who has completed concrete Work similar in material, design, and extent to that indicated for this Project and whose work has resulted in construction with a record of successful in-service performance.

**I. Manufacturer Qualifications:** A firm experienced in manufacturing ready-mixed concrete products complying with ASTM C94 requirements for production facilities and equipment.

**J.** All reinforcing steel shall be accompanied by producer's certificates of mill analysis in accordance with CBC Section 1913A.2 and ACI 318.

1. District's testing agency will perform one tensile test and one bend test for each 10 tons or fraction thereof of each bar size from each source in accordance with CBC Section 1903A and ACI 318.

2. If mill certificates are not available, sampling and testing rate shall be one tensile test and one bend test for each 2½ tons or fraction thereof of each bar size from each source. Such tests shall be made by an independent testing agency paid for by the Contractor. Conform to DSA IR 17-10 and ASTM A370.

**K. Welding:** Qualify procedures and personnel according to AWS D1.4, "Structural Welding Code--Reinforcing Steel." Field and shop welds shall be inspected to conform to CBC Section 1705A.2.1.2, CBC Section 1705A.2.2.5, CBC Table 1075A.2.1, Item 5b. Shop welding shall also be inspected in to confirm to DSA IR 17-3.

**L. Testing and inspection of drilled-in expansion bolts and adhesive grout shall conform to the drawings and the requirements of CBC Section 1913A.7.**

**1.04 DESIGN REQUIREMENTS**

**A. Sustainable Design Requirements:**

1. Steel reinforcing used in work in this Section are intended contribute to meeting requirements for recycle content outlined in LEED NC3.0, Credit MR4.1 or Credit MR4.2.

2. Design Mixtures used in work in this Section are intended to contribute to meeting requirements for the design mixture for innovation and design process outlined in LEED ID Credit 1.

3. Lumber used in work of this Section is to come from forests that have been certified "well managed" forestry sources in accordance with programs of FSC and is tended to contribute to meeting requirements for certified wood outlined in LEED NC3.0 Credit MR7.

   a. Composition wood panels used in work of this Section are intended to:

   i. Contribute to meeting recycled content outlined in LEED NC3.0 Credit MR4.

   ii. Reduce quantity of indoor air contaminants that are
harmful to comfort and well-being of installers and occupants and are not to contain added urea-formaldehyde resins outlined in LEED NC3.0 Credit EQ4.4.

iii. Adhesives used in work of this Section are intended to reduce quantity of indoor air contaminants that are harmful to comfort and well-being of installers and occupants and are to be formulated to be within VOC content limits outlined in LEED NC3.0, Credit EQ4.1.

4. Regional Materials: Give preference to manufacturers and fabricators whose facilities are within 500-mile radius of the project site and to materials that are harvested and extracted within 500-mile radius of the project site to contribute to meet requirements for regional materials outlined in LEED NC3.3 Credit MR5.

1.05 SUBMITTALS

A. Submit in accordance with the provisions of the General Conditions, Article 3.11.

B. The Contractor's Testing Laboratory's certificate of compliance.

C. The Contractor shall submit:
   1. Certified copies of mix designs for each concrete class specified including compressive strength test reports.
   2. Certification that materials meet requirements specified.
   3. Samples only as requested by the Architect.
   4. Certification from vendor that samples originate from and are representative of each lot proposed for use.

D. The District's Testing Agency will submit reports on tests and inspections performed to the District, the Architect, the Contractor, and the Division of the State Architect.

E. Shop Drawings:
   1. Show construction joint locations and details.
   2. Steel Reinforcement Shop Drawings: Details of fabrication, bending, and placement, prepared according to ACI 315, "Details and Detailing of Concrete Reinforcement." Include material, grade, bar schedules, stirrup spacing, bent bar diagrams, arrangement, and supports of concrete reinforcement. Include special reinforcement required for openings through concrete structures.

F. Schedule of placing for the Architect's review before starting Work.

G. For reinforcement to be welded, submit welder's certifications and Welding Procedure Specifications including Procedure Qualification Records.

H. LEED Submittals:
1. Steel Reinforcing: Submit letter or product data from manufacture indicating recycled content. Designate percentage of post consumer and post industrial recycled content.

2. Design Mixture: Submit letter or product data from manufacture indicating innovation for each concrete mixture containing fly ash or slag cement as a replacement for Portland cement or other Portland cement replacements and for equivalent concrete mixtures that do not contain Portland cement replacements.

3. Wood:
   a. Certified Wood: Submit FSC chain-of-custody certificate number with each delivery.
   b. Wood Composite Panels:
      i. Recycled Content: Submit letter or product data from manufacture indicating recycled content. Designate percentage of post consumer and post industrial recycled content.
      ii. Urea-Formaldehyde Resin Content: Submit letter or product data from manufacture stating that materials used in this project contain no added urea-formaldehyde resins.
   c. Adhesives: Submit letter of product data from manufacture stating that adhesives used in work of this Section do not exceed VOC content limits established in South Coast Air Quality Management District Rule 1168.

4. Regional Materials: Submit letter of product data form manufacture or fabricator stating products used in this project were extracted and manufactured locally; identify location of origin listing city, state and country. If only portion of product qualities for this credit, submit product data or letter clearly designating percent age of product that is extracted and manufactured locally.

5. Submit hardcopies of completed Online Documentation required for LEED MR Credit 4.1 or 4.2, MR Credit 5, MR Credit 7, EQ Credit 4.1, EQ Credit 4.4 and ID Credit 1.

1.06 PRODUCT DELIVERY, STORAGE AND HANDLING

A. Ensure storage facilities are weather tight and dry.

B. Deliver and store packaged materials in original containers with seals unbroken and labels intact until time of use.

C. Store bulk cement in bins capable of preventing exposure to moisture.

D. Use sacked cement in chronological order of delivery. Store each shipment so that it may be readily distinguishable from other shipments.

PART 2 - PRODUCTS

2.01 FORM-FACING MATERIALS
A. Smooth-Formed Finished Concrete: Form-facing panels that will provide continuous, true, and smooth concrete surfaces. Furnish in largest practicable sizes to minimize number of joints.
   1. Exterior-grade plywood panels, suitable for concrete forms, complying with DOC PS 1, and as follows:
      a. Medium-density overlay, Class 1, or better, mill-release agent treated and edge sealed.

B. Rough-Formed Finished Concrete: Plywood, lumber, metal, or another approved material. Provide lumber dressed on at least two edges and one side for tight fit.

C. Chamfer Strips: Wood, metal, PVC, or rubber strips, ¾ by ¾-inch, minimum.

D. Form-Release Agent: Commercially formulated form-release agent that will not bond with, stain, or adversely affect concrete surfaces and will not impair subsequent treatments of concrete surfaces.

E. Form Ties: Factory-fabricated, removable or snap-off metal or glass-fiber-reinforced plastic form ties designed to resist lateral pressure of fresh concrete on forms and to prevent spalling of concrete on removal.
   1. Furnish units that will leave no corrodible metal closer than 1-inch to the plane of the exposed concrete surface.
   2. Furnish ties that, when removed, will leave holes not larger than 1-inch in diameter in concrete surface.
   3. Furnish ties with integral water-barrier plates to walls indicated to receive dampproofing or waterproofing.

F. Keyways:
   1. Re-usable polyethylene strip for nailing to forms or headers before pouring concrete. When stripped out later, a key way is left in the concrete.
   2. Acceptable Manufacture: Superior Profiles, KeyWay 21KW (from 2½-inches reduced to 1¼-inches wide by 1 3/8-inches deep or equal.

G. Foam Fill: High density (2 pounds) rigid-cellular-polystyrene boards use as fill under topping slabs:
   1. Provide rigid, expanded (EPS) cellular polystyrene boards that conform to ASTM D6817 or ASTM C578.
      a. Provide in thickness in the amount of layers to achieve required concrete slab thickness indicated.
   2. Extra-strong bonding for laminating of expanded polystyrene.

2.02 STEEL REINFORCEMENT

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

B. Low-Alloy-Steel Reinforcing Bars: ASTM A706 deformed, for reinforcing steel to be welded.
C. Welding Electrodes: AWS D1.4 and CBC Section 1903A.

D. Plain-Steel Wire and Spirals: ASTM A82, as drawn.

2.03 REINFORCEMENT ACCESSORIES

A. Bar Supports: Bolsters, chairs, spacers, and other devices for spacing, supporting, and fastening reinforcing bars and welded wire fabric in place. Manufacture bar supports according to CRSI's "Manual of Standard Practice" from steel wire, plastic, or precast concrete or fiber-reinforced concrete of greater compressive strength than concrete, and as follows:
1. For concrete surfaces exposed to view where legs of wire bar supports contact forms, use CRSI Class 1 plastic-protected or CRSI Class 2 stainless-steel bar supports.

B. Joint Dowel Bars: Plain-steel bars, ASTM A615 Grade 60. Cut bars true to length with ends square and free of burrs.

2.04 EXPANSION ANCHORS AND ADHESIVE ANCHORS

A. Expansion anchors: Hilti Kwik Bolt TZ, 304 Stainless Steel (ICC ES ESR 1917.)

B. Epoxy Grout: Two component material suitable for anchoring rebar into dry or damp concrete. Same as Covert's CIA-Gel 7000, Hilti's HIT HY-150 or approved equal based on allowable values in ICC ES ESR 5193.

2.05 CONCRETE CLASSES

<table>
<thead>
<tr>
<th>CLASS (LOCATION)</th>
<th>STRENGTH</th>
<th>AGGREGATE</th>
<th>WEIGHT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Normal Weight Concrete (Typical)</td>
<td>3000</td>
<td>1½</td>
<td>150</td>
</tr>
</tbody>
</table>

A. Strength: Compressive strength in psi after 28-days when tested in accordance with ASTM C39. All concrete shall develop compression strength specified in 28-days. To meet above requirements, mix shall be designed such that average compressive strength will exceed specified 28-day strength by an amount as specified by ACI 318.

B. Aggregate: Maximum size in inches.

C. Weight: Pounds per cubic foot, air dry.

2.06 UNDER SLAB VAPOR BARRIER

A. Vapor barrier must have all of the following qualities:
1. Permeance of less than 0.01 Perms as tested in accordance with ASTM E1745, Section 7.
2. Other performance criteria:
a. Strength: ASTM E1745 Class A.
b. Thickness: 15 mils minimum.

3. Vapor barrier products:
   b. Or equal products that meet all of the specified performance criteria.

4. Accessories:
   a. Seam tape: Stego Tape by Stego Industries or equal.
   b. Vapor-proofing mastic: Stego Mastic by Stego Industries

B. Sand Cover: Clean mixture of crushed stone, crushed gravel, and manufactured or natural sand; ASTM D448, Size 10, with 100 percent passing a No. 4 sieve and 10 to 30 percent passing a No. 100 sieve; meeting deleterious substance limits of ASTM C33 for fine aggregates.

C. Granular Fill: Clean mixture of crushed stone or crushed or uncrushed gravel; ASTM D448, Size 57, with 100 percent passing a 1½-inches sieve and 0 to 5 percent passing a No. 8 sieve.

2.07 DAMP PROOFING

A. Damp Proofing: Deco 20, Deco Sealer, acrylic resin based sealant, no volatile organic compounds; or equal.
1. Use airless high-pressure sprayer to coat.
2. Dries to an odorless gray within 6 to 8 hours.
3. Properties:

<table>
<thead>
<tr>
<th>ASTM D2939, Section 15</th>
<th>Method A - Resistance to water. Rating number 1 - No softening- no loss of adhesion or reemulsification.</th>
</tr>
</thead>
<tbody>
<tr>
<td>ASTM D2939, Section 16</td>
<td>Flexibility - Rating number 1 - no cracks, hairline or otherwise, no loss of adhesion.</td>
</tr>
<tr>
<td>ASTM D6489</td>
<td>Water Absorption.</td>
</tr>
<tr>
<td>ASTM C836</td>
<td>Film Thickness on vertical surface.</td>
</tr>
<tr>
<td>ASTM D2665</td>
<td>Color Fastness of Surface Coating - UV resistance.</td>
</tr>
<tr>
<td>ASTM D3273</td>
<td>Resistance to mold growth of Surface Coating.</td>
</tr>
</tbody>
</table>

4. Location: Inside face of planter walls.

2.08 MATERIALS

A. General Requirements:
1. Cement and aggregates shall have proven history of successful use with one another. Sources of cement and aggregate shall remain unchanged through-out work unless the Architect approves request for change made at least 10-days prior to anticipate date of casting.
2. Ready-mixed concrete shall meet requirements of ASTM C94.
3. Deviations in properties of materials tested by the District's Testing Agency shall be cause for their rejection pending additional test results and redesign of mix by the Contractor's Testing Laboratory.

4. No frozen aggregates will be permitted.

B. Cements:
1. Concrete: ASTM C150, Type II. Use one brand of cement throughout project unless otherwise acceptable to Structural Engineer.

C. Fly Ash: ASTM C618, Type F, max. 15%.
1. Type I/II typical unless otherwise noted.
2. Type V when in contact with soil.

D. Aggregates:
1. Coarse: ASTM C33. Coarse aggregate shall consist of a clean, hard, fine grained, sound crushed rock, or washed gravel or a combination of both. It shall be free from oil, organic matter or other deleterious substances and shall not contain more than two percent by weight of shale or cherty material. "Cleanliness value shall not be less than 75 when tested per CMM California Test 227 and conforming to CBC Section 1903A and ACI 318, Section 5.2 and 5.3.
2. Fines: ASTM C33. Sand equivalent shall be not less than 75 when tested as per ASTM D2419.
3. Light weight aggregate as per ASTM C330.
4. Provide aggregates from a single source for exposed concrete.

E. Water: Clean and potable, free from impurities detrimental to concrete.

F. Water-Reducing Admixture: ASTM C494, Type A, non-lignin sulfonate. Same as Grace Construction Materials' "WRDA with Hycol"; Master Builders "Pozzolith 322N"; Sika Corp.'s "Plastocrete 161"; or equal product.
1. Air Entraining Admixture: ASTM C260, certified by manufacturer to be compatible with other products. Same as W.R. Grace's "Daravair", Master Builders' "Micro-Air", Sika Corp.'s "Sika Aer", or equal product substituted per Section 01630.
2. High-Range Water-Reducing Admixture (Super Plasticizer): ASTM C494, Type F or Type G. Same as W.R. Grace's "WRDA 19", Master Builders' "Rheobuild", Sika Corp.'s "Sikament", or equal.
G. Other Admixtures: Only as approved by the Architect. Use of admixtures requires DSA approval.

H. Abrasive Grains: Aluminum oxide type. Same as Sonneborn-Contech's "FRICTEX NS"; General Abrasive Co., Inc.'s "Fut-Sure"; The Exelon Co.'s "Exolon Anti-Slip"; or equal product.

I. Non-Shrink Grout: Premixed high strength grout requiring only addition of water at the site. Same as Master Builder’s "Masterflow 928 Grout"; Burke's "Non-Ferrous, Non-Shrink Grout", or equal product.

J. Curing Materials:
   1. Waterproof Paper: ASTM C171, Type 1, regular. Same as Sisalkraft Division of St. Regis Paper Co.'s "Orange Label"; or equal product.
   2. Sheet Plastic: Polyethylene, four mils thick, fungus-resistant.

K. Concrete Sealer: Clear water repellent treatment, blend of six resins containing no silicones or stearates, no darkening or change of color. Same as Sonneborn-Contech's "White Rox M-6-50-8"; Tamms Industries' "Chemstop" or equal product.

L. Hardener, Clear Liquid Type: Grace construction Materials' "Hornstone Crystal Chemical Hardener"; Master Builder's "Mastercron"; Sonneborn-Contech's "Lapidolith"; Upco Co.'s "Vitrox 4701"; or equal product.

M. Joints:
   1. General: Provide all pavement joints, grooves, dummy joints, construction joints, etc. Set expansion joint material to receive filler ¾-inch below finished surface of pavement or as shown on the Drawings. After concrete has set, fill all grooves, dummy joints, construction joints, etc., with specified in Section 07900, Sealants.

2.09 MIXES

A. General Requirements:
   1. The Contractor shall perform tests or assemble the necessary data indicating conformance with specifications.
   2. For each mix submit data showing that proposed mix will attain the required strength in accordance with requirements of CBC Section 1905A.1.2 and ACI 318, Section 5.6.
   3. The Contractor shall instruct Laboratory to base mix design on use of materials tested and approved by the District's Testing Agency.
   4. Mix shall be designed, tested, and adjusted if necessary in ample time before first concrete is scheduled to be placed. Laboratory data and strength test results for revised mix design shall be submitted to Architect prior to using in project.
5. Insure mix designs will produce concrete to strengths specified and of uniform density without segregation.
6. If mix yield exceeds 1-cubic yard, modify mix design to no more than one cubic yard without changing cement content.
7. The Contractor's mix designs shall be subject to review by the Architect and by the District's Testing Agency.
8. Introduction of calcium chloride will not be permitted.
9. Unspecified admixtures will not be permitted unless the Architect reviews, the Contractor modifies mix designs as necessary, and modifications are accepted by the District's Testing Agency.

B. Slab-on-Grade Mix requirements
   1. Maximum water/cement ratio of 0.45.
   2. Maximum fly ash content of 15% (as percentage replacement of cement).
   3. Do not use air entrainment additives.
   4. Use of Water-Reducing admixture is required. High Range Water-Reducing admixture (super plasticizer) shall be used when required to maintain workability and pumpability.

C. Patching Mortar: Mix in proportions by volume of one part cement to two parts fine sand.

D. Non-Shrink Grout: Follow approved manufacturer's printed instructions and recommendations.

2.10 MIXING

A. Batching Plant Conditions:
   1. Ensure equipment and plant will afford accurate weighing, minimize segregation and will efficiently handle all materials to satisfaction of the Architect and the District's Testing Agency.
   2. Replace at no additional expense equipment the Architect and the District's Testing Agency deem inadequate or unsuitable.
   3. Use approved moisture meter capable of determining moisture content of sand.

B. General Requirements:
   1. Thoroughly clean concrete equipment before use for architectural concrete mixes to avoid contamination.
   2. Mix cement, fine and coarse aggregates, admixtures and water to exact proportions of mix designs. Method of mixing shall comply with CBC Section 1903A and ACI 318, Section 5.2 and 5.3.
   3. Measure fine and coarse aggregates separately according to approved method which provides accurate control and easy checking.
   4. Adjust grading to improve workability; do not add water unless otherwise directed.
   5. Maintain proportions, values, or factors of approved mixes throughout work.
6. Mix concrete in transit mixers five minutes immediately prior to discharge in addition to mixing as called for by ACI 304 and ASTM C94.

C. Admixtures: Use automatic metering dispenser to introduce admixture into mix. Dispenser shall be recommended and calibrated by admixture manufacturer.

2.11 SOURCE QUALITY CONTROL

A. The District's Testing Agency will:
1. Review mix designs, certificates of compliance, and samples of materials the Contractor proposes to use.
2. Test and inspect materials, as necessary, in accordance with ACI 318 and CBC Sections 1903A, CBC Section 1901A.4 and ACI 318 for compliance with requirements.
3. Take samples as required from the Contractor's designated sources.
4. Take one grab sample for each 100 tons of Portland cement except that, when used in bulk loading ready-mix plants where separate bins for pretested cement are not available, take grab samples for each shipment of cement placed in bin with not less than one sample being taken for each day's pour and subsequently test such samples if required by the Architect who may be so advised by Division of the State Architect.
5. Test both coarse and fine aggregate by use of solution of sodium or magnesium sulfate, or both whenever in the judgment of the Architect such tests are necessary to determine quality of material. Perform such tests in accordance with ASTM C88. Loss shall not exceed 6-percent of either fine or coarse aggregate. Aggregate failing to comply with this requirement may be used in the Work provided it contains less than 2-percent of shale and other deleterious particles and shows a loss in soundness test of not more than 10-percent when tested in the sodium sulphate solution. Test aggregates as required by CBC Section 1903A.
6. Test for sand equivalent of fine aggregate in accordance with CMM California Test 217.
7. Test for cleanliness value of coarse aggregate in accordance with CMM California Test 227.
8. Inspect plant prior to any work to verify following:
   a. Plant is equipped with approved metering devices for determining moisture content of fine aggregate.
   b. Other plant quality controls are adequate.
9. Continuously inspect quality and quantity of materials used in transit mixed concrete, in batched aggregates and ready-mixed concrete at mixing plant or other location per CBC requirements where other materials are measured.

B. Waiver of Batch Plant Inspection:
1. Continuous batch plant inspection may be waived in accordance with CBC requirements if the plant complies with ASTM C94 and has been
certified by an agency acceptable to DSA to comply with the requirements of the National Ready Mix Concrete Association.

2. When continuous batch plant inspection is waived, the following requirements shall apply:
   a. Testing Agency shall check the first batching at the start of work and furnish mix proportions to the licensed Weigh master.
   b. Licensed Weigh master shall identify material quantities and certify each load by a ticket.
   c. Project Inspector shall collect truck mix tickets with load identification and maintain a daily record of placement. Trucks without a load ticket identifying the mix shall be rejected. Copies of daily placement record shall be submitted to DSA.
   d. At the end of the project, the Weigh master shall submit an affidavit to DSA certifying that all concrete supplied conforms to proportions established by mix designs.

PART 3 - EXECUTION
3.01 FORMWORK

A. Design, erect, shore, brace, and maintain formwork, according to ACI 301, to support vertical, lateral, static, and dynamic loads, and construction loads that might be applied, until concrete structure can support such loads.

B. Construct formwork so concrete members and structures are of size, shape, alignment, elevation, and position indicated, within tolerance limits of ACI 117.

C. Limit concrete surface irregularities, designated by ACI 347R as abrupt or gradual, as follows:

D. Construct forms tight enough to prevent loss of concrete mortar.

E. Fabricate forms for easy removal without hammering or prying against concrete surfaces. Provide crush or wrecking plates where stripping may damage cast concrete surfaces. Provide top forms for inclined surfaces steeper than 1.5 horizontal to 1 vertical. Kerf wood inserts for forming keyways, reglets, recesses, and the like, for easy removal.
   1. Do not use rust-stained steel form-facing material.

F. Set edge forms, bulkheads, and intermediate screed strips for slabs to achieve required elevations and slopes in finished concrete surfaces. Provide and secure units to support screed strips; use strike-off templates or compacting-type screeds.

G. Provide temporary openings for cleanouts and inspection ports where interior area of formwork is inaccessible. Close openings with panels tightly fitted to forms and securely braced to prevent loss of concrete mortar. Locate temporary openings in forms at inconspicuous locations.
H. Edges:
1. Chamfer exterior corners and edges of permanently exposed concrete.
2. Bench Edges: See Article 3.16B1b.

I. Form openings, chases, offsets, sinkages, keyways, reglets, blocking, screeds, and bulkheads required in the Work. Determine sizes and locations from trades providing such items.

J. Clean forms and adjacent surfaces to receive concrete. Remove chips, wood, sawdust, dirt, and other debris just before placing concrete.

K. Retighten forms and bracing before placing concrete, as required, to prevent mortar leaks and maintain proper alignment.
   1. Seal edges abutting masonry surfaces with tape or sealants to prevent runoff onto masonry.

L. Coat contact surfaces of forms with form-release agent, according to manufacturer's written instructions, before placing reinforcement.

3.02 EMBEDDED ITEMS

A. Place and secure anchorage devices and other embedded items required for adjoining work that is attached to or supported by cast-in-place concrete. Use Setting Drawings, templates, diagrams, instructions, and directions furnished with items to be embedded.
   1. Install anchor bolts, accurately located, to elevations required.

3.03 REMOVING AND REUSING FORMS

A. General: Formwork, for sides of beams, walls, columns, and similar parts of the Work, that does not support weight of concrete may be removed after cumulatively curing at not less than 50 degrees F for 24 hours after placing concrete provided concrete is hard enough to not be damaged by form-removal operations and provided curing and protection operations are maintained.

B. Leave formwork, for beam soffits, joists, slabs, and other structural elements, that supports weight of concrete in place until concrete has achieved the following:
   1. At least 70 percent of 28-day design compressive strength.
   2. Determine compressive strength of in-place concrete by testing representative field-cured test specimens according to ACI 301.
   3. Remove forms only if shores have been arranged to permit removal of forms without loosening or disturbing shores.

C. Clean and repair surfaces of forms to be reused in the Work. Split, fray ed, delaminated, or otherwise damaged form-facing material will not be acceptable for exposed surfaces. Apply new form-release agent.
D. When forms are reused, clean surfaces, remove fins and laitance, and tighten to close joints. Align and secure joints to avoid offsets. Do not use patched forms for exposed concrete surfaces unless approved by Architect.

3.04 VAPOR BARRIER

Place, protect, and repair vapor-barrier sheets according to ASTM E1643 and manufacturer’s written instructions.

1. Unroll vapor barrier with the longest dimension parallel with the direction of the concrete placement.
2. Lap vapor barrier over footings and/or seal to foundation walls.
3. Overlap joints - inches and seal with manufacturer’s tape.
4. Seal all penetrations (including pipes) per manufacturer’s instructions.
5. No penetration of the vapor barrier is allowed except for reinforcing steel and permanent utilities.
6. Repair damaged areas by cutting patches of vapor barrier, overlapping damaged area 6-inches and taping all sides with tape.

Sand Cover: Cover vapor retarder with fine-graded granular material, moisten, and compact with mechanical equipment to elevation tolerances of plus 0-inch or minus ¾-inch.

3.05 STEEL REINFORCEMENT

A. General: Comply with CRSI’s "Manual of Standard Practice" for placing reinforcement.
   1. Do not cut or puncture vapor retarder. Repair damage and reseal vapor retarder before placing concrete.

B. Clean reinforcement of loose rust and mill scale, earth, ice, and other foreign materials.

C. Accurately position, support, and secure reinforcement against displacement. Locate and support reinforcement with bar supports to maintain minimum concrete cover. Do not tack weld crossing reinforcing bars.

D. Set wire ties with ends directed into concrete, not toward exposed concrete surfaces.

E. Welding of reinforcing steel shall conform to the requirements of AWS D1.4.

F. Dowels in Epoxy Grout: Follow to manufacturer’s directions and conform to CBC Section 1913A.7.
   1. Drilled holes shall be dry. Clean holes with a nylon brush to remove loose material and blowout holes with oil-free compressed air.
   2. Notify Architect/Engineer immediately if elements within the existing concrete prevent drilling in the location shown on the Drawings.
   3. Testing: District’s Test Laboratory shall tension test 50 percent of dowels.
a. If the any dowel fails, test the dowels not previously tested until 20 consecutive dowels pass.
b. Test shall occur 7 days minimum after complete of dowel installation.
c. Test and inspection cost associated with any failed dowels shall be borne by the Contractor. In addition, deducted from Contract sum.

3.06 ANCHORAGE TO CONCRETE

A. Procedures, drilling bits, installation, and size, depth, and cleanliness of holes shall conform to the ICBO Report governing the use of the product selected.

B. Do not damage existing reinforcement when drilling. If reinforcing steel is encountered, the hole shall be abandoned and a new hole drilled.

3.07 CONCRETE PLACEMENT EXAMINATION

A. Examine units of work to be cast and verify that:
   1. Construction of formwork is complete.
   2. Required reinforcement, inserts, and embedded items are in place.
   3. Form ties at construction joints are tight.
   4. Concrete-receiving places are free of debris.
   5. Dampen subgrade or sand course for slabs-on-grade. Do not saturate.
   6. Depths of depressed slab conditions are correct for delayed finish noted and for its proper bonding to concrete.
   7. Conveying equipment is clean and properly operating.
   8. The Architect has reviewed formwork and reinforcing steel and that preparations have been checked with the Project Inspector.

B. Do not begin casting before unsatisfactory conditions have been corrected.

3.08 PREPARATION

A. Ensure availability of sufficient labor, equipment and materials to place concrete correctly in accordance with scheduled casting.

B. Protect finished surfaces adjacent to concrete-receiving places.

C. Clean transportation and handling equipment at frequent intervals and flush thoroughly with water before each day’s run. Do not discharge wash water into concrete form.

D. Construction Joints: Clean and roughen all construction joint contact surfaces by removing all surface laitance and exposing sound mortar. Sandblasting and bush-hammering are acceptable methods.

E. Coordinate placement cast-in-place cable underfloor ducts and trenches and junction boxes in Computer Laboratory - Room L148, Room L149 and Room
L150. Cable underfloor ducts and trenches and junction boxes prior to placement of in-fill concrete.

1. Top of metal lids of trenches and junction boxes shall align and flush to top of concrete. Top of outlets at ducts shall align and flush with top of concrete.

3.09 MISCELLANEOUS CONDITIONS

A. Where concrete paving interfaces to existing concrete paving, saw cut at closest paving joint or as noted on Drawings.
   1. Drill into existing concrete slab edges for dowel and epoxy installation.
   2. Install #4 reinforcing bars at 12-inches each way unless otherwise noted.

3.10 PLACING

A. The Inspector of Record, Architect, Structural Engineer, Testing Laboratory and DSA shall be notified at least 48 hours before placing concrete.

B. Place concrete in accordance with CBC Section 1903A and ACI 318.

C. Place concrete in cycles as a continuous operation to permit proper and thorough integration and to complete scheduled placement. Place no concrete where sun, wind, heat, or facilities prevent proper finishing and curing.

D. Convey concrete as rapidly and directly as practicable to preserve quality and to prevent separation from rehandling and flowing; do not deposit concrete initially set. Cast concrete within ninety (90) minutes after adding water unless otherwise noted. Retempering of concrete which has partially set will not be permitted.

E. Take precautions to avoid damage to under-slab moisture barrier and displacement of reinforcement and formwork.

F. Deposit concrete vertically in its final position. Avoid free falls in excess of six feet where reinforcement will cause segregation and in typical conditions unless the Architect approves otherwise.

G. Keep forms and reinforcement clean above pour line by removing clinging concrete with wire brush before casting next lift. Also remove leakage through forms.

H. Interruption in casting longer than 60-minutes shall be cause for discontinuing casting for remainder of day. In this event, cut back concrete and provide construction joints as the Architect directs; clean forms and reinforcement as necessary to receive concrete at a later time.

I. Hot Weather Concreting: Conform to ACI 305 and following requirements when mean daily temperature rises above 75 degrees F.
1. An upper temperature limit of concrete mixes shall be established by the Contractor for each class of concrete. Concrete temperature during placing shall not be so high as to cause difficulty from loss of slump, flash set, or cold joints, and shall not exceed 90 degrees F. Other project climatic conditions detrimental to concrete quality such as relative humidity, wind velocity, and solar radiation shall also be considered.

2. Trial batches of concrete for each mix design shall be made at the limiting mix temperature selected. In lieu of trial batches, compression strength test reports (20 minimum) at the limiting temperature for each proposed mix shall be submitted to the District’s testing laboratory for review.

3. Practices to maintain concrete below maximum limiting temperature shall be in accordance with ACI 305. Concrete ingredients may be cooled before mixing, or flake ice or well-crushed ice of a size that will melt completely during mixing may be substituted for part of the mixing water.

4. Practices to avoid the potential problems of hot weather concreting shall be employed by the Contractor in accordance with ACI 305.

5. When the temperature of the reinforcing steel or steel deck forms is greater than 120 degrees F, reinforcing and forms shall be sprayed with water just prior to placing the concrete.

J. Cold Weather Concreting:
1. No placement of concrete will be allowed at temperatures below 20 degrees Fahrenheit or if mean daily temperature for curing period is anticipated to be below 20 degrees F.
2. No concrete placement will be allowed on frozen subgrade.
3. Conform to ACI 306 and following requirements when mean daily temperature falls below 40 degrees Ft.
   a. Reinforcement, forms or ground to receive concrete shall be completely free from frost.
   b. Concrete at time of placement for footings shall have temperature no lower than 50 degrees F, for all other concrete this minimum temperature at time of placement shall be 60 degrees F. Maximum temperature shall be 90 degrees F.
   c. Concrete shall be maintained at temperature no lower than 50 degrees F for minimum 7-day period after placement by means of blanket insulation, heaters, or other methods as approved by the Architect.
   d. Use of calcium chloride or admixtures containing calcium chloride as accelerators will not be permitted.
   e. The Contractor shall keep a record of concrete surface temperature for first 7-days after each pour. This record shall be open to inspection by the Architect.

K. Consolidating:
1. Use vibrators for thorough consolidation of concrete.
2. Provide vibrators for each location during simultaneous placing to ensure timely consolidation around reinforcement, embedded items
and into corners of forms; ensure availability of spare vibrators in case of failures. Vibrate through full depth of freshly placed concrete.

3. Do not place vibrators against reinforcement, attach to forms, or use to spread concrete.

4. Exposed Concrete: Vibrate with rubber type heads and, in addition, spare along forms with flat strap or plate.

L. Walls and Other Formed Elements:

1. Space points of deposit to eliminate need for lateral flow. Placing procedures of concrete in forms permitting escape of mortar, or flow of concrete itself, will not be permitted.

2. Level top surface upon stopping work.

3. Take special care to fill each part of the forms by depositing concrete directly as near final position as possible, and to force concrete under and around reinforcement, embedded items, without displacement.

4. After concrete has taken its initial set, care shall be exercised to avoid jarring forms or placing any strain on ends of projecting reinforcement.

5. Where backfill is placed against a wall, it shall be adequately shored until it has attained design strength.

3.11 JOINTS

A. General: Construct joints true to line with faces perpendicular to surface plane of concrete.

B. Construction Joints:

1. Verify location and conformance with typical details; provide only where designated or approved by the Architect. Comply with ASI 318.

2. All horizontal and vertical construction joints to be thoroughly sandblasted to clean and roughen entire surface to minimum 1/4-inch relief exposing clean coarse aggregate solidly embedded in mortar matrix.

3. Just prior to depositing concrete, the surface of the construction joint shall be thoroughly wetted.

C. Contraction (Control) Joints in Slabs-on-Grade:

1. Construct contraction joins in slabs-on-ground to form panels of patterns indicated on Construction Drawings. Use saw cuts 1/8-inch x 1/4-inch slab depth, unless otherwise indicated.

2. Time saw cutting to allow sufficient curing of concrete to prevent ravelled or broken edges.

3. Contraction joints in unexposed floor slabs may be formed by saw cuts as soon as possible after slab finishing as may be safely done without dislodging aggregate.

4. If joint pattern not shown, provide joints not exceeding 15-feet in either direction and located to conform to bay spacing wherever possible (at column centerlines, half bays, third-bays).
3.12 CURING

A. General Requirements:
   1. Take curing measures immediately after casting and for measures other than application of curing compound, extend for seven days. The Architect may recommend longer periods based upon prevailing temperature, wind and relative humidity. Comply with CBC Section 1903A and ACI 318.
   2. Avoid alternate wetting and drying and fluctuations of concrete temperature.
   3. Protect fresh concrete from direct rays of sun, rain, freezing, drying winds, soiling, and damage.
   4. Do not permit curing method to affect adversely finishes or treatments applied to finish concrete.

B. Curing Method, Typical: Obtain the Architect's approval of alternate measures.
   1. Keep forms and concrete surfaces moist during period forms are required to remain in place.
   2. Apply curing compound per manufacturers' recommendations, except at slabs-on-grade apply curing compound at 150 percent of manufacturer's recommended application coverage rate.

3.13 MISCELLANEOUS CONCRETE ITEMS

A. Filling In: Fill in holes and openings left in concrete structures, unless otherwise indicated, after work of other trades is in place. Mix, place, and cure concrete, as specified, to blend with in-place construction. Provide other miscellaneous concrete filling indicated or required to complete Work.

B. Curbs: Provide monolithic finish to interior curbs by stripping forms while concrete is still green and by steel-troweling surfaces to a hard, dense finish with 1/4-inch radius tooled corners, intersections, and terminations slightly rounded.

C. Equipment Bases and Foundations: Provide machine and equipment bases and foundations as shown on Drawings. Set anchor bolts for machines and equipment at correct elevations, complying with diagrams or templates of manufacturer furnishing machines and equipment.

3.14 CLEANING, PATCHING AND DEFECTIVE WORK

A. Where concrete is under strength, out of line, level or plumb, or shows objectionable cracks, honeycombing, rock pockets, voids, spalling, exposed reinforcement, signs of freezing or is otherwise defective, and, in the
Architect's judgment, these defects impair proper strength or appearance of the work, the Architect will require its removal and replacement at the Contractor's expense.

B. Immediately after stripping and before concrete is thoroughly dry, patch minor defects, form-tie holes, honeycombed areas, etc., with patching mortar. Patch shall match finish of adjacent surface unless otherwise noted. Remove ledges and bulges.

C. Compact mortar into place and neatly file defective surfaces to produce level, true planes. After initial set, dress surfaces of patches mechanically or manually to obtain same texture as surrounding surfaces.

D. Rock Pockets:
1. Cut out to full solid surface and form key.
2. Thoroughly wet before casting mortar.
3. Where the Architect deems rock pocket too large for satisfactory mortar patching as described cut out defective section to solid surface, key and pack solid with concrete to produce firm bond and match adjacent surface.

E. Cleaning
1. Insure removal of bituminous materials, form release agents, bond breakers, curing compounds if permitted and other materials employed in work of concreting which would otherwise prevent proper application of sealants, liquid waterproofing, and other delayed finishes and treatments.
2. Where cleaning is required, take care not to damage surrounding surfaces or leave residue from cleaning agents.
3. Patching of defective concrete requires prior DSA approval.

3.15 PROTECTION
A. Protect concrete from injurious action of the elements and defacement of any nature during construction operations.

B. Protect exposed corners of concrete from traffic or use which will damage them in any way.

C. Make provisions to keep all exposed concrete free from laitance caused by spillage or leaking forms or other contaminants. Do not allow laitance to penetrate, stain, or harden on surfaces, which have been textured.

3.16 FIELD QUALITY CONTROL
A. The District's Testing Agency will:
1. Perform testing in accordance with ACI 318 and CBC Section 1901A.4 and 1903A.
2. Review concrete mix designs.
3. Inspect concrete and grout placement continuously.
4. Test concrete to control slumps according to ASTM C143.
5. Continuously monitor concrete temperature as it arrives on the site.
6. Test concrete for required compressive strength in accordance with CBC Section 1905A.1.2 and ACI 318, Section 5.6.
   a. Make and cure three specimen cylinders according to ASTM C31 for each 50 cubic yards, or fraction thereof, of each class poured at site each day.
   b. Retain one cylinder for 7-day test and two for the 28-day test.
   c. Number each cylinder 1A, 1B, 1C, 2A, 2B, 2C, etc; date each set; and keep accurate record of pour each set represents.
   d. Transport specimen cylinders from job to laboratory after cylinders have cured for 24-hours on site. Cylinders shall be covered and kept at air temperatures between 60 and 80 degrees Fahrenheit.
   e. Test specimen cylinders at age 7-days and age 28-days for specified strength according to ASTM C39.
   f. Base strength value on average of two cylinders taken for 28-day test.

B. Test and inspect materials, as necessary, in accordance with ACI 318, CMM California Test 227 (Coarse Aggregates) and CMM California Test 217 (Fine Aggregates), for compliance with requirements specified in this section.
   Inspection:

C. Testing Agency will inspect all reinforcing and embedded items.

D. Anchorage to concrete: Testing Agency will inspect placement of all expansion anchors and adhesive anchors, and will test anchors in accordance with the schedule on the Drawings and the requirements of CBC Section 1913A.7.

E. The Contractor shall:
   1. Submit ticket for each batch of concrete delivered to job site. Ticket shall bear the following information:
      a. Design mix number.
      b. Signature or initials of ready mix representative.
      c. Time of batching.
      d. Weight of cement, aggregates, water and admixtures in each batch with maximum aggregate size.
      e. Total volume of concrete in each batch.
      f. Notation to indicate equipment was checked for contaminants prior to batching.
   2. Allow access for the District’s Testing Agency for taking core specimens of hardened structure and testing specimen according to ASTM C88 and ASTM C42 when laboratory tests of specimen cylinders show compressive strengths below specified minimum.

3.17 FINISH OF FORMED SURFACES
A. **Rough Form Finish:** For formed concrete surfaces not exposed-to-view in the finish Work or by other construction. Concrete surface shall have texture imparted by form facing material used, with tie holes and defective areas repaired and patched and fins and other projections exceeding 1/4-inch in height rubbed down or chipped off.

B. **Smooth Form Finish:** For formed concrete surfaces exposed-to-view, or to be covered with a coating material applied directly to concrete, or a covering material applied directly to concrete, such as waterproofing, dampproofing, painting or other similar system. This is as-cast concrete surface obtained with selected form facing material, arranged orderly and symmetrically with a minimum of seams. Repair and patch defective areas with fins or other projections completely removed and smoothed.
   1. **Bench:** Smooth Rubbed Finish in accordance to ACI 301:
      a. Forms shall be removed as early as permitted, with patching and removal of fins to follow quickly. Concrete surface shall be wet before finishing. A smooth rubbed finish shall be applied no later than the day after form removal. The wetted surface shall be rubbed with Carborundum brick or other abrasive until uniform color and texture are achieved. No grout shall be used, other than cement paste that is drawn from the concrete by the rubbing process.
      b. **Eased Edge:** 1/4-inch radius tooled edges.

C. **Related Unformed Surfaces:** At tops of walls, horizontal offsets and similar unformed surfaces occurring adjacent to formed surfaces, strike-off smooth and finish with a texture matching adjacent formed surfaces. Continue final surface treatment of formed surfaces uniformly across adjacent unformed surfaces, unless otherwise indicated.

### 3.18 **SLAB FINISHES**

A. **Scratch Finish:** Apply scratch finish to monolithic slab surfaces that are to receive concrete floor topping or mortar setting beds for tile, and other bonded applied cementitious finish flooring material, and as otherwise indicated.
   1. After placing slabs, plane surface to tolerances for floor flatness (FF) of 15. Slope surfaces uniformly to drains where required. After leveling, roughen surface before final set, with stiff brushes, brooms or rakes.

B. **Trowel Finish:** Apply trowel finish to monolithic slab surfaces to be exposed-to-view, and slab surfaces to be covered with resilient flooring, carpet, ceramic or quarry tile, paint, or other thin film finish coating system.
   1. After floating, begin first trowel finish operation using a power-driven trowel. Begin final troweling when surface produces a ringing sound as trowel is moved over surface. Consolidate concrete surface by final hand-troweling operation, free of trowel marks, uniform in texture and appearance, and with surface leveled to tolerances of FF20.
Grind smooth surface defects which would telegraph through applied floor covering system.

2. Floors to receive traffic topping shall have steel trowel finish.

C. Trowel and Fine Broom Finish: Where ceramic is to be installed with thin-set mortar, apply trowel finish as specified, then immediately follow with slightly scarifying surface by fine brooming.

D. Non-Slip Broom Finish: Apply non-slip broom finish to exterior concrete paving, steps and ramps, and elsewhere as indicated.
   1. Immediately after float finishing, slightly roughen concrete surface by brooming with fiber bristle broom perpendicular to main traffic route. Coordinate required final finish with Architect before application.
   2. Medium Broom finish on concrete surface less than 6% slope and Heavy Broom finish on concrete surfaces greater than 6% slope.

3.19 SEALING

A. Application: Sealing product may be used in lieu of curing material.
   1. Stir sealer thoroughly before using.
   2. Apply a continuous, uniform film by solvent-resistant low pressure spray only, short nap roller, or lambs wool applicator.
   3. For curing, apply first coat evenly and uniformly as soon as possible after final finishing. Apply additional coats in full strength when all construction is completed and concrete is ready for use and occupancy.
   4. Drying Time per Coat:
      a. Light Traffic Or Between Coats: 4 hours.
      b. Normal Traffic: 12 hours.
      c. Maximum hardness: 7 days.

3.20 DAMP PROOFING INSTALLATION

A. Follow manufacturer’s instructions.

B. Apply damp proofing after forms are removed.

C. Cover at a rate of 125 to 150 square feet per each gallon of undiluted coating material by airless sprayer. Cover surface entirely.

3.21 CLEAN UP

A. Perform Work under this Section to keep affected portions of building site neat, clean, and orderly. Remove, immediately upon completion of Work under this Section, surplus materials, rubbish, and equipment associated with or used in performance. Be aware that failure to perform clean-up operations within 24 hours of notice by Architect will be considered adequate grounds for having work done by others at no added expense to the District.

END OF SECTION
PART 1 - GENERAL

1.01 SUMMARY

A. Work Included: Provide cementitious underlayment where shown on the Drawings, as specified and as needed for a complete and proper installation of finish flooring.
   1. Provide sloping underlayment as required for maximum ¼-inch (2%) per foot slope to thresholds.
   2. Cementitious topping over existing substrates. See Finish Schedule and Drawings for specific work.
      a. On existing concrete slabs and/or existing depressed concrete slabs.
         i. Exterior sloping concrete topping.
      b. On existing wood subfloors and/or existing depressed wood floors.
   3. Primers.
   4. Saw cutting and bush hammering of existing concrete substrate where indicated.
   5. Clear Seal Coating.
      a. 2 coats.

B. Related Work:
   1. Cutting and Patching: Section 01730.
   2. Selective Demolition: Section 01732.
   3. Cast-In-Place Concrete: Section 03300.
   4. Tiles: Section 09300.
   5. Carpet Tiles: Section 09683.

1.02 REFERENCED STANDARDS

A. Published specifications, standards, tests, or recommended methods of trade, industry, or governmental organizations apply to Work of this Section where cited by abbreviations noted below (latest editions apply).
   1. California Building Code 2013 (CBC.)
      a. ASTM C387 Standard Specification for Packaged, Dry, Combined Materials for Concrete and High Strength Mortar

1.03 SUBMITTALS

A. Submit in accordance with the provision of the General Conditions, Article 3.11.

B. Product Data: Manufacturer's literature describing materials and description of methods of mixing, placing, curing, and protecting
C. Certificates:
   1. Certify that materials comply with standards designated.
   2. Furnish manufacturer's certification that the applicator is using mixing equipment and tools approved by the manufacturer.
   3. Furnish manufacturer's signed statement that the cementitious underlayment in place complies with the Architect's requirements and the manufacturer's specifications. Manufacturer's written recommendations and instructions as required by this Section.

1.04 QUALITY ASSURANCE

A. Applicator's Qualifications: Applicator shall be qualified for application of cementitious underlayment and be able to show evidence of at least five years experience in successfully installing the material.

B. Use adequate numbers of skilled workers who are thoroughly trained and experienced in the necessary crafts and who are completely familiar with the specified requirements and the methods needed for proper performance of the work of this Section.

1.05 DELIVERY, HANDLING, AND STORAGE

A. Deliver and store packaged materials in their original containers with the seals unbroken and labels intact until time of use.

B. Store under cover on platforms in dry location protected from exposure to the elements.

C. Remove damaged and deteriorated materials from the Project site.

1.06 PROJECT CONDITIONS

A. Environmental Requirements:
   1. Thoroughly ventilate building as required during and following placement of cementitious underlayment to remove moisture, promote drying, and inhibit mildew growth.
   2. Do not install when surface temperature of subfloor falls below 40 degrees F.

B. Protection: Protect adjacent work from damage or staining by cementitious underlayment work.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Interior Cementitious Underlayment:
2. Sloping to Drain Underlayment and at Ramps: ARDEX Inc. Feather Finish or SD-P; or equal. 4200 psi compressive strength in 28 days.

3. Primer and Sealer: Primer shall be from same single source manufacture as the underlayment materials.
   a. Primer on Interior Concrete: Ardex EP-2000 Substrate Preparation Epoxy, solvent free, low viscosity, two component, 100% solids epoxy resin; or equal. Or primer as recommended or required by the underlayment manufacture.

4. Fine Aggregates: Pea gravel shall be 1/8-inch to 3/4-inch, well graded, and washed. Provide when required by manufacturer.

B. Exterior Concrete Topping: Premixed Quikcrete Sand/Topping Mix; or equal.
   1. Compressive Strength: ASTM C387
      a. 3000 psi at 7 days.
      b. 5000 psi at 28 days.
   2. Topping thickness not to exceed 2-inches.
   3. Bond Adhesive: Quikcret Concrete Bonding Adhesive #9902 or equal bonding adhesive compatible and recommended with concrete topping mix. Bond adhesive can NOT be used when admixture is used.
   4. As recommended by concrete topping manufacture.
   5. Admixture: Quikcrete Concrete Acrylic Fortifier #8610 or equal admixture compatible and recommended with concrete topping mix.
      a. Provide for concrete topping less than 1-inch thick, replace water with part of the mixing.
   6. Clear Seal Coat: As specified in Section 03300, Cast-in-Place Concrete.

C. Water: Clean and potable, free of impurities detrimental to cementitious underlayment.

2.02 MIXES AND MIXING

Mix with water at site in accordance with the cementitious underlayment manufacturer's written instructions.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Examine receiving surface and verify that:
   1. Required rough-ins and embedded items are in place.
   2. Receiving areas are broom-clean and free of debris.

B. Do not begin placing before unsatisfactory conditions have been corrected.

3.02 PREPARATION

A. Remove projections and foreign particles which are adhered to surfaces receiving cementitious underlayment.
B. Immediately prior to application of underlayment, clean surfaces free of dust, dirt, grit, sand, and other loose particles by vacuuming.

C. Provide sleeves around pipes penetrating through floor.

D. Prime and seal subfloor to receive cementitious underlayment in accordance with the manufacturer's written instructions.

E. Concrete Topping: Remove the top portion of the existing concrete slab to receive sloping concrete topping by first saw cutting top of existing concrete slab surface at a depth of 1-inch. Bush hammer to remove the top portion of the existing concrete slab to a depth of 1-inch. Do not exceed the maximum thickness allowed from the concrete topping manufacture.

3.03 INSTALLATION

A. Pumping equipment shall be clean and in proper operating condition.

B. Pump cementitious underlayment into place.

C. Limit size of slab between control joints to maximum 20 by 40 feet.

D. Screed surfaces to smooth even plane.

E. Finishing:
   1. Double hand-trowel to smooth, level, hard surface appropriate for receiving finish materials specified elsewhere.
   2. Proceed as soon as possible after placing.

F. Concrete Topping Installation:
   1. Coat existing bush hammered concrete surface with bonding adhesive. Bonding agent can NOT be use when admixture (acrylic fortifier) is used. Allow to dry before placing concrete topping.
   2. After placing concrete topping, trowel the surface smooth using a steel finishing trowel or wood float.
   3. Use a trowel or jointer to form the joint at least half the depth of the topping.
   4. Non-Slip Broom Finish: Apply non-slip broom finish to exterior concrete paving, steps and ramps, and elsewhere as indicated.
      a. Immediately after float finishing, slightly roughen concrete surface by brooming with fiber bristle broom perpendicular to main traffic route. Coordinate required final finish with Architect before application.
      b. Medium Broom finish on concrete surface less than 6% slope and Heavy Broom finish on concrete surfaces greater than 6% slope.

5. Curing:
   a. General:
      i. Proper water content and temperature are essential for good curing.
ii. Curing shall start as soon as possible and shall continue for a period of 5 days in warm weather at minimum 70 degrees F or higher, or for 7 days in colder weather at 50 – 70 degrees F.

iii. Curing compounds should not be applied if rain or temperatures below 50 degrees F expected within 24 hours.

3.04 DEFECTIVE WORK

A. Patch all cracks prior to installation of finish surfaces.

B. Where underlayment is under strength, out of line or level, or shows objectionable cracks, voids and spalling, or is defective in any way, and in the Architect's judgment, these defects impair proper strength, appearance, or suitability for receiving proper finish, the Architect will require its removal and replacement at the Contractor's expense.

3.05 CLEANING

A. Follow the cementitious underlayment manufacturer's written recommendations for cleaning methods and materials.

B. Ensure the removal of materials employed in cementitious underlayment work which would prevent the proper application of delayed finishes and treatments.

C. Where cleaning is required, take care neither to damage surrounding surface nor to leave residue from cleaning agents.

END OF SECTION
PART 1 - GENERAL

1.01 SUMMARY

A. Work Included: Provide all labor, materials, necessary equipment, services and included but limited to all related work to complete metal fabrications work, as indicated on the Drawings and as specified herein or both.

1. Exterior handrails and guardrails to ramps, stairs, and stair landings.
   a. Replace non-code compliant handrails and guardrails.
   b. Modify existing non-code compliant handrails and guardrails where noted.

2. Associated cast-in-place post sleeves for handrail assemblies, guardrail assemblies, and handrail/guardrail assemblies with welded reinforcing bars.
   a. **Alternate Method**: Core drill bore holes through horizontal concrete surfaces at the post locations for the installation of grout set posts in concrete with the associated reinforcing bars as indicated on Drawings. **No reinforcing bars shall be cut.**

3. Prefabricated rail assembly at drinking fountain.

4. Exterior stair nosing.
   a. Embedded nosings with contrasting color integral non-slip abrasive grit. Exterior steel shall be hot dipped galvanized.
   a. Pregalvanized materials shall also be shop hot dipped galvanized after fabricated – no exception.

6. Welding of component listed above and/or as indicated on Drawings.

B. Related Work:

1. Earthwork: Section 02300.
2. Cast-in-Place Concrete: Section 03300.
   a. For items provided herein and cast-in-place concrete.
3. Sealants: Section 07900.
4. Painting: Section 09900.
   a. Exposed exterior metal fabrication items require painting except cast-in-place stair nosings.

1.02 QUALITY ASSURANCE

A. Field Measurements: Take field measurements prior to preparation of shop drawings and fabrication, where possible. Do not delay job progress; allow for trimming and fitting where taking field measurements before fabrication might delay work.

B. Shop Assembly: Preassemble items in shop to greatest extent possible to minimize field splicing and assembly. Disassemble units only as necessary for shipping and handling limitations. Clearly mark units for reassembly and coordinated installation.
1.03 REFERENCED STANDARDS

A. Published specifications, standards, tests, and recommended methods of trade or industry apply to the work of this Section where cited by the abbreviations noted below.

   e. ASTM A153 Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware.
   g. ASTM A307 Standard Specification for Carbon Steel Bolts and Studs, 60 000 PSI Tensile Strength.
   h. ASTM A500 Standard Specification for Cold-Formed Welded and Seamless Carbon Steel Structural Tubing in Rounds and Shapes.
   i. ASTM A501 Standard Specification for Hot-Formed Welded and Seamless Carbon Steel Structural Tubing.
   m. ASTM C1107 Standard Specification for Packaged Dry, Hydraulic Cement Grout (non-shrink.)

2. American Institute of Steel Construction (AISC):

3. American Society of Mechanical Engineers (ASME): ASME B36.10M Welded and Seamless Wrought Steel Pipe.

   a. AWS D1.1 Structural Welding Code-Steel.
   b. AWS D1.3 Structural Welding Code-Sheet Steel.
   c. AWS D1.6 Structural Welding Code-Stainless Steel.

5. California Code of Regulations (CCR), Title 24, California State Accessibility Standards.


   a. Solvent Cleaning (SSPC-SP1.)
   b. Hand Tool Cleaning (SSPC-SP2.)
   c. Zinc-Rich Primers - Type I, Inorganic, and Type II, Organic (SSPC-Paint 20.)

1.04 DESIGN REQUIREMENTS

Sustainable Design Requirements: Steel used in work in this Section are intended contribute to meeting requirements for recycle content outlined in LEED NC3.0, Credit MR4.

1.05 SUBMITTALS

A. Submit in accordance with the provisions of the General Conditions, Article 3.11.

B. Manufacturer’s Literature: Submit manufacturer’s literature including specifications and catalog cuts for standard catalog items and printed installation instruction for it.

C. Shop and Erection Drawings: Submit shop and erection drawings for approval for fabricated items indicating materials, fasteners, finishes and methods of installation.

D. LEED Submittal:
   1. Steel: Submit letter or product data from manufacture indicating recycled content. Designate percentage of post consumer and post industrial recycled content.
   2. Submit hardcopies of completed Online Documentation required for LEED MR Credit 4.

1.05 PRODUCT DELIVERY, STORAGE, AND HANDLING

Ship and store materials so as to prevent damage due to stains, discolorations, scratches, dirt, or any other causes. Replace damaged elements. Store indoors in a clean, dry location. Store sheet material on edge above ground. Store and handle materials directly into a heated storage area. Vent fuel-burning heaters in storage area to exterior so as to prevent fume damage to finishes.

1.06 COOPERATION

Work of this section shall be fitted work of all other applicable sections and coordinated to best advantage of entire job. Do all required cutting, drilling, fitting and taping for securing work in position to accommodate work for other sections.
Items fabricated for support of items installed by other sections shall be shop painted as specified herein.

PART 2 - PRODUCTS
2.01 MATERIALS

A. Ferrous Metals: Sizes and shapes as shown in Drawings. Shop primed for painting, unless otherwise noted.
   1. Metal Surfaces, General: For fabrication of miscellaneous metalwork, which will be exposed to view, use only materials, which are smooth and free of surface blemishes including pitting, seam marks, roller marks, rolled trade names and roughness.
   2. Steel Plates, Shapes and Bars: ASTM A36.
   3. Steel Pipe Schedule 40, ASME B36.10M.
      a. Pregalvanized.
   4. Steel Tubing: Cold formed, ASTM A500: or hot rolled, ASTM A501, welded or seamless.
      b. Handrails: 1½-inches outside diameter with a .120-inch wall thickness.
      c. Prefabricated Handrail Components: McNichols Products or equal.
         i. Weld-on-Flange: Weld type rail flange for handrail with two 3/8-inch fastener holes. 4½-inch base diameter, 3¾-inch bolt circle at a height of 11/16-inch.
         ii. Pipe Welding Connectors: Connector joins pipe by hammering wedge into wedge lock into connector.
         iii. Round Pipe Elbows: Prefabricated elbows of varying degree of radius: 35, 45, 55, 90, 125, 135, 145, 180 degrees. Elbows configuration as required.
         iv. Weld-on End Caps
         v. Pipe Wall Returns: 90 degree pipe with wall flange with two fastener holes. Centerline of 3-inches.
   5. Hot Dipped Galvanized: See Article 2.01J.
      a. Exterior steel fabrications shall be hot dipped galvanized.

B. Welding Electrode: Conform to Article 1.03A3.
   1. E60XX minimum typical unless noted.

C. Prefabricated Rail Assembly: American Specialties Inc, Model 3200, Type 75; or equal.
   1. Fabricated from 18-8 stainless steel, Type 304, 1½-inches tubes (outside diameter) by 18 gage. 11 gage mounting flanges shall be continuous bead weld to tube. Tennon flange covers shall be 13 gage steel zinc chromate plated case hardened.
   2. Backing: As specified in Non-Load Bearing Metal Framing, Section 09100.
   3. Welding shall conform to AWS D1.6.
D. Embedded (Cast-in-place Concrete) Stair Nosings: American Safety Tread, Type TP311 (3 3/8-inches wide by approximately ½-inch deep) or equal.
   1. Extruded aluminum 6063-T6 nosing with a mixture of virgin aluminum oxide and silicone carbide abrasive granules in an epoxy binder into the extruded channels of the base.
   2. The abrasive ribs shall project a minimum of 1/16-inch above the extruded channels. Nosings shall be replaceable within a base retainer. Nosings shall be furnished with wing anchors.
   3. Epoxy: All purpose epoxy bonding agent, two component, 100% solids epoxy resin.
      a. ASTM C881, Types I, II, IV and V, Grade 2, Class B and C volume with a viscosity similar to heavyweight oil.
   4. Fasteners: Flat head tamper resistant stainless steel machine screws.

E. Concrete: Concrete shall be ready-mixed; mixed and transported to conform to ASTM C94.
   1. General: Concrete shall conform to Division 3 specifications.

F. Grout: Non-metallic shrinkage-resistant premixed, non-corrosive, non-staining product containing selected silica sands, Portland Cement, shrinkage compensating agents, plasticizing and water-reducing agents, complying with ASTM C1107.
   1. Subject to compliance with requirements, products that may be incorporated in the work include, but are not limited to the following:
      a. 100 Non-shrink Grout (non-metallic) - Conspec, Inc.
      b. Crystex - L&M Construction Chemicals, Inc.
      c. Euco Non-shrink Grout - Euclid Chemical Co.
      d. Kemset - Chem-Masters Corp.
      e. Sonogrout - Sonneborn Building Products Div., Rexnord Chemical Products, Inc.
      f. Supreme Grout - Cormix, Inc.
      g. Sure-Grip High Performance Grout - Dayton Superior.
      h. Vibropruf #41 - Lambert Corp.

G. Concrete Inserts: Threaded or wedge type; galvanized ferrous castings, either malleable iron, ASTM A47, or cast steel, ASTM A27. Provide bolts, washers and shims as required, hot-dip galvanized, ASTM A153, Class A (2-ounce per square foot.)

H. Asphaltic Coating: Heavy bodied asphalt, professional grade coating to be applied with a brush, roller or professional sprayer.

I. Fasteners:
   1. General: Provide hot dip galvanized, fasteners conforming to ASTM A153, Class C (1.25 oz./sq. ft.) as applicable for exterior use or where built into exterior walls and concrete. Select fasteners for the type, grade and class required.
      a. Expansion anchors: Hilti Kwik Bolt TZ, 304 Stainless Steel (ICC ES ESR 1917.)
b. Test Values: Conform to tests required in CBC 1913A.7.

<table>
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<th>Anchor Size Diameter (Inches)</th>
<th>Embedment (Inches)</th>
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2. Bolts and Nuts: Required hexagon head type, ASTM A307, Grade A.
5. Lock Washers: Helical spring type carbon steel, FS FF-W-84.
6. Pipe Spacer Inserts in Gypsum Board: Hot dip galvanized pipe/tube in one size larger than the fastener used to anchor Work to plaster. Length of spacer shall equal thickness of plaster or gypsum board.
7. Stainless steel fasteners: Conform to ASTM F738.

J. Galvanize specified members conforming to ASTM A123 with a minimum 1.25 ounce per square foot galvanized coating.
1. All exterior steel components shall be galvanized inside and outside to assure maximum corrosion resistance.
2. All exterior steel components shall be then given a four stage power wash pretreatment process that cleans and prepares the galvanized surfaces to assure complete adhesion of the finish coat.

K. Paint:
1. Shop Primer for Ferrous Metal: Manufacturer's or fabricator's standard, fast-curing, lead-free, "universal" primer; selected for good resistance to normal atmospheric corrosion, for compatibility with finish paint systems indicated and for capability to provide a sound foundation for field-applied topcoats despite prolonged exposure; complying with performance requirements of FS TT-P-645.
2. Galvanizing Repair Paint: High zinc dust content paint for re-galvanizing welds in galvanized steel, complying with SSPC-Paint-20.

L. Sealants: Conform to Sealants, Section 07900.

2.02 FABRICATION

A. General Workmanship:
2. Form and fabricate the Work to meet installation requirements.
3. Include accessories to adequately secure the Work in place.
4. Use materials of size and thickness indicated or, if not indicated, as required to produce strength and durability in finished product for use intended. Work to dimensions shown or accepted on Shop Drawings, using proven details of fabrication and support. Use type of materials shown or specified for various components of Work.

5. Hot Dipped Galvanizing: See Article 2.01J.

6. Form exposed connection with hairline joints, flush and smooth, using concealed fasteners of type shown or, if not shown, Phillips flat-head (countersunk) screws or bolts.

7. Provide for anchorage of type shown, coordinated with supporting structure. Fabricate and space anchoring devices to provide adequate support for intended use.

8. Cut, reinforce, drill and tap miscellaneous metal work as indicated to receive finish hardware and similar items.

2.03 ROUGH HARDWARE

A. Furnish bent of otherwise custom fabricated bolts, plates anchors, and other miscellaneous steel and iron shapes as required for framing and for anchoring or securing to concrete or other structures.

B. Fabricate items of sizes, shapes and dimensions required. Furnish malleable iron washers for heads and nuts, which bear on wood structural connections; elsewhere, furnish steel washers.

PART 3 - EXECUTION

3.01 PREPARATION

A. Take field measurements before preparation of Shop Drawings and fabrication, where possible. Do not delay job progress; allow for trimming and fitting where taking field measurements before fabrication might delay work.

B. Coordinate and furnish anchorages, setting drawings, diagrams, templates, instructions and directions for installation and anchorages, such as concrete inserts, integral anchors, which are to be embedded in concrete construction. Coordinate delivery of such items to Project site.

3.02 INSTALLATION

A. General:

1. Steel Members in Cast-In-Place Concrete: As specified in Cast-in-Place Concrete, Section 03300.

2. Fastening to Cast-in-Place Construction: Provide anchorage devices and fasteners where necessary for securing miscellaneous metal fabrications to in-place construction; including threaded fasteners for concrete inserts, toggle bolts, lag bolts, and other connectors as required.

3. Cutting, Fitting, and Placement: Perform cutting, drilling, and fitting required for installation of miscellaneous metal fabrications. Set work
accurately in location, alignment and elevation, plumb, level, true and free of rack, measured from established lines and levels. Provide temporary bracing for anchors in concrete or similar construction.

4. Fit exposed connections accurately together to form tight hairline joints. Weld connections, which are not to be left as exposed joints, but cannot be shop welded because of shipping size limitations. Grind exposed joints smooth and touch up shop paint coat. Do not weld, cut, or abrade the surfaces of exterior units, which have been hot-dip galvanized after fabrication, and are intended for bolted or screwed field connections.

5. Post Footing Forms: Construct forms to size and depth of footings indicated on Drawings.
   a. Layout and install footings to obtain accurate alignment, location, grades, level and plumb work in the patch and repair of concrete walkways and asphalt paving.
   b. Where earth forming is used, make with a neat cut. Material shall stand without caving. Should caving occur, provide forms.
   c. Set posts into concrete to depth (as indicated on Drawings) to obtain accurate alignment, location, grades, level and plumb.
   d. Remove formwork when concrete has reach strength significant enough the support embedded post.
   e. Compact soil to 95 percent compaction around post footings when formwork is used.

C. Field Welding: Comply with AWS Code for procedures of manual-shielded metal-arc welding, appearance and quality of welds made, and methods used in correcting welding work.

3.03 ADJUST AND CLEAN

A. Tough-up Painting: Immediately after erection, clean field welds, bolted connections, and abraded areas of shop paint, and paint exposed areas with same material as used for shop painting. Apply by brush or spray to provide a minimum dry-film thickness of 2.0 mils as per Section 09900, Painting.
   1. For Galvanized Surfaces: Clean field welds, bolted connections and abraded areas, and apply two coats of galvanizing repair paint to comply with ASTM A780 and Section 09900, Painting.

3.04 DISSIMILAR METALS

When metal components come into contact with dissimilar metals, surface shall be kept from direct contact by painting the dissimilar metal with a heavy coat of bituminous or asphalt paint.

END OF SECTION
PART 1 - GENERAL
1.01 SUMMARY
A. Work Included: Provide all wood rail to match existing and related items as indicated on the Drawings and specified herein:

B. Related Work:
   1. Aluminum Storefront: Section 08410.
      a. Wood rail brackets provided under Section 08410, Aluminum Storefront.
   2. Painting: Section 09900.
      a. Wood rail stained and finished to match existing wood rail.

1.02 QUALITY ASSURANCE

A. Published specifications, standards, tests, and recommended methods of trade or industry apply to the work of this Section where cited by the abbreviations noted below.
   1. Standard Grading and Dressing Rules, No. 16, West Coast Lumber Inspection Bureau (WCLIB).
   2. Architectural Woodwork Standards (AWS) published jointly with Architectural Woodwork Institute (AWI) and Woodwork Institute shall be incorporated herein as part of these Specifications.
      a. Section 6, Interior and Exterior Millwork.

B. Grade Marking:
   1. Provide for all trim. Do not expose grade marking on any face or surface of members, which will remain exposed to view in the finished work.
   2. Inspection Certificate from appropriate grading and inspecting agency will be acceptable instead of grade marking.

1.03 SUBMITTALS

A. Submit in accordance with the provisions of the General Conditions, Article 3.11.

B. Shop Drawings: Submit for all shop-fabricated assemblies of the construction if construction is different from that shown.

1.04 PRODUCT DELIVERY AND STORAGE

A. Do not deliver millwork until wet operations are complete and dry.

B. Place materials in an area protected from the weather immediately upon delivery to jobsite.
C. Store materials in a well-ventilated room, out of the way of work in progress and where not exposed to extreme changes of temperature and humidity.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Interior Lumber Trim for Staining and Clear Coat: Wood species shall match existing (color and grain match) to conform to AWS Premium Grade for stain grade finish.

B. Interior Fasteners: As indicated on Drawings.

C. Glue: Type II water resistant designed not to penetrate final finish.

D. Wood Filler: Water based, non-shrink type for staining.

PART 3 - EXECUTION

3.01 INSTALLATION AND APPLICATION:

A. Job measurements shall be made as required for the proper fabrication of the Work.

B. Install finish carpentry level, plumb, true, and aligned with adjacent materials and in accordance with referenced standards. Scribe and cut to fit adjoining work. Refinish and seal cuts.

C. Radius all exposed edges with 1/8-inch radius to match existing.

D. Install wood as indicated on the Drawings and as required for complete finish work.

E. Condition finish carpentry in installation areas for 24-hours before installing.

3.02 ADJUSTMENT AND CLEANING

A. After completion of work, clean exposed surfaces, touch up finish as required, remove and refinish damaged or soiled areas of finish, and adjust and repair damaged or defective work as directed.

B. Provide protection for installed work until final acceptance of Project by the District.

END OF SECTION
PART 1 - GENERAL

1.01 SUMMARY

A. Work Included: Provide WI certified and labeled counter tops, casework, casework hardware as shown and as specified.
   1. Plastic Laminate Countertops (where noted.)
   2. Drilled holes NOT acceptable for adjustable shelving within casework units.

B. Related Work:
   1. Finish Hardware: Section 08700.
   2. Non-Load Bearing Metal Framing: Section 09100.
      a. Internal backing shall be examined, approved and certified prior to installation of material under Section 09250. Coordinate with the certification process under Section 09250.
   4. Carpet Tiles: Section 09683.
      a. Resilient base attached to toe kick and sides of casework.
   5. Miscellaneous Specialties: Section 10900.

1.02 QUALITY ASSURANCE

A. Published specifications, standards, tests, and recommended methods of trade or industry apply to the work of this Section where cited by the abbreviations noted below.
      a. ASTM B221 Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes
i. ASTM D2197 Standard Method of Test for Adhesion of Organic Coating.

   b. ANSI A208.2 - American National Standard for Medium Density Fiberboard for Interior Use.

3. Architectural Woodwork Standards (AWS) published jointly with Architectural Woodwork Institute and Woodwork Institute (WI) shall be incorporated herein as part of these Specifications.
   a. Numbers indicated on interior elevations at casework refer to design/style of unit from AWS Appendix A, Casework Design Series.
   b. Decorative Laminate (Plastic Laminate) Casework (Cabinets) to conform to AWS, Section 10.
   c. Countertops shall conform to AWS Section 11.

4. Flame Spread:


6. Forest Stewardship Council (FSC.)

B. Fabricator Qualifications: Firm experience in producing architectural woodwork similar to that indicated for this project, and with a record of successful in-service performance, as well as sufficient production capacity to produce required units without delaying work.

C. Single-Source Responsibility for Fabrication and Installation: Engage a qualified woodworking firm to assume undivided responsibility for fabricating, finishing, and installing woodwork specified in this section.

D. Source of Cabinet Accessories: Provide accessories obtained from one single source for each type of hardware and accessories so finishes match.

E. Environmental Certification: Medium density fiberboard and plywood requiring environmental certification will be marked with FSC authorized certificate. Environmental certification ensures that wood components come from certified forests and are processed by certified chain-of-custody manufacturers.

F. Measurements: Before proceeding with work required to be fitted to other construction, obtain measurements and verify dimensions and any shop drawing details as required for accurate fit.

G. Optimum Moisture Content: Kiln-dry woodwork to an average moisture content not more than 12 percent.

H. Cutting: All cutting in casework for plumbing and electrical shall be done by Contractor.

I. Seismic Force Requirements: The casework shall be fabricated and installed to meet the requirements of Title 24, California Code of Regulations.
J. Quality Standard: Except as otherwise indicated, comply with Architectural Woodwork Standards for grades of interior casework, construction, finishes, and other requirements.

K. Certified Seismic Installation Program (CSIP): The following quality control measures are in addition to quality assurance performed by the project inspector.
1. Before wood or metal stud walls are closed up provide a written Woodwork Institute Certified Seismic Installation Program (CSIP) report confirming that acceptable backing is provided in all locations required for casework installation or identifying those locations where backing is missing or improperly located.
   a. On completion of installation provide a Woodwork Institute Certified Seismic Installation Program Certificate, identifying the work covered and certifying that installation meets the requirements of the WI CSIP attachment details and schedules.
   b. All fees charged by the Woodwork Institute for their Certified Seismic Installation Program are the responsibility of the millwork installer and shall be included in their bid.
   c. Provide an inspection report showing rooms/walls inspected type of blocking (wood or metal), confirmation of compliance or statement of non-compliance, inspector’s name, date and signature along with photo documentation of at least 25% of the walls inspected.

1.03 DESIGN REQUIREMENTS

A. Sustainable Design Requirements:
1. Lumber used in work of this Section is to come from forests that have been certified “well managed” forestry sources in accordance with programs of FSC and is tended to contribute to meeting requirements for certified wood outlined in LEED NC3.0 Credit MR7.
2. Composition wood panels used in work of this Section are intended to:
   a. Contribute to meeting recycled content outlined in LEED NC3.0 Credit MR4.
   b. Reduce quantity of indoor air contaminants that are harmful to comfort and well-being of installers and occupants and are not to contain added urea-formaldehyde resins outlined in LEED NC3.0 Credit EQ4.4.
3. Adhesives used in work of this Section are intended to reduce quantity of indoor air contaminants that are harmful to comfort and well-being of installers and occupants and are to be formulated to be within VOC content limits outlined in LEED NC3.0, Credit EQ4.1.
4. Regional Materials: Give preference to manufacturers and fabricators whose facilities are within 500-mile radius of the project site and to materials that are harvested and extracted within 500-mile radius of the project site to contribute to meet requirements for regional materials outlined in LEED NC3.3 Credit MR5.
1.04 SUBMITTALS

A. Submit in accordance with the provisions of the General Conditions, Article 3.11.

B. Product Data: Submit for hardware.

C. Submit shop drawings of all fabricated work showing location of each item, dimensioned plans and elevations, large-scale detail, attachment devices, and other components.
   1. Shop Drawings shall bear a WI Certified Compliance approval stamp prior to submitting to the Architect.
   2. Prior to Shop Drawing submittal, contact WI and coordinate CSIP certification.
   3. Include, in accordance with the minimum requirements of WI's OSHPD preapproval, OPA-2649-10:
      a. Casework elevation showing the centerline height and horizontal locations of all required, continuous, internal wall backing that is provided under Section 09100, Non-Load Bearing Metal Framing.
      b. Fastener Schedule, clearly showing the type, size/length location and maximum spacing of fasteners.

D. Submit samples of plastic laminate for color selection and samples of cabinet hardware for review.

E. Certificates:
   1. WI Certified Compliance certification that materials, fabrication and installation complies with the requirements specified herein.
   2. CSIP specified in Article 1.02K.
   3. Unit Labels: Each installed unit shall bear the WI Certified Compliance label.

F. LEED Submittal:
   1. Certified Wood: Submit FSC chain-of-custody certificate number with each delivery.
   2. Wood Composite Panels:
      a. Recycled Content: Submit letter or product data from manufacture indicating recycled content. Designate percentage of post consumer and post industrial recycled content.
      b. Urea-Formaldehyde Resin Content: Submit letter or product data from manufacture stating that materials used in this project contain no added urea-formaldehyde resins.
   3. Adhesives: Submit letter of product data from manufacture stating that adhesives used in work of this Section do not exceed VOC content limits established in South Coast Air Quality Management District Rule 1168.
   4. Regional Materials: Submit letter of product data from manufacture or fabricator stating products used in this project were extracted and
manufactured locally; identify location of origin listing city, state and country. If only portion of product qualifies for this credit, submit product data or letter clearly designating percent age of product that is extracted and manufactured locally.

5. Submit hardcopies of completed Online Documentation required for LEED MR Credit 4, MR Credit 5, MR Credit 7, EQ Credit 4.1 and EQ Credit 4.4.

1.05 DELIVERY, STORAGE, AND HANDLING

A. Protect woodwork during transit, delivery, storage, and handling to prevent damage, soilage, and deterioration.

B. Wrap casework until ready for installation.

C. Store and dispose of solvent-based materials, and materials used with solvent-based materials, in accordance with requirements of local authorities having jurisdiction.

D. Do not deliver woodwork until painting and similar operations that could damage, soil, or deteriorate woodwork have been completed in installation areas. If woodwork must be stored in anything other than installation areas, store only in areas whose environmental conditions meet requirements specified in Article 1.06.

1.06 PROJECT CONDITIONS

A. Environmental Limitations: Do not deliver or install casework until building is enclosed, wet-work is completed, and the heating, ventilating, and air conditioning (HVAC) system is operating and will maintain temperature and relative humidity at occupancy levels during the remainder of the construction period.

B. Field Measurements: Where casework is indicated to be fitted to other construction, check the actual dimensions of other construction by accurate field measurements before fabrication, and show recorded measurements on final shop drawings. Coordinate fabrication schedule with construction progress to avoid delaying work.

1. Verify locations of concealed framing, blocking, reinforcements, and furring that support casework by accurate field measurements before being enclosed. Record measurements on final Shop Drawings.

2. Where field measurements cannot be made without delaying work, guarantee dimensions for accurate fit and proceed with fabricating casework without field measurements. Provide allowance for trimming at the site and coordinate construction to ensure that actual dimensions correspond to guaranteed dimensions.

1.07 COORDINATION

Coordinate sizes and locations of framing, blocking, furring reinforcements, and other related units of work specified in other sections such as under Section 09100, Non-Load Bearing Metal Framing to ensure interior casework can be supported and installed as indicated.

PART 2 - PRODUCTS
2.01 MATERIALS

A. Sustainability Requirements:
   1. Formaldehyde:
      a. Composite wood and agrifiber products and assemblies shall contain no added urea-formaldehyde resins.
      b. Laminating adhesives used to fabricate on-site and shop-applied composite wood and agrifiber assemblies shall contain no added urea-formaldehyde resins.
   2. VOC Content: Adhesives and sealants applied on-site and inside the building weather barrier shall comply with VOC limits of the SCAQMD Rule #1168.
   3. Recycled Content:
      a. Composite wood and agrifiber substrate material, including particleboard and fiberboard (low, medium, and high-density) shall contain a minimum 55 percent pre and/or post-consumer recycled content.
      b. Solid-surfacing material shall contain a minimum of 10 percent pre and/or post-consumer recycled content.

B. Plastic Covered Casework:
   1. Exposed Material: Plastic laminate finish (NEMA LD-3 Post-Forming Type) over 45 pounds per square foot density – ¾-inch thickness medium density fiberboard (ANSI-A208.2); in accordance with WI, Section 15, for general purpose, 0.028-inch thick minimum, matte finish.
      a. Edging: 3 mils thick solid PVC in color to match plastic laminate.
      b. Color, texture and pattern as indicated on Drawings.
      c. Manufactured by Wilson Art, Nevamar, Formica or equal.
   2. Doors, Adjustable Shelving, and Drawer Fronts: Core shall be ¾-inch cabinet grade (core veneer) plywood. Medium density fiberboard is not acceptable.
      a. Edging: 3 mils thick solid PVC in color to match plastic laminate.
   3. Semi-exposed Material: Low pressure laminate (white melamine satin finish) over 45 pounds per square foot density - medium density fiberboard.
   4. Plastic Laminated Counter Tops: ¾-inch 7 ply exterior grade plywood with plastic laminate NEMA General Purpose of Post Forming Type, 0.050-inch thick minimum.
      a. Counter Tops at Sink Locations: ¾-inch 7 ply marine (at sinks) and exterior grade plywood plastic laminate NEMA General Purpose of Post Forming Type, 0.050-inch thick minimum.
      b. Square Profile Splash and Returns: ¾-inch 7 ply marine grade plywood with plastic laminate NEMA General Purpose of Post Forming Type, 0.050-inch thick minimum.
   6. Color: As indicated on Drawings or as note herein.
7. Cabinets face frames shall be plastic laminate faced in lengths as long as practical for delivery and installation.

C. Adhesive: Conform to ASTM C557, synthetic rubber resin, flexible and water resistant.

D. Cabinet Hardware: US26D finish unless otherwise noted.
1. Hinges: Rockford Process Control #374 (2½-inches) five (5) knuckle with 8 x ½-inch flat head wood screws or approved equal.
2. Door and Drawer Pulls: EPCO DP430, (4-inches long x 1-inch projection.)
3. Locks: Provide plastic spacers in thickness as required to flush face of lock face to face of door/drawer face.
   a. Doors: CompX National C8173 with C2073 black plastic spacer or equal.
   b. At units with two doors, provide one lock to the active right door leaf and elbow catch at the inactive left leaf, unless otherwise noted in Drawings.
      i. Provide locks to each door (except casework with double doors.)
   c. Key locks alike in each room. Keys shall be stamped with Room number. Verify with the District the correct Room Numbers to be stamped. Conform to keying standard in Finish Hardware, Section 08700.
4. Ball Catches: EPCO 1012DB or approved equal. Minimum one per door; two at doors larger than four feet in height.
5. Elbow Catch: EPCO 1018N.
6. Door: 5/16-inch diameter x 1/16-inch thick clear rubber at two per door/drawer front.
   a. Extra Materials: Provide two additional for each door front.
7. Adjustable Shelving Assemblies:
   b. Supports: Standard support - Knape and Vogt K256ZC in combination with 3-inches shelf bracket - Knape and Vogt 243ZC.
      i. One stand support with 3-inches shelf bracket at each side of shelf.
      ii. Secure under side at each 3-inches shelf support with two #8 flat head wood screws.
      iii. Locate 3-inches shelf support diagonal from opposing 3-inches shelf support at the other shelf end.
8. Mounting accessories and fasteners as indicated on Drawings.
   a. Mounting angles shall have eased edges and shall be pre-finished white and predrilled.
2.02 FABRICATION OF CASEWORK

A. Provide material qualities and fabricate casework in accordance with AWS, Custom Grade, and herein specified. All cabinets shall be shop finished as acceptable to the Architect.
   1. Interior of Plastic Covered Casework: Interiors shall as specified in Article 2.01A3.

B. Provide Custom Grade, Type I or Type II flush overlay-type cabinet construction, Style A frameless.

C. Fabricate cabinets to fully utilize all blind corners with shelving and access to it.

D. Pre-bore backs of casework with the required number, spacing and location of fasteners.

E. Seismic Fabrication Requirements: Fabricate units with a minimum specific gravity of 0.50.
   1. Fasteners in Backing: #14 flat head sheet metal screws with mounting steel angles and with finish washers as indicated on Drawings.
      a. Sheet Metal Screws: 1-inch minimum penetration beyond the back face of sheet metal backing.
   2. Casework to Floor: Casework that sits atop floors shall have integral toe kicks. Separate toe kick bases are not acceptable.
   3. Casework shall be solidly backed at the location of fasteners with a minimum of ¾-inch thick wood members.

2.03 FABRICATION OF COUNTERTOPS

A. Provide material qualities and fabrication of countertops in accordance with AWS, Section 11, Custom Grade, and herein specified.
   1. Edge:
      a. Typical Edge: 1½-inches high self edge fascia (wide build-up) with butt top mount splash.
      b. Counter Top With Sinks: 1¾-inches fully formed rolled no drip edged.
   2. Fabricate countertops for scribing to walls.
   3. Provide back splash and return splash at height indicated on Drawings.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Prior to application of wall finishes in Section 09250, Gypsum Wallboard, or any work that would conceal backing, examine, confirm and document installed backing provided under Section 09100, Non-Load Bearing Metal Framing..

B. Field Quality Control: Provide Woodwork Institute Certified Seismic Installation Program (CSIP) inspection reports and certification as required in Part 1 of this Section.
3.02 INSTALLATION, GENERAL
   A. Install plumb, level, true, and straight with no distortions. Shim as required using concealed shims.
   B. Cut to fit, unless specified to be shop fabricated or shop cut to exact size. Where casework abuts other finished work, scribe and cut for accurate fit. Before making cutouts, drill pilot holes at corners.
   C. Distribute defects allowed in Custom Grade specified to the best overall advantage when installing job-assembled casework items.
   D. Wall and Floor Anchorage: All casework shall be anchored to the walls and floors. Where floor island type casework is provided, casework shall be provided with additional fastening assemblies to secure only to floor.
      1. Coordinate with stud installation work in Non-Load Bearing Metal Framing, Section 09100 for required backing locations. See Drawings for typical casework backing and details.
      2. Coordinate with work under Section 01732, Selective Demolition for the removal of existing wall finish for the required casework backing; and the patching in Section 01730, Cutting and Patching.
      3. Prior to securing casework confirm location of required wall backing.

3.03 INSTALLATION OF CASEWORK
   A. Install casework in a manner consistent with the specified quality grade to be plumb, level, true, and straight with no distortions. Shim as required using concealed shim.
   B. Secure to grounds, stripping, and blocking with counter-sunk, concealed fasteners and blinds nailing as required for a complete installation. Scribe and cut for accurate fit to other finished work.
   C. Adjacent casework shall be fastened together at the front with a minimum of two #10 flat head wood screws with finish washers spaced no greater than 24-inches apart.
   D. Countertops to Case Casework: Adhesively apply countertops to base casework with construction adhesive then secured with #10 flat head wood screws at 12-inches on center.

3.04 INSPECTION
   Contact WI and arrange for final inspection of casework installation. Provide WI Certified Compliance label to each installed unit when final inspection is approved.

3.05 ADJUST AND CLEAN
   A. Repair damaged or defective work as directed.
   B. Adjust hardware for proper operation.

3.06 PROTECTION OF FINISHED WORK
   A. Provide all necessary protective measures to prevent exposure of casework to other construction activity.
B. Use procedures and take precautions for protection of material, installed laboratory casework, and fixtures from damage by work of other trades.

END OF SECTION
PART 1 - GENERAL

1.01 SUMMARY

A. This Section includes provision for acoustic insulation and fire safing as shown and as specified.

B. Related Work:
   1. Non-Load Bearing Metal Framing: Section 09100.
   2. Gypsum Wall Board: 09250.

1.02 REFERENCED STANDARDS

A. Published specifications, standards, tests, or recommended methods of trade or industry apply to the work of this Section where cited by the abbreviations noted below.
      e. ASTM E136 Standard Test Method for Behavior of Materials in a Vertical Tube Furnace at 750°C.

1.03 DESIGN REQUIREMENTS

Sustainable Design Requirements: Steel used in work in this Section are intended contribute to meeting requirements for recycle content outlined in LEED NC3.0, Credit MR4.

1.04 SUBMITTALS

A. Submit in accordance with the provisions of the General Conditions, Article 3.11.

B. Material List: List items proposed to be provided under this Section.

C. Product Data: Manufacturer's literature describing products.

D. Samples: Submit samples of all building insulation specified.

E. LEED Submittal:
1. Submit letter or product data from manufacture indicating recycled content. Designate percentage of post consumer and post industrial recycled content.
2. Submit hardcopies of completed Online Documentation required for LEED MR Credit 4.

1.05 DELIVERY, STORAGE AND HANDLING

A. Delivery insulation materials in labeled packages bearing manufacturer’s name, and acoustic values.

B. Store all materials on the site in a dry area protected from the weather and moisture.

C. Where insulation has an integral vapor barrier, handle with care to prevent damage to barrier.

1.06 PROJECT CONDITIONS

Do not install insulation until construction has progressed to the point that inclement weather will not wet or damage the insulation.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Acoustic Insulation:
   1. Typical interior partition insulation. Incombustible, unfaced fiberglass batts, friction fit between metal stud framing, 3½-inches thick and density of 0.5 pounds per cubic foot. Insulation shall meet the requirements of ASTM C665, Type I, Class A and ASTM E136 (passes.)
   2. Manufacturers: Owens-Corning Fiberglass, Sound Attenuation Batts; Certainteed Sound Attenuation NoiseReducer Batts; or equal.
   3. Fire Rating (ASTM E84): Class A; flame spread 25 or less and smoke developed of 50 or less.

B. Fire-Resistant Safing Insulation: Semi-rigid mineral-fiber blanket, density of 4 pounds per cubic foot and meeting the requirements of, ASTM C665, Types I and III, ASTM C612, Type IA, IB and II and ASTM C553. Provide impaling clips as required.
   2. Fire Rating (ASTM E84): Class A; flame spread of 15 and smoke developed of 0.
   4. Provide impaling clips as required or other clip types to secure safing to built conditions with the intent to secure safing in-place.

C. Impaling Anchors: Corrosion resistant spindle steel pins and washer consisting of perforated metal plates with spindle welded to center and self-locking washers. Provide impaling pins of length to extend beyond insulation
and self locking washer. Length shall not exceed 1-inch beyond the insulation face after self locking washer installation.

1. 12 gage diameter mild steel spindles with a corrosion resistant coating. The perforated base plate is 2-inches square and is made of galvanized steel. Tacto Insul-Hangers, Gemco Insulation Hangers, or equal.


3. Nylon safety point cover or sheet metal dome caps designed for pins.


**PART 3 - EXECUTION**

3.01 CONDITION OF SURFACES

Verify that all piping, conduit, wiring, ducts, blocking, and similar items are installed in insulated spaces before commencing installation.

3.02 INSTALLATION

A. General: Install building insulation in accordance with manufacturer's instructions, unless otherwise noted.

1. Insulation shall extend full height between studs.

2. Install insulation to fit snugly between framing members. Fully insulate all small areas between closely spaced framing members. Where end joints are required, butt tightly or overlap.

3. Cut and fit insulation around pipes, conduits, outlet boxes and similar equipment to maintain integrity if insulation. Where pipes occur, place insulation between wall surface and pipe, compressing insulation where required.

4. Insulate non-standard width spaces by cutting insulation at least 1-inch wider than space to be filled.

END OF SECTION
PART 1 - GENERAL

1.01 SUMMARY

A. Work Included: Provide firestopping and smokeseals at locations indicated on the Drawings, and including the following areas:
   1. All openings in fire or smoke rated floors and walls in both void spaces and those spaces accommodating penetrating items such as cables, conduits, pipes, ducts, etc., not otherwise specified in Divisions 15 and 16.
   2. Around penetrations into rated assemblies such as partitions, floors, ceiling and roofs; and penetrations into rated shafts.
   3. Deflection joint of rated partitions. Top and bottom of rated partitions.
   4. Expansion joints in fire-rated walls and floors.
   5. Protection around and behind electrical junction boxes in rated partition assemblies.
      a. Construction joints are any joints created by different materials and/or substrates that have different rates of expansion and contraction so that the required fire rated assemblies are maintained.

B. Related Work:
   1. Sealants: Section 07900.
   2. Gypsum Wallboard: Section 09250.
   5. Electrical: Divisions 16.

1.02 SUBMITTALS

A. Submit in accordance with the provisions of the General Conditions, Article 3.11.

B. Submit manufacturer's printed product data indicating product characteristics, performance and limiting criteria, as well as a Certificate indicating current approval by the Office of the State Fire Marshall.

C. Submit manufacturer's Shop Drawings and installation instructions for each type of firestop or smokeseal required by the Project. Shop Drawings shall indicate the detailing of all necessary anchorage, reinforcements and fastenings required.

D. Prepare job mock-up of the material proposed for use in the project as directed by Architect. Approved mock-ups may be left in place, as part of the finished project and will constitute the standard for remaining work.
1.03 REFERENCED STANDARDS

A. Published specifications, standards, tests, and recommended methods of trade or industry apply to the work of this Section where cited by the abbreviations noted below.


2. National Fire Protection Association:
   a. NFPA 70, National Electrical Code.


1.04 QUALITY ASSURANCE

A. Materials shall have the current approval of the California State Fire Marshall. Firestopping or smokeseal materials shall conform to both Flame (F) and Temperature (T) ratings per ASTM E814 or UL1479 fire tests, and shall restrict the transmission of temperature as well as the passage of flame, gasses, smoke and water. Fire tests shall be conducted with a minimum positive pressure differential of 0.01-inches of water column.

B. Firestopping and smokeseal work shall be performed by an installer trained or approved by the firestop or smokeseal manufacturer. Equipment used shall be in accordance with firestop or smokeseal manufacturer’s written instructions.

1.05 DELIVERY, STORAGE AND HANDLING

A. Deliver materials in original unopened packages fully identified with manufacturer’s name, trade name and UL label. Leave seals unbroken and labels intact until time of use. Remove from jobsite any rejected or damaged packages found unsuitable for use.

B. Store materials in a dry place, off the ground or floor, and away from other material subject to sweating or attraction of moisture or dampness.

1.06 JOB CONDITIONS

A. Conform to the manufacturer’s printed instructions for installation and when applicable, curing in accordance with the manufacturer’s recommendations regarding temperature and humidity. Conform to all required ventilation and safety requirements.
PART 2 - PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS

A. Products shall be as manufactured by Bio Fireshield, Inc., Damonmill Square, Concord, MA 01742, (707) 226-1801; Dow Coming Corp., P.O. Box 0994, Midland, MI 48640, (517) 496-4000; Electrical Products Division, 3M Center, Bldg. 225-4N-05, St. Paul, MN 55144-1000, (612) 733-4883; C/S Group, Box 380, Muncy, PA 17756, (717) 546-5941, or equal, unless otherwise noted below.

2.02 MATERIALS

A. Firestopping and smokeseal materials shall be asbestos free. The F rating must be a minimum of one (1) hour, but not less than the fire resistance rating of the assembly being penetrated, when tested per ASTM E814. Materials being applied in openings between elements of differing fire ratings shall conform to the most restrictive rating. Fire tests shall be conducted with a minimum positive pressure differential of 0.03-inches of water column. Material shall be non-combustible, with flame spread of 25 or less, and smoke development of 50 or less, when tested in accordance with ASTM E84.

1. Firestop or Smokeseal Mortar: Single component Portland Cement fly ash mortar, requiring no special supports or anchoring devices to pass water hose stream tests.

2. Firestop or Smokeseal Sealant: Single or multiple component silicone sealant. Provide a flexible, air-tight, waterproof seal that bonds to building materials.

3. Firestop or Smokeseal Sleeve: Prefabricated device used around plastic pipes in fire-rated floors and walls. The sleeve shall be made of a steel collar lined with an intumescent material.


5. Pads for Electrical Junction Boxes: Synthethetic elastomeric moldable putty pads in size and shape to cover size of electrical junction boxes or boxes installed within rated partitions.

B. Mineral fiber board, mineral fiber matting, and mineral fiber putty forming and damming materials shall be used to contain the fluid material mixture prior to and during filling of penetrations and voids. Fire tested incombustible and functionally approved forming materials may be left in place to become an integraally part of the foamed penetration seal.

1. Combustible forming and damming materials may be used for containment during installation of materials only, and must be removed from the final completed penetration seal system.

C. Firestopping at voids between rated partitions and flutes of structural slab metal deck: "Q-Stop" by Fyresleeve Industries, Unit D-5180, Stilloreek Avenue, British Columbia, Canada, V5C 4E4. This is a proprietary item; no equal will be accepted without the express approval of the California State Fire Marshal.
PART 3 - EXECUTION

3.01 PREPARATION

A. Examine all work upon which fireproofing is to be applied, and notify the Contractor in writing, with copy to the Architect, of all conditions detrimental to the timely completion of the Work. Do not proceed with the Work of this Section until all unsatisfactory conditions have been corrected in a manner acceptable to the manufacturer of the materials.

B. Prior to application of firestopping or smokeseal material, clean all steel of loose material, including excessive mill scale or rust, paint, grease or other material which would preclude the successful application and retention of bond to the substrate. Do not apply firestops or smokeseals to surfaces previously painted or treated with a sealer, curing compound, water repellent or other coatings unless tests have been performed to ensure compatibility of materials. Remove coatings as required in compliance with manufacturer's instructions.

C. Provide primers as required which conform to manufacturer's recommendations for various substrates and conditions.

D. Mask where necessary to protect adjoining surfaces. Remove excess material and stains on surfaces as required.

3.02 INSTALLATION

A. Coordinate locations and sizes of all sleeves which will be required by the Work of other Sections.

B. Install in strict accordance with manufacturer's printed instructions to provide a Flame (F) rating of at least one (1) hour, but not less than the fire resistance rating of the assembly being penetrated. Ensure that anchoring devices, back-up materials, clips, sleeves, supports and other materials used in the actual fire test are installed.

C. Install fire resistant filler in openings with sufficient pressure to properly fill and seal openings, ensuring an effective seal. Dam bottom of vertical openings and one side of horizontal penetrations provide partial face containment forms or where required to achieve fire resistance ratings, provide permanent mineral composition board forms. On horizontal penetrations, provide partial face containment forms where required for material placement. Allow installed fillers to cure, and remove temporary forms; trim ragged edges with sharp knife; inspect and fill voids with additional filler to form uniform thickness of filler.
D. Spillage: Do not allow sealants to overflow or spill onto adjoining surfaces or to migrate into voids of adjoining surfaces. Clean adjoining surfaces by whatever means may be necessary to eliminate evidence of spillage.

E. Recess exposed edges of gaskets and exposed joint fillers slightly behind adjoining surfaces, unless otherwise shown, so that compressed units will not protrude from joints.

F. Tool trowel exposed surfaces. Remove excess firestop or smokeseal material promptly as work progresses and upon completion.

G. Firestop or smokeseal material at penetrations of insulated piping shall be applied after the insulation is installed. The material used shall have been tested for compatibility and rating and conjunction with the use of the installation material being used. Calcium silicate, or other pipe insulation, may be substituted for fiberglass pipe insulation through the sleeve, if the insulation is part of an assembly, which meets the requirements specified for firestopping or smokesealing.

H. Firestopping or smokesealing materials for filling voids in floors having openings of 4-inches or greater, shall be installed to support the same load as the floor system, unless the area is protected by a permanent barrier preventing loading or traffic on the firestopped or smokesealed area.

3.03 CURE AND PROTECTION

A. Cure firestopping and smokeseal materials in compliance with manufacturer’s instructions and recommendations. Installer shall advise Contractor of procedures required for protection of firestopping and smokeseals during remaining construction period.

B. Install firestops or smokeseals with sufficient pressure to properly fill and seal openings to ensure an effective smokeseal.

C. Tool or trowel exposed surfaces. Remove excess firestop or smokeseal material promptly as work progresses and upon completion.

D. Firestop or smokeseal material at penetration of insulated piping shall have been tested for compatibility and rating in conjunction with the use of the insulation material being used. Calcium silicate or other pipe insulation may be substituted for fiberglass pipe insulation through the sleeve, if the insulation is part of an assembly which meets the requirements specified for firestopping or smokesealing.

E. Firestopping or smokesealing materials for filling voids in floors having openings of 4-inches or greater, shall be installed to support the same load as the floor system, unless the area is protected by a permanent barrier preventing loading or traffic on the firestopped or smokesealed area.
3.04 FIELD QUALITY CONTROL

A. Examine each firestop or smokeseal application after completion of installation, to ensure proper installation of full compliance with this specification at no additional cost.

B. Maintain accessibility to all areas of work until completion of inspection by the applicable Code authorities.

C. When finished work will be visible after completion of the Project, remove temporary dams after initial cure of firestops or smokeseals, and clean adjacent surfaces in accordance with manufacturer's printed instructions. Remedy any staining discoloring on adjacent surfaces caused by the Work of this Section.

3.05 CLEAN UP

A. After completion of application of firestopping or smokeseal materials, remove all debris, excess materials and all equipment, and broom clean all exposed wall and floor areas.

END OF SECTION
PART 1 - GENERAL

1.01 SUMMARY

A. Work Included: Provide all wood rail to match existing and related items as indicated on the Drawings and specified herein:

B. Related Work:
   1. Aluminum Storefront: Section 08410.
      a. Wood rail brackets provided under Section 08410, Aluminum Storefront.
   2. Painting: Section 09900.
      a. Wood rail stained and finished to match existing wood rail.

1.02 QUALITY ASSURANCE

A. Published specifications, standards, tests, and recommended methods of trade or industry apply to the work of this Section where cited by the abbreviations noted below.
   1. Standard Grading and Dressing Rules, No. 16, West Coast Lumber Inspection Bureau (WCLIB).
   2. Architectural Woodwork Standards (AWS) published jointly with Architectural Woodwork Institute (AWI) and Woodwork Institute shall be incorporated herein as part of these Specifications.
      a. Section 6, Interior and Exterior Millwork.

B. Grade Marking:
   1. Provide for all trim. Do not expose grade marking on any face or surface of members, which will remain exposed to view in the finished work.
   2. Inspection Certificate from appropriate grading and inspecting agency will be acceptable instead of grade marking.

1.03 SUBMITTALS

A. Submit in accordance with the provisions of the General Conditions, Article 3.11.

B. Shop Drawings: Submit for all shop-fabricated assemblies of the construction if construction is different from that shown.

1.04 PRODUCT DELIVERY AND STORAGE

A. Do not deliver millwork until wet operations are complete and dry.

B. Place materials in an area protected from the weather immediately upon delivery to jobsite.
C. Store materials in a well-ventilated room, out of the way of work in progress and where not exposed to extreme changes of temperature and humidity.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Interior Lumber Trim for Staining and Clear Coat: Wood species shall match existing (color and grain match) to conform to AWS Premium Grade for stain grade finish.

B. Interior Fasteners: As indicated on Drawings.

C. Glue: Type II water resistant designed not to penetrate final finish.

D. Wood Filler: Water based, non-shrink type for staining.

PART 3 - EXECUTION

3.01 INSTALLATION AND APPLICATION:

A. Job measurements shall be made as required for the proper fabrication of the Work.

B. Install finish carpentry level, plumb, true, and aligned with adjacent materials and in accordance with referenced standards. Scribe and cut to fit adjoining work. Refinish and seal cuts.

C. Radius all exposed edges with 1/8-inch radius to match existing.

D. Install wood as indicated on the Drawings and as required for complete finish work.

E. Condition finish carpentry in installation areas for 24-hours before installing.

3.02 ADJUSTMENT AND CLEANING

A. After completion of work, clean exposed surfaces, touch up finish as required, remove and refinish damaged or soiled areas of finish, and adjust and repair damaged or defective work as directed.

B. Provide protection for installed work until final acceptance of Project by the District.

END OF SECTION
SECTION 06410

CASEWORK

PART 1 - GENERAL

1.01 SUMMARY

A. Work Included: Provide WI certified and labeled counter tops, casework, casework hardware as shown and as specified.
   1. Plastic Laminate Countertops (where noted.)
   2. Drilled holes NOT acceptable for adjustable shelving within casework units.

B. Related Work:
   1. Finish Hardware: Section 08700.
   2. Non-Load Bearing Metal Framing: Section 09100.
      a. Internal backing shall be examined, approved and certified prior to installation of material under Section 09250. Coordinate with the certification process under Section 09250.
   4. Carpet Tiles: Section 09683.
      a. Resilient base attached to toe kick and sides of casework.
   5. Miscellaneous Specialties: Section 10900.

1.02 QUALITY ASSURANCE

A. Published specifications, standards, tests, and recommended methods of trade or industry apply to the work of this Section where cited by the abbreviations noted below.
      a. ASTM B221 Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes
i. ASTM D2197 Standard Method of Test for Adhesion of Organic Coating.

   b. ANSI A208.2 - American National Standard for Medium Density Fiberboard for Interior Use.

3. Architectural Woodwork Standards (AWS) published jointly with Architectural Woodwork Institute and Woodwork Institute (WI) shall be incorporated herein as part of these Specifications.
   a. Numbers indicated on interior elevations at casework refer to design/style of unit from AWS Appendix A, Casework Design Series.
   b. Decorative Laminate (Plastic Laminate) Casework (Cabinets) to conform to AWS, Section 10.
   c. Countertops shall conform to AWS Section 11.

4. Flame Spread:


6. Forest Stewardship Council (FSC.)

B. Fabricator Qualifications: Firm experience in producing architectural woodwork similar to that indicated for this project, and with a record of successful in-service performance, as well as sufficient production capacity to produce required units without delaying work.

C. Single-Source Responsibility for Fabrication and Installation: Engage a qualified woodworking firm to assume undivided responsibility for fabricating, finishing, and installing woodwork specified in this section.

D. Source of Cabinet Accessories: Provide accessories obtained from one single source for each type of hardware and accessories so finishes match.

E. Environmental Certification: Medium density fiberboard and plywood requiring environmental certification will be marked with FSC authorized certificate. Environmental certification ensures that wood components come from certified forests and are processed by certified chain-of-custody manufacturers.

F. Measurements: Before proceeding with work required to be fitted to other construction, obtain measurements and verify dimensions and any shop drawing details as required for accurate fit.

G. Optimum Moisture Content: Kiln-dry woodwork to an average moisture content not more than 12 percent.

H. Cutting: All cutting in casework for plumbing and electrical shall be done by Contractor.

I. Seismic Force Requirements: The casework shall be fabricated and installed to meet the requirements of Title 24, California Code of Regulations.
J. Quality Standard: Except as otherwise indicated, comply with Architectural Woodwork Standards for grades of interior casework, construction, finishes, and other requirements.

K. Certified Seismic Installation Program (CSIP): The following quality control measures are in addition to quality assurance performed by the project inspector.
   1. Before wood or metal stud walls are closed up provide a written Woodwork Institute Certified Seismic Installation Program (CSIP) report confirming that acceptable backing is provided in all locations required for casework installation or identifying those locations where backing is missing or improperly located.
      a. On completion of installation provide a Woodwork Institute Certified Seismic Installation Program Certificate, identifying the work covered and certifying that installation meets the requirements of the WI CSIP attachment details and schedules.
      b. All fees charged by the Woodwork Institute for their Certified Seismic Installation Program are the responsibility of the millwork installer and shall be included in their bid.
      c. Provide an inspection report showing rooms/walls inspected type of blocking (wood or metal), confirmation of compliance or statement of non-compliance, inspector’s name, date and signature along with photo documentation of at least 25% of the walls inspected.

1.03 DESIGN REQUIREMENTS

A. Sustainable Design Requirements:
   1. Lumber used in work of this Section is to come from forests that have been certified “well managed” forestry sources in accordance with programs of FSC and is tended to contribute to meeting requirements for certified wood outlined in LEED NC3.0 Credit MR7.
   2. Composition wood panels used in work of this Section are intended to:
      a. Contribute to meeting recycled content outlined in LEED NC3.0 Credit MR4.
      b. Reduce quantity of indoor air contaminants that are harmful to comfort and well-being of installers and occupants and are not to contain added urea-formaldehyde resins outlined in LEED NC3.0 Credit EQ4.4.
   3. Adhesives used in work of this Section are intended to reduce quantity of indoor air contaminants that are harmful to comfort and well-being of installers and occupants and are to be formulated to be within VOC content limits outlined in LEED NC3.0, Credit EQ4.1.
   4. Regional Materials: Give preference to manufacturers and fabricators whose facilities are within 500-mile radius of the project site and to materials that are harvested and extracted within 500-mile radius of the project site to contribute to meet requirements for regional materials outlined in LEED NC3.3 Credit MR5.
1.04 SUBMITTALS

A. Submit in accordance with the provisions of the General Conditions, Article 3.11.

B. Product Data: Submit for hardware.

C. Submit shop drawings of all fabricated work showing location of each item, dimensioned plans and elevations, large-scale detail, attachment devices, and other components.
   1. Shop Drawings shall bear a WI Certified Compliance approval stamp prior to submittal to the Architect.
   2. Prior to Shop Drawing submittal, contact WI and coordinate CSIP certification.
   3. Include, in accordance with the minimum requirements of WI's OSHPD preapproval, OPA-2649-10:
      a. Casework elevation showing the centerline height and horizontal locations of all required, continuous, internal wall backing that is provided under Section 09100, Non-Load Bearing Metal Framing.
      b. Fastener Schedule, clearly showing the type, size/length location and maximum spacing of fasteners.

D. Submit samples of plastic laminate for color selection and samples of cabinet hardware for review.

E. Certificates:
   1. WI Certified Compliance certification that materials, fabrication and installation complies with the requirements specified herein.
   2. CSIP specified in Article 1.02K.
   3. Unit Labels: Each installed unit shall bear the WI Certified Compliance label.

F. LEED Submittal:
   1. Certified Wood: Submit FSC chain-of-custody certificate number with each delivery.
   2. Wood Composite Panels:
      a. Recycled Content: Submit letter or product data from manufacture indicating recycled content. Designate percentage of post consumer and post industrial recycled content.
      b. Urea-Formaldehyde Resin Content: Submit letter or product data from manufacture stating that materials used in this project contain no added urea-formaldehyde resins.
   3. Adhesives: Submit letter of product data from manufacture stating that adhesives used in work of this Section do not exceed VOC content limits established in South Coast Air Quality Management District Rule 1168.
   4. Regional Materials: Submit letter of product data form manufacture or fabricator stating products used in this project were extracted and
manufactured locally; identify location of origin listing city, state and country. If only portion of product qualifies for this credit, submit product data or letter clearly designating percent age of product that is extracted and manufactured locally.

5. Submit hardcopies of completed Online Documentation required for LEED MR Credit 4, MR Credit 5, MR Credit 7, EQ Credit 4.1 and EQ Credit 4.4.

1.05 DELIVERY, STORAGE, AND HANDLING
A. Protect woodwork during transit, delivery, storage, and handling to prevent damage, soilage, and deterioration.
B. Wrap casework until ready for installation.
C. Store and dispose of solvent-based materials, and materials used with solvent-based materials, in accordance with requirements of local authorities having jurisdiction.
D. Do not deliver woodwork until painting and similar operations that could damage, soil, or deteriorate woodwork have been completed in installation areas. If woodwork must be stored in anything other than installation areas, store only in areas whose environmental conditions meet requirements specified in Article 1.06.

1.06 PROJECT CONDITIONS
A. Environmental Limitations: Do not deliver or install casework until building is enclosed, wet-work is completed, and the heating, ventilating, and air conditioning (HVAC) system is operating and will maintain temperature and relative humidity at occupancy levels during the remainder of the construction period.
B. Field Measurements: Where casework is indicated to be fitted to other construction, check the actual dimensions of other construction by accurate field measurements before fabrication, and show recorded measurements on final shop drawings. Coordinate fabrication schedule with construction progress to avoid delaying work.
   1. Verify locations of concealed framing, blocking, reinforcements, and furring that support casework by accurate field measurements before being enclosed. Record measurements on final Shop Drawings.
   2. Where field measurements cannot be made without delaying work, guarantee dimensions for accurate fit and proceed with fabricating casework without field measurements. Provide allowance for trimming at the site and coordinate construction to ensure that actual dimensions correspond to guaranteed dimensions.

1.07 COORDINATION
Coordinate sizes and locations of framing, blocking, furring reinforcements, and other related units of work specified in other sections such as under Section 09100, Non-Load Bearing Metal Framing to ensure interior casework can be supported and installed as indicated

PART 2 - PRODUCTS
2.01 MATERIALS

A. Sustainability Requirements:
   1. Formaldehyde:
      a. Composite wood and agrifiber products and assemblies shall contain no added urea-formaldehyde resins.
      b. Laminating adhesives used to fabricate on-site and shop-applied composite wood and agrifiber assemblies shall contain no added urea-formaldehyde resins.
   2. VOC Content: Adhesives and sealants applied on-site and inside the building weather barrier shall comply with VOC limits of the SCAQMD Rule #1168.
   3. Recycled Content:
      a. Composite wood and agrifiber substrate material, including particleboard and fiberboard (low, medium, and high-density) shall contain a minimum 55 percent pre and/or post-consumer recycled content.
      b. Solid-surfacing material shall contain a minimum of 10 percent pre and/or post-consumer recycled content.

B. Plastic Covered Casework:
   1. Exposed Material: Plastic laminate finish (NEMA LD-3 Post-Forming Type) over 45 pounds per square foot density – ¾-inch thickness medium density fiberboard (ANSI-A208.2); in accordance with WI, Section 15, for general purpose, 0.028-inch thick minimum, matte finish.
      a. Edging: 3 mils thick solid PVC in color to match plastic laminate.
      b. Color, texture and pattern as indicated on Drawings.
      c. Manufactured by Wilson Art, Nevamar, Formica or equal.
   2. Doors, Adjustable Shelving, and Drawer Fronts: Core shall be ¾-inch cabinet grade (core veneer) plywood. **Medium density fiberboard is not acceptable.**
      a. Edging: 3 mils thick solid PVC in color to match plastic laminate.
   3. Semi-exposed Material: Low pressure laminate (white melamine satin finish) over 45 pounds per square foot density - medium density fiberboard.
   4. Plastic Laminated Counter Tops: ¾-inch 7 ply exterior grade plywood with plastic laminate NEMA General Purpose of Post Forming Type, 0.050-inch thick minimum.
      a. Counter Tops at Sink Locations: ¾-inch 7 ply marine (at sinks) and exterior grade plywood plastic laminate NEMA General Purpose of Post Forming Type, 0.050-inch thick minimum.
      b. Square Profile Splash and Returns: ¾-inch 7 ply marine grade plywood with plastic laminate NEMA General Purpose of Post Forming Type, 0.050-inch thick minimum.
   6. Color: As indicated on Drawings or as note herein.
7. Cabinets face frames shall be plastic laminate faced in lengths as long as practical for delivery and installation.

C. Adhesive: Conform to ASTM C557, synthetic rubber resin, flexible and water resistant.

D. Cabinet Hardware: US26D finish unless otherwise noted.
   1. Hinges: Rockford Process Control #374 (2½-inches) five (5) knuckle with 8 x 5/8-inch flat head wood screws or approved equal.
   2. Door and Drawer Pulls: EPCO DP430, (4-inches long x 1-inch projection.)
   3. Locks: Provide plastic spacers in thickness as required to flush face of lock face to face of door/drawer face.
      a. Doors: CompX National C8173 with C2073 black plastic spacer or equal.
      b. At units with two doors, provide one lock to the active right door leaf and elbow catch at the inactive left leaf, unless otherwise noted in Drawings.
         i. Provide locks to each door (except casework with double doors.)
      c. Key locks alike in each room. Keys shall be stamped with Room number. Verify with the District the correct Room Numbers to be stamped. Conform to keying standard in Finish Hardware, Section 08700.
   4. Ball Catches: EPCO 1012DB or approved equal. Minimum one per door; two at doors larger than four feet in height.
   5. Elbow Catch: EPCO 1018N.
   6. Door: 5/16-inch diameter x 1/16-inch thick clear rubber at two per door/drawer front.
      a. Extra Materials: Provide two additional for each door front.
   7. Adjustable Shelving Assemblies:
      b. Supports: Standard support - Knape and Vogt K256ZC in combination with 3-inches shelf bracket - Knape and Vogt 243ZC.
         i. One stand support with 3-inches shelf bracket at each side of shelf.
         ii. Secure under side at each 3-inches shelf support with two #8 flat head wood screws.
         iii. Locate 3-inches shelf support diagonal from opposing 3-inches shelf support at the other shelf end.
   8. Mounting accessories and fasteners as indicated on Drawings.
      a. Mounting angles shall have eased edges and shall be prefinished white and predrilled.
2.02 FABRICATION OF CASEWORK

A. Provide material qualities and fabricate casework in accordance with AWS, Custom Grade, and herein specified. All cabinets shall be shop finished as acceptable to the Architect.
   1. Interior of Plastic Covered Casework: Interiors shall as specified in Article 2.01A3.

B. Provide Custom Grade, Type I or Type II flush overlay-type cabinet construction, Style A frameless.

C. Fabricate cabinets to fully utilize all blind corners with shelving and access to it.

D. Pre-bore backs of casework with the required number, spacing and location of fasteners.

E. Seismic Fabrication Requirements: Fabricate units with a minimum specific gravity of 0.50.
   1. Fasteners in Backing: #14 flat head sheet metal screws with mounting steel angles and with finish washers as indicated on Drawings.
      a. Sheet Metal Screws: 1-inch minimum penetration beyond the back face of sheet metal backing.
   2. Casework to Floor: Casework that sits atop floors shall have integral toe kicks. Separate toe kick bases are not acceptable.
   3. Casework shall be solidly backed at the location of fasteners with a minimum of ¾-inch thick wood members.

2.03 FABRICATION OF COUNTERTOPS

A. Provide material qualities and fabrication of countertops in accordance with AWS, Section 11, Custom Grade, and herein specified.
   1. Edge:
      a. Typical Edge: 1½-inches high self edge fascia (wide build-up) with butt top mount splash.
      b. Counter Top With Sinks: 1¾-inches fully formed rolled no drip edged.
   2. Fabricate countertops for scribing to walls.
   3. Provide back splash and return splash at height indicated on Drawings.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Prior to application of wall finishes in Section 09250, Gypsum Wallboard, or any work that would conceal backing, examine, confirm and document installed backing provided under Section 09100, Non-Load Bearing Metal Framing.

B. Field Quality Control: Provide Woodwork Institute Certified Seismic Installation Program (CSIP) inspection reports and certification as required in Part 1 of this Section.
3.02 INSTALLATION, GENERAL
A. Install plumb, level, true, and straight with no distortions. Shim as required using concealed shims.
B. Cut to fit, unless specified to be shop fabricated or shop cut to exact size. Where casework abuts other finished work, scribe and cut for accurate fit. Before making cutouts, drill pilot holes at corners.
C. Distribute defects allowed in Custom Grade specified to the best overall advantage when installing job-assembled casework items.
D. Wall and Floor Anchorage: All casework shall be anchored to the walls and floors. Where floor island type casework is provided, casework shall be provided with additional fastening assemblies to secure only to floor. 
   1. Coordinate with stud installation work in Non-Load Bearing Metal Framing, Section 09100 for required backing locations. See Drawings for typical casework backing and details.
   2. Coordinate with work under Section 01732, Selective Demolition for the removal of existing wall finish for the required casework backing; and the patching in Section 01730, Cutting and Patching.
   3. Prior to securing casework confirm location of required wall backing.

3.03 INSTALLATION OF CASEWORK
A. Install casework in a manner consistent with the specified quality grade to be plumb, level, true, and straight with no distortions. Shim as required using concealed shim.
B. Secure to grounds, stripping, and blocking with counter-sunk, concealed fasteners and blinds nailing as required for a complete installation. Scribe and cut for accurate fit to other finished work.
C. Adjacent casework shall be fastened together at the front with a minimum of two #10 flat head wood screws with finish washers spaced no greater than 24-inches apart.
D. Countertops to Case Casework: Adhesively apply countertops to base casework with construction adhesive then secured with #10 flat head wood screws at 12-inches on center.

3.04 INSPECTION
Contact WI and arrange for final inspection of casework installation. Provide WI Certified Compliance label to each installed unit when final inspection is approved.

3.05 ADJUST AND CLEAN
A. Repair damaged or defective work as directed.
B. Adjust hardware for proper operation.

3.06 PROTECTION OF FINISHED WORK
A. Provide all necessary protective measures to prevent exposure of casework to other construction activity.
B. Use procedures and take precautions for protection of material, installed laboratory casework, and fixtures from damage by work of other trades.

END OF SECTION
PART 1 - GENERAL

1.01 SUMMARY

A. This Section includes provision for acoustic insulation and fire safing as shown and as specified.

B. Related Work:
   1. Non-Load Bearing Metal Framing: Section 09100.
   2. Gypsum Wall Board: 09250.

1.02 REFERENCED STANDARDS

A. Published specifications, standards, tests, or recommended methods of trade or industry apply to the work of this Section where cited by the abbreviations noted below.
      e. ASTM E136 Standard Test Method for Behavior of Materials in a Vertical Tube Furnace at 750°C.

1.03 DESIGN REQUIREMENTS

Sustainable Design Requirements: Steel used in work in this Section are intended contribute to meeting requirements for recycle content outlined in LEED NC3.0, Credit MR4.

1.04 SUBMITTALS

A. Submit in accordance with the provisions of the General Conditions, Article 3.11.

B. Material List: List items proposed to be provided under this Section.

C. Product Data: Manufacturer's literature describing products.

D. Samples: Submit samples of all building insulation specified.

E. LEED Submittal:
1. Submit letter or product data from manufacture indicating recycled content. Designate percentage of post consumer and post industrial recycled content.

2. Submit hardcopies of completed Online Documentation required for LEED MR Credit 4.

1.05 DELIVERY, STORAGE AND HANDLING

A. Delivery insulation materials in labeled packages bearing manufacturer's name, and acoustic values.

B. Store all materials on the site in a dry area protected from the weather and moisture.

C. Where insulation has an integral vapor barrier, handle with care to prevent damage to barrier.

1.06 PROJECT CONDITIONS

Do not install insulation until construction has progressed to the point that inclement weather will not wet or damage the insulation.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Acoustic Insulation:

1. Typical interior partition insulation. Incombustible, unfaced fiberglass batts, friction fit between metal stud framing, 3½-inches thick and density of 0.5 pounds per cubic foot. Insulation shall meet the requirements of ASTM C665, Type I, Class A and ASTM E136 (passes.)

2. Manufacturers: Owens-Corning Fiberglass, Sound Attenuation Batts; Certainteed Sound Attenuation NoiseReducer Batts; or equal.

3. Fire Rating (ASTM E84): Class A; flame spread 25 or less and smoke developed of 50 or less.

B. Fire-Resistant Safing Insulation: Semi-rigid mineral-fiber blanket, density of 4 pounds per cubic foot and meeting the requirements of, ASTM C665, Types I and III, ASTM C612, Type IA, IB and II and ASTM C553. Provide impaling clips as required.


2. Fire Rating (ASTM E84): Class A; flame spread of 15 and smoke developed of 0.


4. Provide impaling clips as required or other clip types to secure safing to built conditions with the intent to secure safing in-place.

C. Impaling Anchors: Corrosion resistant spindle steel pins and washer consisting of perforarted metal plates with spindle welded to center and self-locking washers. Provide impaling pins of length to extend beyond insulation
and self locking washer. Length shall not exceed 1-inch beyond the insulation face after self locking washer installation.

1. 12 gage diameter mild steel spindles with a corrosion resistant coating. The perforated base plate is 2-inches square and is made of galvanized steel.
   Tacto Insul-Hangers, Gemco Insulation Hangers, or equal.


3. Nylon safety point cover or sheet metal dome caps designed for pins.


PART 3 - EXECUTION

3.01 CONDITION OF SURFACES

Verify that all piping, conduit, wiring, ducts, blocking, and similar items are installed in insulated spaces before commencing installation.

3.02 INSTALLATION

A. General: Install building insulation in accordance with manufacturer's instructions, unless otherwise noted.
   1. Insulation shall extend full height between studs.
   2. Install insulation to fit snugly between framing members. Fully insulate all small areas between closely spaced framing members. Where end joints are required, butt tightly or overlap.
   3. Cut and fit insulation around pipes, conduits, outlet boxes and similar equipment to maintain integrity if insulation. Where pipes occur, place insulation between wall surface and pipe, compressing insulation where required.
   4. Insulate non-standard width spaces by cutting insulation at least 1-inch wider than space to be filled.

END OF SECTION
PART 1 - GENERAL
1.01 SUMMARY

A. Work Included: Provide firestopping and smokeseals at locations indicated on the Drawings, and including the following areas:
   1. All openings in fire or smoke rated floors and walls in both void spaces and those spaces accommodating penetrating items such as cables, conduits, pipes, ducts, etc., not otherwise specified in Divisions 15 and 16.
   2. Around penetrations into rated assemblies such as partitions, floors, ceiling and roofs; and penetrations into rated shafts.
   3. Deflection joint of rated partitions. Top and bottom of rated partitions.
   4. Expansion joints in fire-rated walls and floors.
   5. Protection around and behind electrical junction boxes in rated partition assemblies.
      a. Construction joints are any joints created by different materials and/or substrates that have different rates of expansion and contraction so that the required fire rated assemblies are maintained.

B. Related Work:
   1. Sealants: Section 07900.
   2. Gypsum Wallboard: Section 09250.
   5. Electrical: Divisions 16.

1.02 SUBMITTALS

A. Submit in accordance with the provisions of the General Conditions, Article 3.11.

B. Submit manufacturer's printed product data indicating product characteristics, performance and limiting criteria, as well as a Certificate indicating current approval by the Office of the State Fire Marshal.

C. Submit manufacturer's Shop Drawings and installation instructions for each type of firestop or smokeseal required by the Project. Shop Drawings shall indicate the detailing of all necessary anchorage, reinforcements and fastenings required.

D. Prepare job mock-up of the material proposed for use in the project as directed by Architect. Approved mock-ups may be left in place, as part of the finished project ad will constitute the standard for remaining work.
1.03 REFERENCED STANDARDS

A. Published specifications, standards, tests, and recommended methods of trade or industry apply to the work of this Section where cited by the abbreviations noted below.


2. National Fire Protection Association:
   a. NFPA 70, National Electrical Code.


1.04 QUALITY ASSURANCE

A. Materials shall have the current approval of the California State Fire Marshall. Firestopping or smokeseal materials shall conform to both Flame (F) and Temperature (T) ratings per ASTM E814 or UL1479 fire tests, and shall restrict the transmission of temperature as well as the passage of flame, gasses, smoke and water. Fire tests shall be conducted with a minimum positive pressure differential of 0.01-inches of water column.

B. Firestopping and smokeseal work shall be performed by an installer trained or approved by the firestop or smokeseal manufacturer. Equipment used shall be in accordance with firestop or smokeseal manufacturer's written instructions.

1.05 DELIVERY, STORAGE AND HANDLING

A. Deliver materials in original unopened packages fully identified with manufacturer's name, trade name and UL label. Leave seals unbroken and labels intact until time of use. Remove from jobsite any rejected or damaged packages found unsuitable for use.

B. Store materials in a dry place, off the ground or floor, and away from other material subject to sweating or attraction of moisture or dampness.

1.06 JOB CONDITIONS

A. Conform to the manufacturer's printed instructions for installation and when applicable, curing in accordance with the manufacturer's recommendations regarding temperature and humidity. Conform to all required ventilation and safety requirements.
PART 2 - PRODUCTS
2.01 ACCEPTABLE MANUFACTURERS

A. Products shall be as manufactured by Bio Fireshield, Inc., Damonmill Square, Concord, MA 01742, (707) 226-1801; Dow Coming Corp., P.O. Box 0994, Midland, MI 48640, (517) 496-4000; Electrical Products Division, 3M Center, Bldg. 225-4N-05, St. Paul, MN 55144-1000, (612) 733-4883; C/S Group, Box 380, Muncy, PA 17756, (717) 546-5941, or equal, unless otherwise noted below.

2.02 MATERIALS

A. Firestopping and smokeseal materials shall be asbestos free. The F rating must be a minimum of one (1) hour, but not less than the fire resistance rating of the assembly being penetrated, when tested per ASTM E814. Materials being applied in openings between elements of differing fire ratings shall conform to the most restrictive rating. Fire tests shall be conducted with a minimum positive pressure differential of 0.03-inches of water column. Material shall be non-combustible, with flame spread of 25 or less, and smoke development of 50 or less, when tested in accordance with ASTM E84.

1. Firestop or Smokeseal Mortar: Single component Portland Cement fly ash mortar, requiring no special supports or anchoring devices to pass water hose stream tests.

2. Firestop or Smokeseal Sealant: Single or multiple component silicone sealant. Provide a flexible, air-tight, waterproof seal that bonds to building materials.

3. Firestop or Smokeseal Sleeve: Prefabricated device used around plastic pipes in fire-rated floors and walls. The sleeve shall be made of a steel collar lined with an intumescent material.


5. Pads for Electrical Junction Boxes: Synthetic elastomeric moldable putty pads in size and shape to cover size of electrical junction boxes or boxes installed within rated partitions.

B. Mineral fiber board, mineral fiber matting, and mineral fiber putty forming and damming materials shall be used to contain the fluid material mixture prior to and during filling of penetrations and voids. Fire tested incombustible and functionally approved forming materials may be left in place to become an integrally part of the foamed penetration seal.

1. Combustible forming and damming materials may be used for containment during installation of materials only, and must be removed from the final completed penetration seal system.

C. Firestopping at voids between rated partitions and flutes of structural slab metal deck: "Q-Stop" by Fyresleeve Industries, Unit D-5180, Stillcreek Avenue, British Columbia, Canada, V5C 4E4. This is a proprietary item; no equal will be accepted without the express approval of the California State Fire Marshal.
D. Flexible Fire Barriers at expansion joints: "FB 83" at 1-hour rated floor assemblies, "FB 88" at 1-hour rated partitions and 2-hour rated tunnel, by C/S Group; equivalent products by MM Systems; or equal.

PART 3 - EXECUTION

3.01 PREPARATION

A. Examine all work upon which fireproofing is to be applied, and notify the Contractor in writing, with copy to the Architect, of all conditions detrimental to the timely completion of the Work. Do not proceed with the Work of this Section until all unsatisfactory conditions have been corrected in a manner acceptable to the manufacturer of the materials.

B. Prior to application of firestopping or smokeseal material, clean all steel of loose material, including excessive mill scale or rust, paint, grease or other material which would preclude the successful application and retention of bond to the substrate. Do not apply firestops or smokeseals to surfaces previously painted or treated with a sealer, curing compound, water repellent or other coatings unless tests have been performed to ensure compatibility of materials. Remove coatings as required in compliance with manufacturer's instructions.

C. Provide primers as required which conform to manufacturer's recommendations for various substrates and conditions.

D. Mask where necessary to protect adjoining surfaces. Remove excess material and stains on surfaces as required.

3.02 INSTALLATION

A. Coordinate locations and sizes of all sleeves which will be required by the Work of other Sections.

B. Install in strict accordance with manufacturer’s printed instructions to provide a Flame (F) rating of at least one (1) hour, but not less than the fire resistance rating of the assembly being penetrated. Ensure that anchoring devices, back-up materials, clips, sleeves, supports and other materials used in the actual fire test are installed.

C. Install fire resistant filler in openings with sufficient pressure to properly fill and seal openings, ensuring an effective seal. Dam bottom of vertical openings and one side of horizontal penetrations provide partial face containment forms or where required to achieve fire resistance ratings, provide permanent mineral composition board forms. On horizontal penetrations, provide partial face containment forms where required for material placement. Allow installed fillers to cure, and remove temporary forms; trim ragged edges with sharp knife; inspect and fill voids with additional filler to form uniform thickness of filler.
D. Spillage: Do not allow sealants to overflow or spill onto adjoining surfaces or to migrate into voids of adjoining surfaces. Clean adjoining surfaces by whatever means maybe necessary to eliminate evidence of spillage.

E. Recess exposed edges of gaskets and exposed joint fillers slightly behind adjoining surfaces, unless otherwise shown, so that compressed units will not protrude from joints.

F. Tool trowel exposed surfaces. Remove excess firestop or smokeseal material promptly as work progresses and upon completion.

G. Firestop or smokeseal material at penetrations of insulated piping shall be applied after the insulation is installed. The material used shall have been tested for compatibility and rating and conjunction with the use of the installation material being used. Calcium silicate, or other pipe insulation, may be substituted for fiberglass pipe insulation through the sleeve, if the insulation is part of an assembly, which meets the requirements specified for firestopping or smokesealing.

H. Firestopping or smokesealing materials for filling voids in floors having openings of 4-inches or greater, shall be installed to support the same load as the floor system, unless the area is protected by a permanent barrier preventing loading or traffic on the firestopped or smokesealed area.

3.03 CURE AND PROTECTION

A. Cure firestopping and smokeseal materials in compliance with manufacturer's instructions and recommendations. Installer shall advise Contractor of procedures required for protection of firestopping and smokeseals during remaining construction period.

B. Install firestops or smokeseals with sufficient pressure to properly fill and seal openings to ensure an effective smokeseal.

C. Tool or trowel exposed surfaces. Remove excess firestop or smokeseal material promptly as work progresses and upon completion.

D. Firestop or smokeseal material at penetration of insulated piping shall have been tested for compatibility and rating in conjunction with the use of the insulation material being used. Calcium silicate or other pipe insulation may be substituted for fiberglass pipe insulation through the sleeve, if the insulation is part of an assembly which meets the requirements specified for firestopping or smokesealing.

E. Firestopping or smokesealing materials for filling voids in floors having openings of 4-inches or greater, shall be installed to support the same load as the floor system, unless the area is protected by a permanent barrier preventing loading or traffic on the firestopped or smokesealed area.
3.04 FIELD QUALITY CONTROL

A. Examine each firestop or smokeseal application after completion of installation, to ensure proper installation of full compliance with this specification at no additional cost.

B. Maintain accessibility to all areas of work until completion of inspection by the applicable Code authorities.

C. When finished work will be visible after completion of the Project, remove temporary dams after initial cure of firestops or smokeseals, and clean adjacent surfaces in accordance with manufacturer's printed instructions. Remedy any staining discoloring on adjacent surfaces caused by the Work of this Section.

3.05 CLEAN UP

A. After completion of application of firestopping or smokeseal materials, remove all debris, excess materials and all equipment, and broom clean all exposed wall and floor areas.

END OF SECTION
PART 1 - GENERAL

1.01 SUMMARY

A. Work Included: Provide all caulking and sealing work required to weatherproof of Project, including interior caulking and sealing, complete, as indicated on Drawings and specified.
   2. Sealant joint between ceramic tile to steel door frames.
   3. Sealant joint between interior finishes.
   4. Sealant under thresholds in finish door hardware.
   5. Sealant joint between plumbing fixture and toilet accessories to finishes.
   6. Sealant joints to fill gaps for painting.
   7. Sealant joints between aluminum storefront.
   8. Sealant joints related to finish work in Division 9.
   9. Sealant joints related to cutting and patching; and selective demolition work, and other work in Division 2.
  10. Acoustic sealant joints at edges of gypsum board partitions.
  11. Acoustical sealant joints at steel acoustical window and steel door frames to gypsum board.

B. Related Work:
   1. Cutting and Patching: Section 01730.
   2. Selective Demolition: Section 01732.
   3. Cast-In-Place Concrete: Section 03300.
   4. Firestopping and Smokesseals: Section 07270.
   5. Steel Doors and Frames: Section 08100.
   6. Aluminum Storefront: Section 08410.
   7. Acoustical Steel Window: Section 08385.
   8. Finish Hardware: Section 08700.
      a. Sealant used to install thresholds.
  10. Gypsum Wallboard: Section 09250.
  11. Tile: Section 09300.
  12. Painting: Section 09900.
  13. Signage: Section 10400.
  15. Plumbing: Section 15400.

1.02 QUALITY ASSURANCE

A. Comply with current Flat Glass Marketing Association (FGMA) Sealant Manual.

B. Comply with manufacturer's printed instructions, except where more stringent requirements are indicated.
C. Before purchase of each required material, confirm its compatibility with each other material it will be applied to in the joint system.

D. Compatibility: Provide joint sealants, joint fillers, and other related materials that are compatible with one another and with joint substrates under service and application conditions.

E. Comply with American Society for Testing and Materials International (ASTM):
   2. ASTM C919 Standard Practice for Use of Sealants in Acoustical Applications.

1.03 DESIGN REQUIREMENTS

Sealants under this Section and used in work of this Section are intended to reduce the quantity of indoor air contaminants that are harmful to comfort and well-being of the installers and occupants and are to be formulated to be within VOC content limits outlined in Leadership in Energy & Environmental Design (LEED), United States Green Building Council - LEED NC3.0 Credit EQ4.2

1.04 SUBMITTALS

A. Submit in accordance with the provisions of the General Conditions, Article 3.11.

B. Product Data: Submit manufacturer's specifications, recommendations, and installation instruction, including cleaning of joint surfaces, for each type of material required.

C. Samples: Submit samples of each color required for each type of exposed sealant.

D. LEED Submittal:
   1. Submit letter of product data from manufacture stating that sealants used in work of this Section do not exceed VOC content limits established in South Coast Air Quality Management District Rule 1168.
   2. Submit hardcopies of completed Online Documentation required for LEED EQ Credit 4.2.

1.04 ENVIRONMENTAL REQUIREMENTS

A. Conform to Code of Federal Regulations (CFR):

1.05 PRODUCT DELIVERY, STORAGE AND HANDLING

A. Deliver materials in original, tightly sealed containers or unopened packages with manufacturer's name, labels, and product identification.

B. Store materials out of weather in original containers or unopened packages as recommended by manufacturer.

1.06 GUARANTEE

Guarantee workmanship against leakage, deterioration, or other failure to perform properly for 2-years from the date of Substantial Completion.

PART 2 - PRODUCTS

2.01 SEALANT MATERIALS

A. Colors:
   2. Exposed Material: Manufacturer's standard colors, as selected by the District.

B. Single-component, mildew-resistant silicone sealant, Type S; Grade NS; Class 25; Uses NT, G, A, and O; formulated with fungicide. Use for interior sealant joints in ceramic tile, and other hard surfaces at toilet rooms and around plumbing fixtures.

C. Latex Sealant: Single-component, nonsag, mildew-resistant, paintable, acrylic-emulsion sealant complying with ASTM C834. For interior use only at perimeters of door and window frames.

D. Acoustical Sealant for Exposed Joints: Nonsag, paintable, nonstaining, latex sealant complying with ASTM C834. For interior use only at acoustical assemblies.

E. Acoustical Sealant for Concealed Joints: Nondrying, nonhardening, nonskinning, nonstaining, gunnable, synthetic-rubber sealant recommended for sealing interior concealed joints to reduce transmission of airborne sound complying with ASTM C834. For interior use only at acoustical assemblies.

F. For Exterior Exposed Concrete/Plaster: Two Components Urethane (self-leveling) complying with ASTM C920, Type M, Grade NS, Class 25, Bostik "Chem Calk 550" or equal.
G. For threshold setting bed, exposed joints, exposed metal, exposed masonry: One component urethane complying with ASTM C920, Type S, Grade NS, Class 25, Bostik "Chem Calk 900" or equal.

H. For Interior Exposed Joints: One component urethane complying with ASTM C920, Type S, Grade NS, Class 25, Bostik "Chem Calk 900" or equal.

I. For Interior Wet Areas: One components Silicone (acetoxy cove) complying with ASTM C920, Type S, Bostik "Chem Calk 1200" or equal.

2.02 MISCELLANEOUS MATERIALS

A. Joint Primer/Sealer: Provide the type of joint primer/ sealer recommended by the sealant manufacturer for the joint surfaces to be primed or sealed.

B. Sealant Backer Rod: Compressible rod-stock polyethylene foam, polyethylene-jacketed polyurethane foam, butyl-rubber foam, neoprene foam, or other flexible, permanent, durable, nonabsorptive material as recommended for compatibility with sealant by the sealant manufacturer.

C. Cleaning Solvent: Methyl-ethyl-ketone. (MEK).

PART 3 - EXECUTION

3.01 INSTALLATION

A. Clean joint surfaces immediately before installation of sealant.
   1. Remove dirt, insecure coatings, moisture, and other substances which would interfere with bond of sealant.
   2. Etch concrete joint surfaces as recommended by sealant manufacturer.
   3. Use cleaning solvent to clean all joint surfaces. Wipe joints free of solvent, using clean, dry, white cotton cloths or white, lintless paper. Do not permit solvent to air dry.

B. Prime or seal the joint surfaces: Do not allow primer/sealer to spill or migrate onto adjoining surfaces.

C. Install sealant backer rod for elastomeric sealants, except where recommended to be omitted by sealant manufacturer for the application shown, or backed by other solid substrate.

D. Install bond-breaker tape wherever backer rod is not used and where required by manufacturer's recommendations to ensure that elastomeric sealants will perform properly.
E. Employ only proven installation techniques, which will ensure that sealants will be deposited in uniform, continuous ribbons without gaps or air pockets, with complete "wetting" of the joint bond surfaces equally on opposite sides.
   1. Except as otherwise indicated, fill sealant rabbet to a slightly concave surface, slightly below adjoining surfaces.
   2. Where horizontal joints are between a horizontal surface and a vertical surface, fill joint to form a slight cove, so that joint will not trap moisture and dirt.

F. Install sealants to depths as recommended by the sealant manufacturer, but within the following general limitations:
   1. For normal moving joints sealed with elastomeric sealants, but not subject to traffic, fill joints to a depth equal to 50% of joint width, but not less than ¼-inch deep nor more than ½-inch deep.

3.02 CLEAN AND CURE

A. Spillage:
   1. Do not allow sealants or compounds to overflow or spill onto adjoining surfaces or to migrate into the voids of adjoining surfaces.
   2. Clean the adjoining surfaces by whatever means necessary to eliminate all evidence of spillage.

B. Curing: Cure sealants in compliance with manufacturer's instructions and recommendations to obtain high early-bond strength, internal cohesive strength, and surface durability.

END OF SECTION
SECTION 08100
STEEL DOOR AND FRAMES

PART 1 - GENERAL

1.01 SUMMARY

A. Work Included: Provide all labor, materials, necessary equipment, service and included but not limited to all related work to complete the steel doors and frames work, as indicated on the Drawings.
   2. Grout filled door frames at acoustical wood doors.

B. Related Work:
   1. Cutting and Patching: Section 01730.
   2. Selective Demolition: Section 01732.
   3. Sealants: Section 07900.
   5. Wood Doors: Section 08210.
      a. Grout fill steel door frame at Door L106.1 and Door L107.1 to maintain STC rating of door assembly as specified in Section 08210, Wood Doors.
   6. Finish Hardware: Section 08700.
   7. Glazing: Section 08800.
      a. Rated and non-rated glazing into steel door frames at sidelights, transoms, and interior windows.
   8. Non-Load Bearing Metal Framing: Section 09100.
  10. Painting: Section 09900.
      a. Paint door and window frames.

1.02 QUALITY ASSURANCE

A. Provide doors and frames complying with Steel Door Institute (SDI) "Recommended Specifications: Standard Steel Doors and Frames" (SDI-100) and as herein specified.
   1. SDI-100: Recommended Specifications for Standard Steel Doors and Frames.
   2. SDI-105: Recommended Erection Instructions for Steel Frames.

1.03 REFERENCED STANDARDS

A. The following references, codes, and standards are hereby made a part of this Section; and lathing shall conform to the applicable requirements therein, except as otherwise specified herein or shown on the Drawings. Nothing in the Drawings or these Specifications shall be construed as permitting work, which is contrary to code requirements.

c. ASTM A653 Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.


e. ASTM A1011 Standard Specification for Steel, Sheet and Strip, Hot-Rolled, Carbon, Structural, High-Strength Low-Alloy and High-Strength Low-Alloy with Improved Formability.

f. ASTM C1107 Standard Specification for Packaged Dry, Hydraulic Cement Grout (non-shrink.)

2. The Hollow Metal Manufacturers Association (HMMA):
   a. HMMA 802 Manufacturing of Hollow Metal Doors and Frames.
   b. HMMA 840 Installation and Storage of Hollow Metal Doors and Frames.
   c. HMMA 841 Tolerances and Clearance for Commercial Hollow Metal Doors and Frames.


6. Underwriters Laboratories, Inc. (UL):
   b. UL 10B Fire test of Door Assemblies.
   c. UL 10C Standard for Positive Pressure Fire Tests of Door Assemblies.

1.04 DESIGN REQUIREMENTS

Sustainable Design Requirements: Steel used in work in this Section are intended contribute to meeting requirements for recycle content outlined in LEED NC3.0, Credit MR4.1.

1.05 SUBMITTALS

A. Submit in accordance with the provisions of the General Conditions, Article 3.11.

B. Submits manufacturer’s specifications for fabrication and installation, including data substantiating that products comply with requirements.

C. Submit Shop Drawings for fabrication and installation of steel frames and frames. Include details of each door and frame type, elevations of door design types, conditions at openings, details of construction, location and installation requirements of finish hardware and reinforcements, and details of joints and connections. Show anchorage and accessory items.
1. Provide schedule steel doors and frames using same referenced numbers of details and openings as those on Drawings.
2. Indicate coordination of glazing steel doors and frames and stops with glass and glazing requirements.
3. Indicate galvanizer's materials for steel doors and frames.

D. LEED Submittal:
1. Steel: Submit letter or product data from manufacture indicating recycled content. Designate percentage of post consumer and post industrial recycled content.
2. Submit hardcopies of completed Online Documentation required for LEED MR Credit 4.

1.06 DELIVERY, STORAGE AND HANDLING
A. Deliver steel doors and frames cartoned or crated to provide protection during transit and job storage.
B. Inspect steel frames upon delivery for damage. Minor damages may be repaired provided finish items are equal in all respects to new work and acceptable to Architect; otherwise, remove and replace damaged items as directed.
C. Store steel doors and frames at building site under cover. Place units on wood sills at least 4-inches high or otherwise store on floors in manner that will prevent rust and damage. Avoid use of non-vented plastic or canvas shelters, which could create humidity chamber. If cardboard wrapper on door becomes wet, remove carton immediately. Provide 1/4-inch spaces between stacked doors to promote air circulation.

1.07 WARRANTY/GUARANTEE

Provide a written warranty/guarantee for steel doors and frames executed jointly by the manufacturer, Contractor, and installer, agreeing to replace or repair components, which fail in materials or workmanship for a period of five years from the date of Substantial Completion.

PART 2 - PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS
A. Subject to compliance with requirements, provide steel doors and frames to be manufactured by one of the following:
   1. Steel Frames:
      a. Allied Steel Products, Inc.
      c. Ceco Corp.
      d. Curries Mfg., Inc.
      e. Mesker Industries, Inc.
      h. Republic Builders Products Corp./Subs. Republic Steel
2.02 MATERIALS

A. Hot-Rolled Steel Sheets and Strip: Commercial quality carbon steel, pickled and oiled, complying with ASTM A1011 and ASTM A568.

B. Cold-Rolled Steel Sheets: Commercial quality carbon steel, complying with ASTM A1008 and ASTM A1011.

C. Galvanized Steel Sheets: Zinc-coated carbon steel sheets of commercial quality, complying with ASTM A653, A60 galvannealed for interior zinc coating mill phosphatized.
   1. Galvolume products are not acceptable.

D. Supports and Anchors: Fabricate of not less than 18 gage galvanized sheet steel or stainless steel for stainless steel frames.

E. Inserts, Bolts and Fasteners: Manufacturer's standard units, except hot-dip galvanized items to be built into exterior walls, complying with ASTM A153, Class C or D as applicable.

F. Shop Applied Paint:
   1. Primer: Rust-inhibitive enamel or paint, either air drying or baking, suitable as a base for specified finish paints.
   2. Finish: Site finish under Section 09900, Painting.
   3. Inside face of frames profiles shall be coated with 1/16-inch thick coat of bituminous fibered asphalt emulsion coating in addition to shop paint primer coats.

G. Glass: Specified in Section 08800, Glazing.

H. Glazing Stops: Formed 16 gage channels, minimum 5/8-inch high, mitered corners; prepared for countersink style stainless steel tamperproof screws.

   1. Subject to compliance with requirements, products that may be incorporated in the work include, but are not limited to the following:
      i. 100 Non-shrink Grout (non-metallic) - Conspec, Inc.
      ii. Crystex - L&M Construction Chemicals, Inc.
      iii. Euco Non-shrink Grout - Euclid Chemical Co.
      v. Sonogrouting - Sonneborn Building Products Div., Rexnord Chemical Products, Inc.
      vi. Supreme Grout - Cormix, Inc.
      vii. Sure-Grip High Performance Grout - Dayton Superior.
     viii. Vibropruf #41 - Lambert Corp.
2. Grout shall be mixed to provide 4-inches maximum slump consistency and hand troweled into place. Grout mixed to a thinner, "pumpable" consistency shall not be used.

3. Excess water from thin consistency grout will cause premature rusting of steel frames.

2.03 FABRICATION

A. Standard Steel Frames:

1. Fabricate steel frames with a SDI-108, Physical Performance Level A (Extra Heavy Duty.)

2. Fabricate steel frames of A60 galvannealed for interior frames conforming to ASTM A653 unless otherwise noted.

3. Frames for labeled fire rated doors, windows, glazed and openings assemblies:
   a. Comply with NFPA 80. Test by Underwriters Laboratories, Inc. or Factory Mutual.
   b. Comply with UL 10B and UL10C.
   c. Fire rated labels of approving laboratory permanently attached to each steel frame as evidence of conformance with these requirements. Provide labels of metal or engraved stamp, with raised or incised markings.

4. Fabricate steel frames units to be rigid, seamless, neat in appearance, and free from defects, warp or buckle. Wherever practical, fit and assemble units in manufacturer's plant. Clearly identify work that cannot be permanently factory assembled before shipment, to assure proper assembly at project site.
   a. Fabricate frames with mitered and welded corners.
   b. Provide steel frames of types and profiles as shown on Drawings.
   c. Returns: ½-inch.
   d. Minimum thickness:
      i. Exterior frames: 14 gage.
      ii. Interior frames: 16 gage.
   e. Fabricate frames with 12 gage hardware reinforcement welded in place unless otherwise noted. Reinforce all steel frames for overhead closers, whether closers are specified or not.
      i. Hinges: 7 gage welded in place.
   f. Door Silencers: Except on weatherstripped frames, drill stops to receive 3 silencers on strike jambs of single leaf-swing frames and 2 silencers per leaf on heads of double leaf-swing frames.
   g. Plaster Guards: Provide 26 gage steel plated guards or mortar boxes, welded to frame, at back of finish hardware cutouts where mortar or other materials might obstruct hardware operation.
      i. Standard plaster guards in frames is not intended for thin consistency grout. Provide heavier gage sheets for grout fill.
h. Frames for Acoustic Wood Doors: Frames shall be braced or fastened in such a way that will prevent the pressure of the grout from deforming the frame members. Fabricate steel frame to accept grout.

i. Provide bituminous fibered asphalt emulsion coating to all concealed surfaces of all frames.

j. Provide applied glazing steel channels with pre drilled anchor holes for glazing. Conform thickness of glazing. Provide the stainless steel countersunk tamper resistant anchors to secure glazing channels.

k. Frame Anchors: Conceal fastenings unless otherwise indicated.
   i. Floor anchors:
      1). Where floor fills occur, provide extension type floor anchors to compensate for depth of fill.
      2). At bottom of jamb use galvanized 16 gage inch thick steel clip angles welded to jamb and drilled to receive two ¼-inch floor bolts.

   ii. Where mullions occur, provide 12 gage thick steel channel anchors, drilled for two ¼-inch floor bolts and frame anchor screws.

   iii. Where sill sections occur, provide continuous galvanized 18 gage thick steel rough bucks drilled for ¼-inch floor bolts and frame anchor screws. Space floor bolts at 24-inches on center.

iv. Jamb anchors:
   1). Locate anchors on jambs near top and bottom of each frame, and at intermediate points not over 24-inches apart, except for fire rated frames space anchors as required by labeling authority.
   2). Form jamb anchors of not less than galvanized 18 gage thick steel unless otherwise specified.
   3). Anchors set in masonry: Use adjustable anchors designed for friction fit against the frame and for extension into the masonry not less than 10-inches. Use one of following type:
      a). Wire loop type of 3/16-inch diameter wire.
      b). T-shape or strap and stirrup type of corrugated or perforated sheet steel.
   4). Anchors for stud partitions: Weld to frame type. Provide tabs for securing anchor to the sides of the studs.
   5). Anchors for frames set in prepared openings:
      a). Steel pipe spacers with ⅝-inch inside diameter welded to plate reinforcing at jamb stops or hat shaped formed strap spacers, 2-inches wide, welded to jamb near stop.
      b). Drill jamb stop and strap spacers for ¼-inch flat head bolts to pass thru frame and spacers.
c). Two piece frames: Subframe or rough buck drilled for ¼-inch bolts.

6). Anchors for observation windows and other continuous frames set in stud partitions.
   a). In addition to jamb anchors, weld clip anchors to sills and heads of continuous frames over 4 feet long.
   b). Anchors spaced 24-inches on centers maximum.

7). Modify frame anchors to fit special frame and wall construction and provide special anchors where shown or required.
   v. Install anchors for labeled fire rated doors to provide rating as required.

B. Standard Steel Doors: Provide metal doors complying with SDI-100 of types and styles as indicated on Drawings.
   1. Heavy Duty Grade II, Model 4, flush seamless.
   2. Minimum thickness of steel for doors shall be 16 gage.
   3. Increase minimum gages as required to comply with fire rated units requirements.

C. Glazing and Glazing Materials: As specified in Glazing, Section 08800.

D. Vision Framing: 16 gage steel removable moldings with mitered corners and tamper resistant countersunk screws in size required for rating and glazing. Shop primed for painting.

E. Shop Painting: (For Finish Painting specified in Painting, Section 09900.
   1. Clean, treat, and paint exposed surfaces of steel door and frame units, including galvanized surfaces.
   2. Clean steel surfaces of mill scale, rust, oil, grease, dirt, and other foreign materials before application of paint.
   3. Apply shop coat of prime paint of even consistency to provide a uniformly finished surface ready to receive finish paint.

PART 3 - EXECUTION
3.01 INSPECTION
Installer must examine substrate conditions under which steel doors and frames will be installed and must notify Contractor in writing of any conditions detrimental to proper and timely completion of work. Do not proceed with work until unsatisfactory conditions have been corrected in manner acceptable to installer.

3.02 INSTALLATION
A. Install standard steel door and frames, and accessories in accordance with final shop drawings and manufacturer's data, and as herein specified.

B. Frame Installation:
   1. Comply with provisions of SDI-105 unless otherwise indicated.
2. For frames located at in-place concrete or masonry and at drywall installations, place frames prior to construction of enclosing walls and ceilings. Set frames accurately in positions, plumbed, aligned, and braced securely until permanent anchors are set. After wall construction is completed, remove temporary braces and spreaders leaving surfaces smooth and undamaged.

3. In metal stud partitions, install at least 3 wall anchors per jamb at hinge and strike levels. In open steel stud partitions, place studs in wall anchor notches and wire tie. In closed steel stud partitions, attach wall anchors to studs with tapping screws.

4. Grout filled steel door frames shall be installed with additional wall anchors.

C. Door Installation:
   1. Fit steel doors accurately in frames, within clearances specified in SDI-100.
   2. Install all applicable finish hardware furnished under Section 08700, Finish Hardware.
   3. Hardware Installation: As specified in Section 08700, Finish Hardware, manufacturer's direction, and applicable SDI-100 standards.

3.03 ADJUST AND CLEAN

A. Immediately after erection, sand smooth any rusted or damaged areas of prime coat and apply touch-up of compatible air-drying primer.

B. Immediately prior to final inspection, remove protective plastic wrappings from doors and framed units.

C. Check and re-adjust operating finish hardware items, leaving steel doors and frames undamaged and in complete and proper operating condition.

END OF SECTION
SECTION 08210

WOOD DOORS

PART 1 - GENERAL

1.01 SUMMARY

A. Work Included: Provide flush wood doors and flush wood doors with vision frames and hardware preparation; complete as indicated in Drawings and as specified.
   1. Stain grade and clear coat finished.
   2. Vision Frames.

B. Related Work:
   1. Steel Doors and Frames: Section 08100.
   2. Glazing: Section 08800.
      a. Glazing standard apply to acoustical glazing in this Section.
   3. Finish Hardware: Section 08700.
      a. Coordinate the required acoustic gasketing (seals, automatic door bottom and threshold) to maintain STC rating of the acoustical wood door.
   4. Painting: Section 09900.

1.02 REFERENCED STANDARDS

A. Published specifications, standards, tests, and recommended methods of trade or industry apply to the work of this Section where cited by the abbreviations noted below.
   1. Architectural Woodwork Standards (AWS) published jointly with Architectural Woodwork Institute (AWI) and Woodwork Institute shall be incorporated herein as part of these Specifications.
      a. Section 9, Doors.
   2. Window and Door Manufacturers Association (WDMA):
      a. WDMA Industry Standard 1A Wood Flush Doors.
      b. WDMA TR-6 catalyzed polyurethane.
   3. American National Standards Institute (ANSI):
      a. ANSI A208.1 Mat-Formed Wood Particleboard.
      d. ASTM E152 Methods of Fire Tests and Door Assemblies.
8. Underwriters Laboratories, Inc. (UL):
   b. UL 10B Fire test of Door Assemblies.
   c. UL10C Standard for Positive Pressure Fire Tests of Door Assemblies.
10. Forest Stewardship Council (FSC.)

1.03 SUBMITTALS

A. Submit in accordance with the provisions of the General Conditions, article 3.11.
B. Product Data: Manufacturer’s literature describing products.
C. Shop Drawings: Show door types, face finishes, fire ratings, details, and locations; reference to door marks and hardware groups shown on Drawings.
D. Samples:
   1. Veneer: 12-inches square minimum of specified veneer showing range of variation in grain pattern and color to be expected with specified finish applied.
   2. Door Construction: 12-inches square of the top corner section of each type of door to show construction, core, bonding, veneer thickness, edge and top condition.
   3. Approved sample shall be used a Architect’s Control Sample.
E. Manufacturer’s Acoustic Test Reports.
F. LEED Submittal:
   1. Certified Wood: Submit FSC chain-of-custody certificate number with each delivery.
   2. Wood Composite Panels:
      a. Recycled Content: Submit letter or product data from manufacture indicating recycled content. Designate percentage of post consumer and post industrial recycled content.
      b. Urea-Formaldehyde Resin Content: Submit letter or product data from manufacture stating that materials used in this project contain no added urea-formaldehyde resins.
   3. Adhesives: Submit letter of product data from manufacture stating that adhesives used in work of this Section do not exceed VOC content limits established in South Coast Air Quality Management District Rule 1168.
   4. Submit hardcopies of completed Online Documentation required for LEED MR Credit 4, MR Credit 7, EQ Credit 4.1 and EQ Credit 4.4.
1.04 QUALITY ASSURANCE

A. LEED Requirements:
   1. Door Construction:
      a. Core: Solid FSC certified particleboard core conforming to ANSI 208.1 LD-2 consisting of recycled fiber with no added urea-formaldehyde bonding resins. LEED Credits MR 4, MR 7, EQ 4.4
      b. Stiles: Exposed surface same species as or compatible to face veneer. Glued to core. No added urea-formaldehyde in wood components and adhesives. LEED Credit EQ 4.4
      c. Top and Bottom Rails: Mill option hardwood or SCL glued to core. No added urea-formaldehyde in wood components and adhesives. LEED Credit EQ 4.4
      d. Crossbanding: high-density fiberboard consisting of recycled fibers with no added urea-formaldehyde. LEED Credit MR 4, and EQ 4.4.
   2. Adhesives: Glue lines for assembly between the plies of face, cross banding and core are to be Type 1 polyvinyl acetate (PVA). LEED Credit EQ 4.4

B. Fire-rated doors: Provide units complying with NFPA 80, and listed by UL or Intertek Testing Services-Warnock Hersey. Units shall bear testing agency labels.
   1. Positive Pressure: Provide certificate that fire rated doors have been tested for positive pressure in accordance with UL10C or NFPA.

C. Used skilled craftspeople who are thoroughly trained and experienced in the necessary crafts and who are completely familiar with the specified requirements and the methods needed for proper performance of the work of this Section.

1.05 DELIVERY, STORAGE, AND HANDLING

A. Provide proper facilities for handling and storage of products to prevent damage.

B. Deliver and store packaged products in original containers with seals unbroken and labels intact, until time of use.

C. Keep products dry. Where necessary, stack products off ground on level, flat forms, fully protected from weather.

D. Identify type and size of each door before delivery in order to permit installation at correct locations.

E. Do not drag doors across one another or across other surfaces; lift doors and carry them into position.
1.01 WARRANTY

A. Submit in accordance with the General Conditions, Article 3.4.

B. Manufacturer's signed warranty covering manufacturing or material defects for life of original installation, including repair or replacement.

C. Warranty to cover repair or replacement of defective interior wood doors for life of initial installation including:
   1. Materials and workmanship.
   2. Bowing, cupping, and twisting greater than ¼-inch for 42-inches by 84-inches door panel.
   3. Telegraphing of core through veneer exceeding 0.01-inch in 3-inches.
   4. Delamination.

D. Within 30 days of warranty expiration a walk through shall be performed to determine if doors are warped or bowed.

E. Manufacturer's performance warranty for acoustical wood door assembly.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

A. Egger Industries (used as the standard as listed.)
   2. 20 minute Rated Doors: Master Flush Fire Door.

B. Algoma Hardwood, Inc.

C. Marshfield Door Systems, Inc.

D. Substitutions under the General Conditions, Article 3.11.

2.02 MATERIALS

A. General:
   1. Doors shall be FSC certified.
   2. Stiles: AWS Edge Type E, minimum 1 3/8-inches hardware glued to core.
      a. Split Resistance: Not less than 450 load pounds when tested in accordance with ASTM D143, with test specimens modified to have a ¾-inch diameter hole through the center located on the diagonal intersection of the exterior surface of the sample edge.
      b. Direct Screw Withdrawal: Not less than 700 load pounds when tested in accordance with ASTM D1037, using a #12 x 1¼-inch steel threaded-to-the head wood screw.
      c. Cycle/Slam: 200,000 cycles with no loose hinge screws or other visible signs of failure when tested in accordance with the requirements of ANSI A151.1, Section 2.5.
   3. Top and Bottom Rails: AWS Edge Type E, minimum 1¼-inches two ply end strips glued to core.
4. Faces: 5 ply construction with 1/16-inch hardwood veneer crossbands with face veneers.

5. Face Veneers: Hardwood veneer 1/50-inch thick after sanding with maximum 12 percent.
   a. Facing Quality: HPVA HP-1 AA Grade or AWS Premium Grade for transparent finish.
   b. Species: Select White Oak to match Architect's Control Sample.
   c. Veneer match: Book match.
   d. Assembly: Center balance match.

6. Blocking: Provide 5-inches wide minimum wood blocking for installation of closers, kick plates, and other hardware items and eliminate need for through-bolting.
   a. Lock Blocks: Minimum 10-inches log, contiguous with inside of each stile and extending a minimum of 4-inches in from the inside of each stile. Centerline of lock block above finish floor shall be located at centerline of mortise lock case above finish floor.

7. Adhesive: Exterior Type II.

B. Non-Rated and 20 Minute Rated Solid Core Doors:
1. Core: 45 pounds/square foot minimum medium density mat-formed particle board meeting the requirements of ANSI A208.1, Grade 1-LD-2.
   a. Minimum recycled content: 50 percent post-industrial wood waste such as sawdust, shavings, and lumber scraps.
   b. Urea formaldehyde free construction.
   c. Core bonding adhesive: Resins complying with ANSI A208.1 formaldehyde limits. Adhesive shall not contain urea-formaldehyde resin.
   d. Bonding: Glue stiles and rails to core and sand core assembly prior to applying faces.

C. Acoustical Wood Doors: Acoustical wood doors shall confirm to the requirements herein and the following:
1. The Sound Transmission Class (STC) specified shall be certified by the manufacturer to be based on tests conducted at an independent testing agency in accordance with current ASTM E90 and E413. Earlier tests not acceptable.
   a. Acoustical Doors with lites to be factory glazed to maintain STC rating. Door may be fire labeled if specified.
      i. Insulated Glazing Unit: 1 1/8-inches.
      ii. Gazing bead: Standard lip wood bead.
   b. STC Ratings: 50.
   c. Gasket System: See Section 08700, Finish Hardware for gaskets (acoustic strips and threshold.) Coordinate the location of outer gasket to align to the fact of acoustic wood door.
2.03 OTHER MATERIALS

A. Glazing and Glazing Materials: As specified in Glazing, Section 08800.

B. Vision Framing: 16 gage steel removable moldings with mitered corners and tamper resistant countersunk screws in size required for rating and glazing. Shop primed for painting.

C. Acoustic Vision Frame: As required to maintain STC rating from acoustical wood door manufacture.

2.04 FABRICATION

A. Preparation: Verify size, design, and fire-resistive rating required for each opening.

B. Manufacture wood doors in accordance with WDMA Industry Standards, unless otherwise noted.

C. Bond stiles, rails, and edgebands to core material. Sand assembly to uniform thickness before applying crossbands.

D. Undercut doors ½-inch (unless otherwise noted herein) from bottom of door to top of floor covering, unless otherwise noted. Where thresholds occur, undercut doors from bottom of door to top of threshold as required.

E. Pre-fit doors at factory and provide cutouts for hardware according to templates and NWWDA. Coordinate hardware locations for different types of frames.

F. Bevel both stile edges 1/8-inch in 2-inches.

G. Bond face material to core material, and factory seal ends.

H. Prepare doors for recessed hardware as specified for the doors in Section 08700, Finish Hardware.

2.05 FACTORY FITTING

A. Factory fit doors to coincide with designated frame opening sizes with these clearances and bevels:
   1. Non-Rated Door Clearances:
      a. Head, jamb, and between double doors: 1/8-inch.
      b. Bottom of door to floor finish: 1/8-inch.
      c. Bottom of door to top of threshold: ½-inch.
   2. Fire-Rated Door Clearances: Comply with NFPA 80.
   3. Lock and hinge door edges shall be beveled 1/8-inch in 2-inches.
Bevel of fire-rated doors shall not exceed that permitted by labeling agency

B. Factory machine doors to receive hardware in accordance with AWI requirements, Section 08710, "Door Hardware", and supplied hardware templates.
   1. Machine cut relief for hinges and coring for locksets, cylinders, and other items.
   2. Pilot drill screw and bolt holes.

C. Seal cut surfaces after fitting and machining. Ensure that hardware recess edges are sealed with minimum two coats varnish.

2.06 FINISHES

A. Premium Finish:
   1. All doors to be factory prefinished conforming to WDMA TR-6 or AWS, Section 5, System 4 with solvent-free (low VOC) UV-cured sealers and topcoats that complies with all applicable Federal and State regulations for Volatile Organic Compounds (VOC) and Hazardous Air Pollutants (HAP) emission limitations per the EPA Clean Air Act.
   2. Finish door edges to match coats specified herein.
   4. Effect: Open Grain.
   5. Coats:
      a. 1st Coat: Stain as required to match Architect's Control Sample.
      b. 2nd Coat: Sanding Sealer
      c. 3rd, 4th and 5th Coat: Top coat of conversion varnish.

2.07 SOURCE QUALITY CONTROL

Wood Doors shall bear WDMA or AWS quality certified stamp.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Examine receiving frames and review hardware schedule to verify proper coordination with doors.
B. Do not install doors in frame openings that are not plumb or are out of tolerance for size or alignment.

3.02 INSTALLATION

A. Install doors at correct openings, ensure smooth swing, and proper closure with frame.
B. Hardware: Install finish hardware for wood doors in accordance with Section 08700, Finish Hardware.
C. Where installation requires on-site cutting, reseal cut surfaces with primer.

3.03 DEFECTIVE WORK

A. Replace, rework, or otherwise make good as required, doors or finish hardware found defective as follows:
   1. Items broken, damaged, disfigured, or defaced.
   2. Incomplete, misaligned, or incorrectly located items.

A. Warp or Twist: Replace all doors containing warp or twist in excess of ¼-inch in any face including full diagonal direction. Replacement shall include finishing new door, replacing hardware damaged by malfunction of original door, and hanging new door in accordance satisfactory operating condition.

B. Using fine-grained sandpaper, completely eliminating all scratches and abrasions in finished wood and refinish with product recommended by the door manufacture.

END OF SECTION
PART 1 - GENERAL

1.01 SUMMARY

A. Work Included: Provision of access doors of the types and sizes as shown on the Drawings, as specified, and as needed for a complete and proper installation.
   1. Stainless steel type at toilets.

B. Related Work:
   1. Non-Load Bearing Metal Framing: Section 09100.
   2. Gypsum Board: Section 09250.
   3. Painting: Section 09900.
   4. Mechanical: Division 15
      a. Access doors for water values behind walls and as required to access concealed plumbing.
   5. Electrical: Division 16.

1.02 DESIGN REQUIREMENTS

Sustainable Design Requirements: Steel used in work in this Section are intended to contribute to meeting requirements for recycle content outlined in Leadership in Energy & Environmental Design (LEED), United States Green Building Council - LEED NC3.0, Credit MR4.

1.03 SUBMITTALS

A. Submit in accordance with the provisions of the General Conditions, Article 3.11.

B. Product Data: Manufacturer's literature describing products.

C. Samples: Only as requested by the Architect to illustrate type, finish, framing, and hardware.

D. Shop Drawings: Show attachment to structure in each typical condition. Where only number of doors is noted without locations, note proposed locations for the Architect's review and acceptance.

E. Certificates: Certify compliance with applicable labeling agency.

F. LEED Submittal:
   1. Steel: Submit letter or product data from manufacture indicating recycled content. Designate percentage of post consumer and post industrial recycled content.
   2. Submit hardcopies of completed Online Documentation required for LEED MR Credit 4.

1.04 DELIVERY, STORAGE AND HANDLING

A. Before site delivery, identify type and size of each door in way not to damage finish.
B. Deliver and store packaged products in original containers with seals unbroken and labels intact, until time of use.

C. Deliver products only after proper storage facilities are available. Handle carefully to prevent damage, and store on clean concrete surface or raised platform in safe, dry area. Do not dump onto ground.

PART 2 - PRODUCTS

2.01 MATERIALS AND FABRICATION

A. General:
   1. Provide access door assemblies consisting of an integral unit complete with all parts ready for installation. Fabricate units of continuous welded steel construction; grind welds smooth and flush with adjacent surfaces. Provide attachment devices and fasteners to suit specific project conditions.
   2. Frames: Unless otherwise specified, fabricate from 16 gage minimum steel.
   3. Doors: Unless otherwise specified, fabricate from 14 gage steel with concealed spring hinges set to open 175 degrees.
   4. Locking Devices: Provide one cylinder lock per access door. Provide two keys per lock, and key all locks alike, unless otherwise scheduled.
   5. Access doors shall be stainless steel at the following locations:
      a. Toilet rooms.
   6. Finish:
      a. Steel: Chemically etch and apply one baked-on rust-inhibitive prime coat.
      b. Stainless Steel: AISI No. 4 satin polish finish.

B. Products:
   2. Type 1 (Typical Ceiling Mounted, Unless Otherwise Noted): At non-rated conditions, provide prime coated flush panel access door. Karp Associates DSC-214M; Milcor Style M; or equal.
      a. Paint to match adjacent wall or ceiling surface color specified in Painting, Section 09900.
      b. Key lockable; all keyed alike.
      c. Size: 24-inches by 24-inches in ceilings unless otherwise noted, i.e., 24-inches by 48-inches to access ceiling mounted mechanical units. See Mechanical Drawings for locations.
   2. Type 2: Stainless steel wall mounted flush panel access door. Karp Associates DSC-214M Stainless Steel; Milcor Style MS; or equal.
      a. Plumbing Access: Provide in size necessary to gain full access without impediments for access doors required to access plumbing valves concealed in walls, but no smaller than 8-inches square.
      b. Key lockable; all keyed alike.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Examine construction to receive access doors and verify correctness of dimensions and other supporting or adjoining conditions.
B. Do not install doors until unsatisfactory conditions have been corrected.

3.02 PREPARATION

Provide access doors suitable to match adjacent construction. Verify that location will serve portion of work to which access is required. Where proposed functional location conflicts with physical obstructions within ceilings and walls, notify the Architect before installation.

3.03 INSTALLATION

A. Install access doors in accordance with manufacturer's instructions and at locations noted or otherwise authorized by the Architect. Ensure correct types and sizes at proper locations.

B. Install door with the sides aligned with the axis of the room or wall surface.

C. Securely attach frames to structure and ensure doors operate smoothly and are free from warp, twist, or distortion.

D. Ceiling Mounted Panels: Locate access panels away from building infrastructure, structure and utilities to provide the largest amount of access into the ceiling cavity above. Do not locate under ducts, conduits, etc that would prevent or limit access into the ceiling cavity.

3.04 CLEANING

Thoroughly clean surface of grease, oil, or other impurities, touch-up abraded prime coats, and otherwise prepare for finish painting.

END OF SECTION
SECTION 08385
STEEL ACOUSTICAL WINDOW

PART 1 - GENERAL
1.01 SUMMARY

A. Work Included: Provide Steel acoustical window; complete as indicated in Drawings and as specified.

B. Related Work:
1. Cutting and Patching: Section 01730.
2. Selective Demolition: Section 01732.
3. Sealants: Section 07900.
4. Glazing: Section 08800.
5. Glazing standard apply to glazing in this Section.
7. Gypsum Wallboard: Section 09250.
8. Painting: Section 09900.
   a. Paint window frame.

1.02 REFERENCED STANDARDS

A. Published specifications, standards, tests, and recommended methods of trade or industry apply to the work of this Section where cited by the abbreviations noted below.
   b. ASTM A 569 Standard Specification for Steel, Carbon, (0.15 Maximum Percent), Hot-Rolled Sheet and Strip, Commercial Quality.
   c. ASTM A653 Standard Specification for Steel Sheet, Zinc Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot Dip Process.
   h. ASTM E413 Classification for Determination of Sound Transmission Class.

1.03 DESIGN REQUIREMENTS

Sustainable Design Requirements: Steel used in work in this Section are intended to contribute to meeting requirements for recycle content outlined in LEED NC3.0, Credit MR4.

1.04 SUBMITTALS

A. Submit in accordance with the provisions of the General Conditions, Article 3.11.

B. Product data: indicate door materials and construction.

C. Shop Drawings: indicate door opening criteria, elevations, sizes, types, swings; identify and detail cutouts.

D. Quality assurance submittals:
   1. Test reports:
      a. Certified laboratory reports, performed in accordance with ASTM E90 and ASTM E413, from independent testing laboratory qualified under the National Voluntary Laboratory Accreditation Program (NVLAC) supporting compliance of assemblies to specified requirements.

   2. Certificates:
      a. Contractor's certification that:
         i. Products of this Section, as provided, meet or exceed specified requirements.
         ii. Manufacturer of products of this section meet specified qualifications.

   3. Manufacturer's instructions: Printed installation instructions for each component.

E. Closeout Submittals:
   1. Warranty documents, executed by manufacturer in Owner's name.
   2. Operation and maintenance data for assembly components.
   3. Certified statement of manufacturer's authorized representative, as specified in Article 3.05 of this Section.
   4. Certified test reports of independent testing agency, as specified in Article 3.05 of this Section.

F. LEED Submittal:
   1. Steel: Submit letter or product data from manufacture indicating recycled content. Designate percentage of post consumer and post industrial recycled content.
2. Submit hardcopies of completed Online Documentation required for LEED MR Credit 4.

1.05 QUALITY ASSURANCE

A. Qualifications:
   1. Manufacturer: Minimum five years documented experience producing systems specified in this section.
   2. Installer: Minimum five years documented experience producing systems specified in this section, and approved by manufacturer.

1.06 SYSTEM DESCRIPTION

A. Design Requirements: Acoustical window shall be a manufacture assembly that shall include frame, glazing, glazing retainers, gasketing systems and sound deadening materials as required to achieve specified performance requirements.

B. Performance requirements: Sound Transmission Coefficient rating of STC 49 for installed assembly, when tested as operable door assembly in accordance with ASTM E90 and ASTM E413.

1.07 DELIVERY, STORAGE, AND HANDLING

A. Store frames in accordance with requirements of HMMA 840.

B. Remove wraps or covers from window upon delivery at the building site; clean and touch-up scratches or disfigurement caused by shipping or handling promptly with rust inhibitive primer.

C. Store window on planks or dunnage in a dry location; store in a vertical position spaced by blocking.

D. Store units covered to protect them from damage, but permitting air circulation.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

A. Acceptable Manufacturer: Krieger Steel Products, KriegerSonic NCV-2525L-49; or approved equal to meet the specification in this Section and configuration as detailed in Drawings.

1. Unless otherwise specified for an individual product or material, supply all products specified in this Section from the same manufacturer.

2.02 MATERIALS

A. Steel Sheet: One of the following:

2. Cold-rolled steel sheet conforming to ASTM A366, commercial quality.

3. Hot-rolled steel sheet conforming to ASTM A569, pickled and oiled, commercial quality.
B. Galvanized Steel Sheet: ASTM A653, commercial quality, minimum G60 zinc coating.

C. Acoustical Material: Manufacturer's standard for required STC rating.

D. Primer: Meeting ASTM B117 salt spray for 150 hours and ASTM D1735 water fog test for organic coatings for 200 hours.

2.03 COMPONENTS

A. Frames: Fabricate in accordance with Architect-approved Shop Drawings, and as follows:
   1. Frames for interior use: Fabricate from galvanized steel sheet, minimum 14 gage thickness.
   2. Form frame members straight, and of uniform profile through lengths, as welded units with integral trim, of sizes and profiles indicated.
      a. Weld contact edges of joints closed tight.
      b. Miter perimeter trim faces and weld continuously.
   3. When shipping limitations so dictate, fabricate frames for large openings in sections designed for assembly in the field; install alignment plates or angles, of same material and gage as frame, at each joint.
   4. Jamb anchors:
      a. Fabricate of same material as frame material; weld anchors inside each jamb for wall anchorage.
      b. Frames to Studs: Continuous 16 gage steel channel to surround stud, welded inside each jamb.

B. Glazing:
   2. The area between the two pieces of glass shall be finished with a minimum of 1-inch thick acoustical desiccant, applied to the frame by a perforated metal channel casing, furnished to fit.
   3. Stops:
      a. Where integral stops are indicated, form minimum 5/8-inch in depth by 16 gage steel channel.
      b. Butt stop joints.
      c. Fabricate for dual-glazing permitting individual removal of glazing.

C. Gasketing: Neoprene type as required for STC rating from manufacture.

D. Acoustical Sealant: As specified in Section 07900, Sealants.

2.04 FINISHES

A. Shop priming for window frames:
   1. After fabrication, fill and sand tool marks and surface blemishes on
both faces and both vertical edges smooth and free from irregularities.

2. Treat for paint adhesion, then apply primer to all accessible surfaces; allow curing prior to shipment.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Verification Of Conditions:
   1. Prior to installation, check and correct frames for size, squareness, alignment, twist and plumb.
   2. Verify openings are in accordance with approved Shop Drawings.

B. Installer's examination:
   1. Have installer of this section examine conditions under which construction activities of this section are to be performed, then submit written notification if such conditions are unacceptable.
   2. Transmit two copies of installer's report to Architect within 24 hours of receipt.
   3. Beginning construction activities of this section before unacceptable conditions have been corrected is prohibited.
   4. Beginning construction activities of this section indicates installer's acceptance of conditions.

3.02 INSTALLATION

A. Install units in accordance with approved shop drawings and manufacturer's printed installation instructions; in addition, install steel components in accordance with HMMA 840.

B. Oversize Assemblies:
   1. Weld field joints in accordance with AWS D1.1 and approved Shop Drawings.
   2. Finish exposed field welds smooth; touch-up with rust inhibitive primer.

C. Fill voids between concealed side of frame and adjacent wall construction with lightweight gypsum plaster in accordance with approved Shop Drawings or manufacturer's printed installation instructions.

D. Finish surfaces having abrasion damage smooth; touch-up with rust inhibitive primer.

E. Install glazing & gasketing systems in accordance with manufacturer's printed instructions.

F. Field painting is specified in Section 09900, Paint.

3.03 SITE TOLERANCES

A. Do not exceed the following installation tolerances:
   1. Squareness: Plus or minus 1/16-inch measured on a line, 90 degrees from one jamb, at the upper corner of the frame at the other jamb.
2. Alignment: Plus or minus 1/16-inch measured on jambs on a horizontal line parallel to the plane of the wall.
3. Twist: Plus or minus 1/16-inch measured at face corners of jambs on parallel lines perpendicular to the plane of the wall.
4. Plumb: Plus or minus 1/16-inch measured on the jamb at the floor.

3.04 FIELD QUALITY CONTROL
A. General: The quality control provisions herein are in addition to the quality assurance provided by continuous project inspection.
B. Engage and pay for the services of independent testing agency to:
   1. Test door and frame assemblies selected by District or Architect in accordance with ASTM E336.
   2. Issue certified report documenting compliance of installed door and frame assemblies to specified acoustical performance requirements.
C. Notify Architect a minimum of four calendar days prior to scheduled testing dates.

END OF SECTION
SECTION 08410
ALUMINUM STOREFRONT

PART 1 - GENERAL
1.01 SUMMARY

A. Work Included: Aluminum storefronts complete as shown and as specified.

1. Insert aluminum frames to existing aluminum storefront.
   a. Door Locations:
      i. Computer Laboratory, Door L148.1.
      ii. Computer Laboratory, Door L149.1.
      iii. Computer Laboratory, Door L150.1.

2. Interior aluminum storefront work at Frame Type S5 and Door L102.1

3. Anodized aluminum brackets for wood rail provided under Section 06200, Finish Carpentry.
   a. Room Locations:
      i. Server Demonstration Room, L147.
      ii. Computer Laboratory, L149.
      iii. Central Processing, L150B.

4. Anodized sill glazing section in configuration to match existing exterior aluminum storefront glazing profile to properly glaze existing opening, provide proper drainage and provide water tight installation.
   a. Room Locations:
      i. Server Demonstration Room, at removed Door L147.1.
      ii. Computer Laboratory, at removed Door L149.2.

5. Anodized sill glazing section, vertical mullion, and header in configuration to match existing interior aluminum storefront glazing profile to properly glaze existing opening.
   a. Room Locations: Central Processing, L150B.

6. Anodized horizontal aluminum tube to the face of the existing or new glazing surface of existing exterior storefront along North and East sides, as shown on Drawings.
   a. Tube installation in conjunction with film application from Section 08800, Glazing.
   b. Associate compression neoprene gasket.
   c. Room Locations:
      i. Server Demonstration Room, L147 (two locations.)
      ii. Computer Laboratory, L148 (two locations.)
      iii. Computer Laboratory, L149.
      iv. Computer Laboratory, L150.
      v. Office, L156A.

7. New aluminum components shall match at the existing aluminum storefront color/finish.

B. Related Work:
   1. Finish Carpentry: Section 06200.
   2. Sealants: Section 07900.
3. Finish Hardware: Section 08700.
4. Glazing: Section 08800.
5. Non-Load Bearing Metal Framing: Section 09100.
6. Window Covering: Section 12492.
   a. Window covering to existing exterior aluminum storefront.

1.02 SYSTEM DESCRIPTION

A. Design Criteria: Design in accordance with wind load Exposure “C” per CBC, Chapter 24.
   1. Uniform Loading: Test in accordance with ASTM E330 using 35 psf for storefront; maximum deflection 1/175 of span or 3/4-inch, with no evidence of permanent deformation or damage.
      a. Provide reinforcing to resist vertical and lateral forces as required by the local building code.
      b. Test in accordance with ASTM E330 at a pressure 1.5 times the design wind loads. At the conclusion of the test there shall be no glass breakage, permanent damage to fasteners or parts, or any other damage, which would cause the curtain wall assemblies and storefronts to be defective.
   2. Water Penetration: Test for no uncontrolled water leakage when tested in accordance with ASTM E331 at a static air pressure difference of 12 psf for curtain wall assemblies and 8 psf for storefronts as defined in AAMA 501.2 spray test. This requirement does not apply to interior storefront.
   3. Air Infiltration: Test that shall not exceed 0.06 cfm per square foot when tested in accordance with ASTM E283 at static air pressure difference of 6.24 psf for storefronts.

B. Coordinate installation with sealant and glazing work to produce a weatherproof and waterproof installation. One installer shall assume full responsibility for the satisfactory performance of the installation specified in this Section.

C. Design curtain wall assemblies and storefronts to provide for expansion and contraction of component materials as will be caused by a temperature range of 0 degrees F to 180 degrees F without buckling, stress on glass, failure of joint seals, undue stress on Structural elements, damaging loads on fasteners, reduction of performance, or other detrimental effects.

1.03 DESIGN REQUIREMENTS

Sustainable Design Requirements: Aluminum and steel used in work in this Section are intended contribute to meeting requirements for recycle content outlined in LEED NC3.0, Credit MR4.

1.04 SUBMITTALS

A. Submit in accordance with the provisions of the General Conditions, Article
3.11.

B. Shop Drawings: Elevations of window walls and doors, and full-size details showing thickness, profiles, jointing, connections and assembly of various members, reinforcement, anchorage, and supports.

C. Samples: 6-inches long aluminum extrusions with each finish specified in this Section. Provide the colors that closely match the existing aluminum storefront.

D. Certification:
   1. Test reports from accredited AAMA testing laboratories certifying performance as specified in this Section.
   2. Manufacturer’s certification that material’s and components meet performance as specified in this Section.
   3. Provide certificate of quality control procedures to be in use during fabrication of the work in this Section and results and test methods used during fabrication.

E. Product Data: Manufacturer’s detailed specifications and literature.

F. LEED Submittal:
   1. Aluminum: Submit letter or product data from manufacture indicating recycled content. Designate percentage of post consumer and post industrial recycled content.
   2. Steel: Submit letter or product data from manufacture indicating recycled content. Designate percentage of post consumer and post industrial recycled content.

1.04 WARRANTIES

A. Submit a written warranty agreeing to repair or replace total installations which do not perform satisfactorily, or do not meet requirements of this Section. Total installations include glass, glazing, anchorage and setting system, sealing and flashing as they relate to the specified design criteria. The warranty period shall be from the Notice of Completion for the following time:
   1. For Total Installation: 3 years.
   2. For Glazing: 5 years.
   3. For Finish: 5 years.

B. Failure due to defective materials or workmanship is deemed to include, but not to be limited to:
   1. Failures in operation of operating component or components.
   2. Leakage or air filtration in excess of the specified standards.
   3. Excessive deflection.
   4. Deterioration of finish, or metal, in excess of normal weathering.
5. Defects in weather stripping and elastomeric gaskets.
6. Defects which contribute to unsightly appearance, potential safety hazard, or potential untimely failure of the Work of this Section of the Project as a whole.

1.05 STANDARD SPECIFICATION

A. Published specifications, standards, tests or recommended methods of trade or industry apply to the Work of this Section where cited below:


2. American Architectural Manufactures Association (AAMA) /Window and Door Manufactures Association (NWDMA):
   b. AAMA 611 Voluntary Specification for Anodized Architectural Aluminum
   c. Voluntary specifications regarding joint sealers, glazing, tapes, and "Test Methods for Sealant."

   b. ASTM E283 Specifications for Rate of Air Leakage Through Exterior Windows, Curtain Walls, and Doors
   d. ASTM E331 Specifications for Test Method for Water Penetration by Uniform Static Air Pressure Difference.


6. California Building Code (CBC.)

7. Aluminum Association Publication.
   a. Aluminum Standards and Data.
   b. Designation System for Aluminum Finishes.
   c. Standards for Anodized Architectural Aluminum.
   d. Welding Aluminum.
   e. Care of Aluminum.


PART 2 - PRODUCTS
2.01 MANUFACTURER
A. Storefront: EFCO System 402, Kawneer Trifab II 450 or equal. Configuration as indicated on the Drawings.
   1. Size: 4⅛-inches deep with 2-inches face dimension, for center glazing.
   2. System shall provide fully resilient bedding for glass by use of extruded EPDM rubber gaskets.
   3. Door stop around aluminum storefront openings:
      a. 2 piece applied stop with weather stripping (5/8-inch x 1⅛-inches minimum.)
   4. Deflection frame required at head condition.

B. Other Components: As shown on Drawings.
   1. The configuration of the in-fill aluminum storefront sill section shall match the existing glazing profile of the existing storefront vertical mullions and:
      a. Be water tight from the interior,
      b. Allow drainage of moist towards the exterior,
      c. Adapted to secure adequately and interaces adequately to the existing storefront vertical mullions.
   2. Aluminum storefront insert frame required around the existing door opening shall be in a profile and configuration to allow installation of 2 piece door stop and continuous aluminum hinges (as specified in Section 08700, Finish Hardware.)

C. Aluminum Finish: Anodized aluminum as specified in Article 2.02D.

2.02 MATERIALS

A. Aluminum: 6063-T5 or T6 extruded alloy and temper as required, with not less than 0.080-inch wall thickness.

B. Fasteners: Include anchors, shims, bolts, screws, inserts, and other fasteners required for the installation.
   1. Screws, bolts, nuts, and washer, non-magnetic stainless steel, 300 series type.

C. Structural-Steel Reinforcement of Tubular Framing: Provide as required.
   1. Hot-dip galvanize after fabrication.
   2. Touch up abraded surfaces after installation.

D. Finish: Anodized, AA-M10-C22-A44, in conformance to AAMA 611.
   1. Color: To match existing aluminum storefront.
      a. The Architect shall determine the closest match.

E. Glazing: As specified in Section 08800, Glazing for Clear Annealed Laminated.

F. Perimeter Sealants: As specified in Section 07900, Sealants.
G. Other Materials: Provide other materials not specifically described but required for a complete and proper installation.

H. Related and Miscellaneous Materials:
1. Glazing Gaskets and Seals: Glazing gaskets and seals used for Work in this Section shall be an integrated glazing system as designed by the manufacturer to produce a watertight assembly, and shall be physically and chemically compatible with each other and with adjacent materials. Gaskets and seals for conventional glazing systems shall be continuous, one-piece, with injection molded corners.
   a. Compression Seal Gaskets: Closed cell extruded neoprene sponge gasket meeting the requirements of ASTM C509, black color. Gaskets shall be designed when in final compression form; to be compressed a minimum of 24% and a maximum of 40%, and to exert a pressure of between 4 and 10 pounds per lineal inch.
   b. Dense Neoprene Gaskets: High quality extruded, elastomeric, ozone resistant, black color, virgin neoprene compound. Durometer shall be as recommended by manufacturer for jobsite conditions. Profile shall be such that gasket will be retained by framing or stop member.

2.03 FABRICATION

A. Examine the Drawings and Specifications for the Work of this Section as well as for adjacent surfaces. Report omissions or deficiencies to the Architect in writing.

B. Assemblies shall be fabricated and assembled in accordance with the Drawing details and the requirements of the Specifications. Glazing system for windows shall be fabricated and assembled in strict accordance with the manufacturer's instructions and recommendations. The Architect will not permit deviations of any nature without prior review and acceptance. Except where such information is given on the Drawings, thickness of metal shall be in accordance with the manufacturer's recommendations subject to strength and profile requirements. Minor adjustments for watertightness and strength may be suggested for the Architect's review.

C. Work shall be carefully fabricated and assembled with proper and acceptable provision for contraction and expansion in horizontal and vertical directions.

D. Exposed work shall be carefully matched to produce continuity of line, design, and finish. Joints in exposed work, unless otherwise shown or required for thermal movement, shall be accurately fitted, rigidly secured with hairline contacts, and sealed watertight.
E. Where possible, verify dimensions affecting Work of this Section at the job site. Notify the Architect where field dimensions are at variance with those of reviewed shop drawings. Corrective measures, where necessary, shall be determined, and the Architect’s favorable review of such measures shall be obtained prior to commencing fabrication.

F. Removable members such as glass stops shall be extruded and shall be securely engaged into adjacent components. Glass stops shall maintain the required clearance between face of stop and glass.

G. Members shall have clean sharp edges without dents, marks, indentations, waves, or flaws of any nature.

H. Fastenings shall be of sufficient strength to support both horizontal wind load and vertical dead load with liberal safety allowance. They shall be spaced and are of such sizes as will develop the maximum strength of the members they secure or support. Washers, where required, shall be of the same material as the fastener. Unless otherwise shown or accepted, fastenings shall be concealed.

I. Sealants, gaskets, setting blocks, tapes, and separators, where used, shall be physically and chemically compatible with each other and with adjacent materials. Items shall be installed so that they will not become dislodged during or after assembly of units. Comply with requirements of Section 08800, Glazing.

J. Finish Hardware:
   1. Preparation: Verify frame details of receiving openings and obtain reviewed hardware schedule, templates, and other information.
   2. General Requirements:
      a. Make provisions for attachment of hardware.
      b. Conceal fastenings wherever possible.
      c. Do not cover labels nor block portions with trade or manufacturer’s name.
   3. Provisions for Hardware:
      a. Provide reinforcing and cutouts as required to receive hardware in accordance with templates.
      b. Make total thickness of reinforced conditions at least equal to nominal thickness of fasteners required by hardware items.
      c. Drill and tap as required for hardware.

PART 3 - EXECUTION
3.01 PREPARATION

Aluminum surfaces potentially in contact with concrete or dissimilar metals, if not organically coated, shall be isolated by a heavy coating of bituminous paint or zinc-chromate primer.

3.02 INSTALLATION
A. Work shall be performed in accordance with the Drawings, Specifications, and reviewed submittals.
   1. Erection shall be plumb, level, square, and in proper alignment without warp or rack of frames set to manufacturer's prescribed tolerances and installation instructions; and in relationship to other work.

B. All materials shall be screwed in place using shims or anchor straps as required.
   1. Unless otherwise shown or approved, connections and fastenings shall be concealed in finished Work.
   2. Exposure fastening shall be finished to match adjoining coated aluminum.

C. Glazing tape or gaskets shall be inserted prior to assembly of grid-framing material.
   1. Care shall be taken to ensure proper seating of tape or gaskets to afford continuous contact with glass around perimeter of glazed openings.

D. Finished aluminum work shall be free of waves, buckles, dents, or other defects.

E. Moldings joined at corner shall be accurately cut and neatly fitted to result in a tightly closed miter.

F. Interior and exterior perimeter sealing shall be as specified herein.
   1. Where priming is required, apply before sash is installed.
   2. Special attention shall be given to the proper cleaning of painted aluminum surfaces in contact with sealant.

G. Install items plumb and square with watertight, hairline joints.

H. Bolted Connections shall be set in non-skinning, butyl rubber sealant.

I. Install items of finish hardware for proper operation of doors without binding, sticking, sagging, or excessive clearances.

3.03. ADJUSTING CLEANING AND PROTECTION

A. After erection, protect exposed portions of grid framing and doors from damaged by tools, plaster, lime acid, cement, or other compounds.

B. All marred, defaced, scratched, or otherwise defective items shall be replaced with an acceptable member at no additional cost to District.

C. After completion of glazing and finish painting of surrounding surfaces, verify and correct for watertight conditions.
D. After completion of glazing and finish painting of surrounding surfaces, adjust doors and door hardware to provide smooth operation, correct function, and weathertight closure; lubricate or wax hardware and moving parts as required. Re-adjust hardware and doors as required prior to final acceptance.

E. Weep holes shall be unobstructed and free of dirt, rubbish, sealants, and other materials at completion of Project.

F. Initiate and maintain all protection and other precautions required to ensure that units will be without damage or deterioration (other than normal weathering) at time of final acceptance.

3.04. TOLERANCES:

A. Variation from Plane: 0.03-inches per foot maximum or 0.25-inches per 30 feet, whichever is less.

B. Misalignment of two adjoining members abutting in plane: 0.01 inches.

END OF SECTION
PART 1 - GENERAL
1.01 SUMMARY

A. Work Included: Provide items known commercially as finish or door hardware that are required for swing, sliding, and folding doors, except special types of unique hardware specified in the same sections as the doors and door frames on which they are installed. The work includes the following:

1. Thresholds, gasketing and weather-stripping.
2. Door silencers or mutes.
3. Field verification of existing rough openings prior to submission of required Submittals to acknowledge actual outside frame size.
4. Adjust existing closers to confirm with disabled access requirements specified herein.
5. Key Boxes: Furnish two boxes in the following locations:
   a. One exterior location adjacent to Door L102.
   b. One exterior location adjacent to Door L148.
6. Automatic Door Operators with associated door signage.

B. Related Work:

1. Selective Demolition: Section 01732.
   a. Salvage all removed door hardware.
2. Cementitious Underlayment: Section 03550.
3. Steel Doors and Frames: Section 08100.
4. Wood Doors: Section 08210.
5. Sealants: Section 07800.
   a. Standards for sealants used to install thresholds.
   a. Coordinate the location of required backing for the installation of wall mounted stops.
7. Tile: Section 09300.
8. Carpet Tiles: Section 09683.

1.02 REFERENCED STANDARDS

A. Published specifications, standards, tests, and recommended methods of trade or industry apply to the work of this Section where cited by the abbreviations noted below.

1. American National Standards Institute (ANSI)/Builders' Hardware Manufacturers Association (BHMA.)
   a. ANSI/BHMA A115.1 through A115.4 Door and frame preparation standards.
   b. ANSI/BHMA A156.1 through A156.20 Standards for various hardware items.
   c. ANSI/BHMA A156.25 Electrified Locking Devices.
1.03 SUBMITTALS

A. Submit in accordance with the provisions of the General Conditions, Article 3.11.

B. Submit product data (catalog cuts) including manufacturers' technical product information for each item of door hardware, installation instructions, maintenance of operating parts and finish, and other information necessary to show compliance with requirements.

C. Submit six copies of schedule organized vertically into Hardware Groups with index of doors and headings, indicating complete designsations of every item required for each door or opening. Include following information:
   1. Type, style, function, size and finish of each hardware item.
   2. Name, part number and manufacturer of each item.
   3. Fastenings and other pertinent information.
   4. Location of hardware set coordinated with floor plans and door schedule.
   5. Explanation of all abbreviations, symbols and codes contained in schedule.
   6. Mounting locations for hardware.
   7. Door and frame sizes and materials.
   8. List of manufacturers used and their nearest representative with address and phone number.

D. Keying Schedule: Submit separate detailed schedule indicating clearly how the District's final instructions on keying of locks has been fulfilled.

E. Templates for doors, frames, and other work specified to be factory prepared for the installation of door hardware. Check Shop Drawings of other work to confirm that adequate provisions are made for locating and installing door hardware to comply with indicated requirements.
F. Furnish as-built/as-installed schedule with closeout documents, including keying schedule, wiring/riser diagrams, manufacturers' installation, adjustment and maintenance information.

1.04 QUALITY ASSURANCE

A. Obtain each type of hardware (latch and lock sets, hinges, closers, exit devices, etc.) from a single manufacturer.

B. Supplier Qualifications: A recognized architectural door hardware supplier, with warehousing facilities in the project's vicinity, that has a record of successful in-service performance for supplying door hardware similar in quantity, type, and quality to that indicated for this project and that employs an experienced architectural hardware consultant (AHC) who is available to District, Architect, and Contractor, at reasonable times during the course of the Work, for consultation.
   1. Responsible for detailing, scheduling and ordering of finish hardware.
   2. Meet with District to finalize keying requirements and to obtain final instructions in writing.
   3. Stock parts for products supplied and are capable of repairing and replacing hardware items found defective within warranty periods.

C. Hardware Installer: Company specializing in the installation of commercial door hardware with five years documented experience.

D. Fire-Rated Openings: Provide door hardware for fire-rated openings that complies with NFPA Standard No. 80 and requirements of authorities having jurisdiction. Provide only items of door hardware that are listed and tested by UL or Warnock Hersey for given type/size opening and degree of label. Provide proper latching hardware, door closers, approved-bearing hinges and seals whether listed in the Hardware Schedule or not.
   1. Where emergency exit devices are required on fire-rated doors, (with supplementary marking on doors' UL labels indicating "Fire Door to be Equipped with Fire Exit Hardware") provide UL label on exit devices indicating "Fire Exit Hardware".

E. Exit Doors: Operable from inside with single motion without the use of a key or special knowledge or effort.

F. Field Quality Control: Provide a third party Architectural Hardware Consultant (AHC) to inspect installation and certify that hardware and its installation have been furnished and installed in accordance with manufacturer's instructions and as specified herein.

1.05 DELIVERY, STORAGE AND HANDLING

A. Coordinate delivery of packaged hardware items to the appropriate locations (shop or field) for installation.
B. Hardware items shall be individually packaged in manufacturers' original containers, complete with proper fasteners. Clearly mark packages on outside to indicate contents and locations in hardware schedule and in work.

C. Provide locked storage area for hardware, protect from moisture, sunlight, paint, chemicals, etc.

D. Inventory door hardware jointly with representatives of hardware supplier and hardware installer until each is satisfied that count is correct.

1.06 COORDINATION

A. Coordinate work in this Section with other directly affected section involving manufacture of internal reinforcing of hardware such as wall backing.

B. Coordinate hardware for fire rated assemblies with doors and frames for fire rated assemblies. Ensure fire rated hardware in combination with doors and frames meet positive pressure testing requirement for fire rated assemblies in accordance with UL10C.

1.07 WARRANTY

A. Provide warranties of respective manufacturers' regular terms of sale from day of final acceptance as follows:
   1. Locksets: Seven (7) years.
   2. Closers: Ten years, except electronic closers shall be two years.
   3. Exit devices: Three years.
   4. All other hardware: Two years.

1.08 PRE-INSTALLATION CONFERENCE

A. Convene a pre-installation conference at least one week prior to beginning work of this section.


C. Agenda: Review hardware schedule, products, installation procedures and coordination required with related work. Review District's keying standards.

1.09 MAINTENANCE

A. Maintenance Tools and Instructions: Furnish a complete set of specialized tools and maintenance instructions as needed for District's continued adjustment, maintenance, and removal and replacement of door hardware.

B. Provide two additional keys lock cylinders for each master keyed group.

1.10 MAINTENANCE SERVICES
A. Return to the project after 6 months, but no later than 7 months, accompanied by the AHC and readjust each piece of hardware to restore to proper functions of the door assembly.
   1. Replace hardware, which have deteriorated, failed to function correctly, failed due to faulty design, material or installation of hardware.
   2. Prepare a written report of current and predictable problems of substantial nature in performance of hardware.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

<table>
<thead>
<tr>
<th>Item</th>
<th>Manufacturer</th>
<th>Acceptable Substitutes</th>
</tr>
</thead>
<tbody>
<tr>
<td>A. Hinges</td>
<td>Ives</td>
<td>Hager, Stanley</td>
</tr>
<tr>
<td>B. Locks, Dead Bolts &amp; Cylinders</td>
<td>Corbin-Russwin</td>
<td>None</td>
</tr>
<tr>
<td>C. Exit Devices</td>
<td>Von Duprin</td>
<td>None</td>
</tr>
<tr>
<td>D. Latch Guards</td>
<td>MAG Security</td>
<td>Ives</td>
</tr>
<tr>
<td>E. Closers &amp; Door Operators</td>
<td>LCN</td>
<td>None</td>
</tr>
<tr>
<td>F. Overhead Stops</td>
<td>Glynn Johnson</td>
<td>Hager</td>
</tr>
<tr>
<td>G. Push, Pulls, &amp; Protection Plates</td>
<td>Ives</td>
<td>Trimco, BBW, Quality</td>
</tr>
<tr>
<td>H. Stops</td>
<td>Ives</td>
<td>Trimco, BBW, Quality</td>
</tr>
<tr>
<td>I. Thresholds</td>
<td>Pemko</td>
<td>National Guard, Zero</td>
</tr>
<tr>
<td>J. Seals/Gaskets &amp; Door Bottoms</td>
<td>Pemko</td>
<td>National Guard, Zero</td>
</tr>
</tbody>
</table>

2.02 MATERIALS

A. Hinges: Exterior out-swinging door butts shall be non-ferrous material and shall have stainless steel hinge pins. All doors to have non-rising pins.
   1. Conform to ANSI/BHMA A156.1 and A156.7.
   2. Hinges shall be sized in accordance with the following:
      a. Height:
         i. Doors up to 41-inches wide: 4½-inches x 4½-inches.
         ii. Doors 42-inches to 48-inches wide: 5-inches x 5-inches.
      b. Width: Sufficient to clear frame and trim when door swings 180 degrees.
c. Number of Hinges: Furnish 3 hinges per leaf to 7-feet 5-inches in height. Add one for each additional 2 feet in height.

3. Provide non-rising hinge pins throughout.
4. Furnish non-removable pins (NRP) at all exterior out-swing doors and at interior key locked doors with reverse bevels.
5. Provide removable pins on hinges for exterior in swinging doors and interior doors.

B. Continuous Hinges: Conform to ANSI/BHMA 156.25, Grade 1.

C. Heavy Duty Cylindrical Locks and Latches: Corbin Russwin Architectural Hardware, with Newport (NZD) design, fastened with through-bolts and threaded chassis hubs.
1. Conform to ANSI/BHMA 156.2, Series 4000, Grade 1, tested to exceed 3,000,000 cycles.
2. Chassis: Cylindrical design, corrosion-resistant plated cold-rolled steel.
3. Locking spindle: Stainless steel, one-piece interlocking design.
5. Lever Trim: Accessible design, independent operation, spring-cage supported, minimum 2-inches clearance from lever mid-point to door face.
6. Locks shall be of such construction that when locked, the door may be opened from within by using lever and without the use of a key or special knowledge.
7. Rosettes: Minimum 3½-inches diameter for coverage of ANSI/DHI A115.18 door preparation, through-bolt lugs on both spring cages to fully engage this pattern.
9. Strikes: 16 gage curved lip stainless steel or brass with 1-inch deep dust box (M17). Lips shall be of sufficient length to clear trim and protect clothing.
10. Setback: 2¾-inches unless otherwise noted.

D. Cylinders:
1. Minimum 6 pin type with steel cylindrical cases and interior non-corrosive parts. Do not supply plastic, die cast or aluminum mechanisms.
2. Cylinder shall be capable of receiving cores specified in Article 2.03, Keying.
3. Plugs: Extruded brass bar material fully round without flattened areas.

E. Exit Devices: Von Duprin as scheduled.
1. Compression spring engineering.
2. Non-handed basic device design with center case interchangeable with all functions.
   a. Casing: 0.140 average thickness.
3. All latch bolts shall be deadlocking with ¾-inches throw and have a self-lubricating coating to reduce friction and wear.
4. Device shall bear UL label for fire and/or panic as may be required.
5. All surface strikes shall be roller type and utilize a plate underneath to prevent movement.
6. All exit devices to be sex-bolted to the doors.
7. Panic Hardware shall comply with ANSI/BHMA A156.3, Grade 1 tested for 1,000,000 cycles
8. The unlatching force shall not exceed 15 pounds. Applied in the direction of travel. Panic hardware shall comply with CBC Section 1008.1.9.

F. Closers and Door Operators: LCN as scheduled. Place closers inside building, stairs, room, etc.
1. Door closer cylinders shall be of high strength cast iron construction with double heat-treated pinion shaft to provide low wear operating capabilities of internal parts throughout the life of the installation. All door closers shall be tested to ANSI/BHMA A156.4 tested for 10,000,000 cycles.
2. All door closers shall be fully hydraulic and have full rack and pinion action with a shaft diameter of a minimum of 11/16-inch and piston diameter of 1-inch to ensure longevity and durability under all closer applications.
3. All parallel arm closers shall incorporate one-piece solid forged steel arms with bronze bushings. 1 9/16-inches steel stud shoulder bolts shall be incorporated in regular arms, hold-open arms, arms with hold open and stop built in. All other closers to have forged steel main arms for strength, durability, and aesthetics for versatility of trim accommodation, high strength and long life.
4. Closers shall be installed to permit doors to swing 180 degrees where occurs.
5. All closers shall utilize a stable fluid withstanding temperature range of 120 degrees F to -30 degrees F without requiring seasonal adjustment of closer speed to properly close the door.
6. Provide the manufactures drop plates, brackets and spacers as required at narrow head rails and special frame conditions. NO wood plates or spacers will be allowed.
7. Maximum effort to operate doors shall not exceed 5 pounds, such pull or push effort being applied at right angles to hinged doors. Compensating devices or automatic door operators may be utilized to meet the above standards. When fire doors are required, the maximum effort to operate the door may be increased but shall not to exceed 15 pounds when specifically approved by fire marshal. All closers shall be adjusted to operate with the minimum amount of opening force and still close and latch the door. Door shall take at least 3 seconds to move from an open position of 70 degrees to a point of 3-inches from the latch jamb. Comply with CBC Sections 11B-404.2.7, 11B-404.2.8, 11B-404.2.9 & 1008.1.9.
8. Provide sex-bolted or through bolt mounting for all door closers.
9. Door Operators shall comply with CBC Sections 11B-404.3 and ANSI/BHMA A156.10 in addition to those listed in Article 2.02D7.
   a. Motor: 1/12 horse power DC permanent magnet motor with shielded ball bearing; motor stops when door stops or is fully open and when breakaway is operated.
   b. Switching: Off/Auto/Hold Open, 3 position rocker or key type and slide arm for top of door.
   c. Control Circuits for Activation and Safeties: Low voltage, NEC Class II.
   d. Power Supply: 115 Volts, 15 Amp circuit breaker, 1 per unit.
   e. Fail Safe: In the event of power failure, door shall operate manually with controlled spring close as though equipped with a manual closer without damage to the operator assembly.
   f. Power Supply for Electric Strike: On board, 1 Amp, 24 Volt DC.
   g. Accessory Connection: Dedicated and clearly labeled connectors.
   h. Provide adjustments by digital interface via keypad input in self-contained housing for:
      i. Opening speed
      ii. Back check speed.
      iii. Power assist.
      iv. Hold-open with setting from 2 to 32 seconds.
     v. Auto Reserve Opening/ Closing Force: Door to safely stop and reserve if object is encountered in opening or closing cycle.
     vi. Adjustment of latching force from 0 to 23 degrees from fully closed position.
     vii. Alternate action single activation to keep door open until second action occurs.
    viii. Electric Lock Relay: Fall Safe, Fail Secure or Off.
   ix. Logic terminal for interface with accessories, mats and sensors.
   x. Safety slow/stop.
   xi. Power Boost: Latching feature, which applies additional 25 pounds losing force.
   i. Labels: Signage applications to doors to conform to ANSI/BHMA A156.19.

G. Door Stops:
1. Unless otherwise noted in Hardware Groups, provide wall type with appropriate fasteners. Where wall type cannot be used, provide floor type. If neither can be used, provide overhead type.
2. Do not install floor stops more than 4-inches from the face of the wall or partition conforming to CBC Sections 11B-204 and 11B-307.
3. Overhead stops shall be made of stainless steel and non-plastic mechanisms and finished metal end caps. Field-changeable hold-open, friction and stop-only functions.
H. Protection Plates: Fabricate either kick, armor, or mop plates with four beveled edges. Provide kick plates 10-inches high and 2-inches less door width. Sizes of armor and mop plates shall be listed in the Hardware Groups. Furnish with machine or wood screws of stainless steel to match other hardware.

I. Thresholds: As scheduled and/or as detailed.
1. Thresholds/Cover Plates shall not exceed ½-inch in height with exposed beveled edge of 1:2 ratio maximum slope.
   a. Square edged when abutting other finishes where noted on Drawings.
   b. Sealant not permitted on the side of cover plates required for seismic movement as noted on Drawings.
   c. Sealant shall conform to Sealants, Section 07900.
2. Use stainless steel ¾-inch fasteners, red-head flat-head sleeve anchors.
3. Thresholds shall comply with CBC Section 11B-303.2 and 11B-303.3.

J. Silencers: Furnish silencers for interior hollow metal frames, 3 for single doors and 2 for pairs of doors. Omit where seals and gasket occur or for fire-resistive-rated door assemblies.

K. Push and Pull Plates: 8-inches center ¾-inch outside diameter round pull with 4-inches x 16-inches plate.

2.03 KEYING

A. Furnish a Grand Master, Master, keyed alike or keyed different system as directed by the District or Architect. Furnish all cylinders in keyway to match existing Corbin Russwin system.

B. Provide construction keying for doors requiring locking during construction; remove temporary cores or inserts immediately prior to District occupancy. Furnish permanent keys (and cores if applicable) directly to District.
1. Furnish construction master key system with 5 keys for locks and cylinders with not more than 6 for any group and remainder in blanks.
2. Upon Substantial Completion of the project, the District shall void the construction key system.

C. Supply keys as follows:
1. Supply 2 cut change keys for each lock.
2. Supply 12 cut master keys for each different master key set.
3. Supply 3 uncut grand master keys.

D. Identification and Delivery:
1. Factory stamp permanent keys to read, "DO NOT DUPLICATE."
2. Ship permanent keys and interchangeable core directly to District. Order hardware less the cores for faster delivery.
2.04 FINISHES

Finish as noted on Hardware Groups.

2.05 FASTENERS

A. Screws for strikes, faceplates and similar items shall be flat head, countersunk type, provide machine screws for metal and standard wood screws for wood.

B. Screws for butt hinges shall be flathead, countersunk, full-thread type.

C. Fastening of closer bases or closer shoes to doors shall be by means of sex bolts and spray painted to match closer finish.

D. Provide expansion anchors for attaching hardware items to concrete or masonry.

E. All exposed fasteners shall have a Phillips head.

F. Finish of exposed screws to match surface finish of hardware or other adjacent work.

G. All Exit Devices and Lock Protectors shall be fastened to the door by the means of sex bolts or through bolts.

PART 3 – EXECUTION

3.01 INSPECTION

A. Verify that doors and frames are square, plumb, and ready to receive work and dimensions are as instructed by the manufacturer.

B. Beginning of installation means acceptance of existing conditions.

3.02 INSTALLATION

A. Install hardware in accordance with manufacturer’s instructions and requirements of DHI.

B. Use the templates provided by hardware item manufacturer.

C. Mounting heights for locksets, panic devices hardware shall be as recommended by the Door and Hardware Institute. Operating hardware will to be located between 30-inches and 44-inches above floor finish surface.

1. Mount dead bolts not to exceed 44-inches with push/pull plates mounted below.

D. Set units level, plumb and true to line and location. Adjust and reinforce the attachment substrate as necessary for proper installation and operation.
E. Drill and countersink units that is not factory-prepared for anchorage fasteners. Space fasteners and anchors in accordance with industry standards.

F. Set thresholds for exterior doors in full bed sealant as specified in Sealants, Section 07900.

G. If hand of door is changed during construction, make necessary changes in hardware at no additional cost.

H. Hardware Installer shall coordinate with security contractor to route cable to connect electrified locks, panic hardware and fire exit hardware to power transfers or electric hinges at the time these items are installed to avoid disassembly and reinstallation of hardware.

I. Hardware Installer shall also be present with the security contractor when the power is turned on for the testing of the electronic hardware applications. Installer shall adjust solenoids, latches, vertical rods and closers to insure proper and secure operation.

J. Floor Stops: Locate floor stops no more than 4-inches away from face of partitions to conform to disable accessibility requirements.

3.03 ADJUST AND CLEAN

A. Adjust and check each operating item of hardware and each door, to ensure proper operation or function of every unit. Replace units, which cannot be adjusted to operate freely and smoothly as intended for the application made.

B. Clean adjacent surface soiled by hardware installation.

C. Final Adjustment: Wherever hardware installation is made more than one month prior to acceptance or occupancy of a space or area, return to the work during the week prior to acceptance or occupancy, and make final check and adjustment of all hardware items in such space or area. Clean operating items as necessary to restore proper function and finish of hardware and doors. Adjust door control devices to compensate for final operation of heating and ventilating equipment.

D. Instruct District’s Personnel in proper adjustment and maintenance of hardware finishes, during the final adjustment of hardware.

E. Continued Maintenance Service: Approximately six months after the completion of the project, the Contractor accompanied by the Architectural Hardware Consultant, shall return to the project and re-adjust every item of hardware to restore proper functions of doors and hardware. Consult with and instruct District’s personnel in recommended additions to the maintenance procedures. Replace hardware items, which have deteriorated or failed due to faulty design, materials or installation of hardware units.
Prepare a written report of current and predictable problems (of substantial nature) in the performance of the hardware.

3.04 HARDWARE LOCATIONS

Conform to CBC Chapter 11B for positioning requirements for the disabled.

3.05 SCHEDULE

A. The items listed in the following schedule shall conform to the requirements of the foregoing specifications.

B. The Door Schedule on the Drawings indicates which hardware set is used with each door.

Manufacturers Abbreviations (Mfr.)

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>COR</td>
<td>Corbin-Russwin</td>
</tr>
<tr>
<td>GLY</td>
<td>Glynn Johnson</td>
</tr>
<tr>
<td>IVE</td>
<td>Ives</td>
</tr>
<tr>
<td>LCN</td>
<td>LCN</td>
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<td>MAG</td>
<td>Mag Security</td>
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<tr>
<td>PEM</td>
<td>Pemko</td>
</tr>
<tr>
<td>VON</td>
<td>Von Duprin</td>
</tr>
</tbody>
</table>

Lever Lock Set, Dead Bolts & Cylinders
Overhead Stop
Hinges, Continuous Hinges, Push/Pull, Kick Plates, Door Stops, Latch Guards & Silencers
Door Closers & Automatic Operators
Latch Guards
Thresholds, Seals/Gasketing & Weather-stripping
Exit Devices
HARDWARE GROUPS

EXTERIOR DOOR ASSEMBLIES

HARDWARE GROUP: 100 (Existing Door L146.2)

1 Ea Door Bottom 315C AL PEM
1 Ea Threshold 2727C (½" high with ¼" offset) AL PEM
1 Set Seals S88BL BLK PEM
Balance hardware to remain

HARDWARE GROUP: 101 (Existing Door L146.1)

1 Ea Automatic Door Operator 9540 REG RF 3572HL with end caps (Senior 688 VON Swing Gearbox – 9540-3454)
Provide appropriate surface mounting brackets to existing aluminum storefront header and transom panel
1 Ea Power Supply PS914 (24 VDC) - VON
Locate above in ceiling cavity and positioned to provide full maintenance access
1 Ea Labels Kit 740031-00 consisting of:
740072-00, "Push To Operate"
740073-00, "Pull To Operate"
1 Ea Electric Strike 6113 FSE (24 VDC)* 630 VON
1 Ea Door Bottom 315C AL PEM
1 Ea Threshold 2727C (½" high with ¼" offset) AL PEM
1 Set Seals S88BL BLK PEM
Balance hardware to remain
* See Electrical Drawings for connection of Power Supply to power source. Verify operations of electric strike with existing lever lock set.

HARDWARE GROUP: 102 (Door L148.1, L149.1 & L150.1)

1 Ea Continuous Hinge 112HD EPT PREP 710 IVE
1 Ea Power Transfer Hinge EPT-10 710 VON
1 Ea Panic Device EL98NL-OP-2SI (24 VDC) 710 VON
1 Ea Power Supply PS914 (24 VDC) - VON
Locate above in ceiling cavity and positioned to provide full maintenance access
1 Ea Mortise Security Cylinder 1080-CT6 x Cylinder Collar 630 COR
1 Ea Rim Cylinder 3080-CT6 x 422F8 Collar 630 COR
1 Ea Interchangeable Core 8000-6 630 COR
1 Ea Labels Kit 740031-00 consisting of:
27274, "Automatic Caution Door" (both sides of door)
740072-00, "Push To Operate"
740073-00, "Pull To Operate"
1 Ea Door Pull VR910NL 630 IVE
1 Ea Door Bottom 315C AL PEM
1 Ea Latch Guard 8846-S 630 MAG
HARDWARE GROUP: 103 (Door L102.2 if for electric strikes)

2 Ea Continuous Hinge 112HD
1 Ea Panic Device CD98NL-OP-2SI (RHR)
1 Ea Panic Device 98EO
1 Ea Mortise Dogging Cylinder 1080-CT6 x Cylinder Collar
1 Ea Mortise Security Cylinder 1080-CT6 x Cylinder Collar
1 Ea Rim Cylinder 3080-CT6 x 422F8 Collar
3 Ea Interchangeable Core 8000-6
1 Ea Labels Kit 740031-00 consisting of:
27274, “Automatic Caution Door” (both sides of door)
740072-00, Push To Operate”
740073-00, “Pull To Operate”
1 Ea Closer 4011-72MC (LHR)
1 Ea Door Pull VR910NL
2 Ea Door Bottom 315C
1 Ea Floor Stop FS441 (LHR)
1 Set Seals S88BL
2 Ea Meeting Seals 303SD
1 Ea Threshold 2727C (½” high with ¼” offset)

Connect existing door operator to RHR door. Install panic devices to interface with existing electrical strike and door strike.

HARDWARE GROUP: 103 (Door L102.2 if for electric panic devices)

2 Ea Continuous Hinge 112HD EPT PREP
1 Ea Power Transfer Hinge EPT-10
1 Ea Panic Device EL98NL-OP(RHR)
24 VDC-verify with existing power supply/power source
1 Ea Power Supply PS914 (24 VDC)
Locate above in ceiling cavity and positioned to provide full maintenance access
1 Ea Labels Kit 740031-00 consisting of:
27274, “Automatic Caution Door” (both sides of door)
740072-00, Push To Operate”
740073-00, “Pull To Operate”
1 Ea Panic Device 98EO
1 Ea Mortise Dogging Cylinder 1080-CT6 x Cylinder Collar
1 Ea Mortise Security Cylinder 1080-CT6 x Cylinder Collar
1 Ea Rim Cylinder 3080-CT6 x 422F8 Collar
3 Ea Interchangeable Core 8000-6
1 Ea Closer 4111 x 3049EDA-72MC (LHR)
1 Ea Door Pull VR910NL
2 Ea Door Bottom 315C
1 Ea Floor Stop FS41 (LHR)
Connect existing door operator to RHR door. Install panic devices to interface with existing door strikes.

### INTERIOR DOOR ASSEMBLIES

#### HARDWARE GROUP: 200 (Toilets-Door L126.1 & L127.1)

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
<th>Brand</th>
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<tbody>
<tr>
<td>3 Ea</td>
<td>Hinges</td>
<td>5BB1HW</td>
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<td>Dead Bolt</td>
<td>DL3213-423L71</td>
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<td>Interchangeable Core</td>
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<td>Closer</td>
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<td>Kick Plate</td>
<td>8400 10&quot; x 2&quot; LDW</td>
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<tr>
<td>1 Ea</td>
<td>Wall Stop</td>
<td>WS407CCV</td>
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<tr>
<td>1 Ea</td>
<td>Threshold</td>
<td>2727C (½&quot; high with ¼&quot; offset)</td>
</tr>
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#### HARDWARE GROUP: 201 (Door L102.1)

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<thead>
<tr>
<th>Item</th>
<th>Description</th>
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</thead>
<tbody>
<tr>
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<td>Continuous Hinge</td>
<td>112HD</td>
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<tr>
<td>1 Ea</td>
<td>Panic Device</td>
<td>CD35A-F-NL-OP-2SI (RHR)</td>
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<td>1 Ea</td>
<td>Mortise Dogging Cylinder</td>
<td>1080-CT6 x Cylinder Collar</td>
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<tr>
<td>1 Ea</td>
<td>Rim Cylinder</td>
<td>3080-CT6 x 422F8 Collar</td>
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<tr>
<td>1 Ea</td>
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<td>4111 x 3049EDA - 72MC (LHR)</td>
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<td>Door Pull</td>
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<td>S88BL</td>
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<tr>
<td>1 Ea</td>
<td>Threshold</td>
<td>2364C (1/8&quot; high x 4&quot; carpet separator)</td>
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#### HARDWARE GROUP: 202 (Door L148.2 & L142.3)

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<tr>
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<td>1 Ea</td>
<td>Interchangeable Core</td>
<td>8000-6</td>
</tr>
<tr>
<td>1 Ea</td>
<td>Closer</td>
<td>4111-72</td>
</tr>
<tr>
<td>1 Ea</td>
<td>Kick Plate</td>
<td>8400 10&quot; x 2&quot; LDW</td>
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<tr>
<td>1 Ea</td>
<td>Wall Stop</td>
<td>WS407CCV</td>
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<tr>
<td>1 Set</td>
<td>Seals</td>
<td>S88BL</td>
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#### HARDWARE GROUP: 203 (Door L150.2)

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<tr>
<td>1 Ea</td>
<td>Closer</td>
<td>4111 x 3077CNS-72</td>
</tr>
<tr>
<td>1 Ea</td>
<td>Kick Plate</td>
<td>8400 10&quot; x 2&quot; LDW</td>
</tr>
<tr>
<td>1 Set</td>
<td>Seals</td>
<td>S88BL</td>
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<td>HARDWARE GROUP: 204 (Door L150B.1)</td>
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<td>3 Ea Hinges 5BB1</td>
<td>626 IVE</td>
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</tr>
<tr>
<td>1 Ea Classroom Lock CL3355 NZD M17 CT6</td>
<td>626 COR</td>
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</tr>
<tr>
<td>1 Ea Interchangeable Core 8000-6</td>
<td>626 COR</td>
<td></td>
</tr>
<tr>
<td>1 Ea Kick Plate 8400 10&quot; x 2&quot; LDW</td>
<td>626 IVE</td>
<td></td>
</tr>
<tr>
<td>1 Ea Floor Stop FS441</td>
<td>630 IVE</td>
<td></td>
</tr>
<tr>
<td>1 Ea Latch Guard 8840-C</td>
<td>626 MAG</td>
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<tr>
<td>1 Set Seals S88BL</td>
<td>BLK PEM</td>
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<tr>
<td>1 Ea Office Lock CL3351 NZD M17 CT6</td>
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<tr>
<td>1 Ea Kick Plate 8400 10&quot; x 2&quot; LDW</td>
<td>626 IVE</td>
</tr>
<tr>
<td>1 Ea Wall Stop WS407CCV</td>
<td>630 IVE</td>
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<tr>
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<td>1 Ea Interchangeable Core 8000-6</td>
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<td>1 Ea Kick Plate 8400 10&quot; x 2&quot; LDW</td>
<td>626 IVE</td>
</tr>
<tr>
<td>1 Ea Wall Stop WS407CCV</td>
<td>630 IVE</td>
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<tr>
<td>1 Ea Classroom Lock CL3355 NZD M17 CT6</td>
<td>626 COR</td>
</tr>
<tr>
<td>1 Ea Interchangeable Core 8000-6</td>
<td>626 COR</td>
</tr>
<tr>
<td>1 Ea Closer 4111 x 3049EDA x -72</td>
<td>689 LCN</td>
</tr>
<tr>
<td>1 Ea Overhead Stop 814S</td>
<td>626 GLY</td>
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<tr>
<td>1 Ea Kick Plate 8400 10&quot; x 2&quot; LDW</td>
<td>626 IVE</td>
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<td>1 Set Seals S88BL</td>
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<thead>
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<td>3 Ea Hinges 5BB1HW</td>
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<tr>
<td>1 Ea Panic Device 9BL 996L-17</td>
<td>626 VON</td>
</tr>
<tr>
<td>1 Ea Cylinder 3080-CT6 x 422F88 Collar</td>
<td>626 COR</td>
</tr>
<tr>
<td>1 Ea Interchangeable Core 8000-6</td>
<td>626 COR</td>
</tr>
<tr>
<td>1 Ea Closer 4111 x 3049EDA x -72</td>
<td>689 LCN</td>
</tr>
<tr>
<td>1 Ea Overhead Stop 814S</td>
<td>626 GLY</td>
</tr>
<tr>
<td>1 Ea Kick Plate 8400 10&quot; x 2&quot; LDW</td>
<td>626 IVE</td>
</tr>
<tr>
<td>1 Set Seals S88BL</td>
<td>BLK PEM</td>
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<table>
<thead>
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<th>HARDWARE GROUP: 208 (Door L102A.1)</th>
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<tr>
<td>3 Ea Hinges 5BB1HW</td>
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<tr>
<td>1 Ea Panic Device 9BL 996L-17</td>
<td>626 VON</td>
</tr>
<tr>
<td>1 Ea Cylinder 3080-CT6 x 422F88 Collar</td>
<td>626 COR</td>
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<td>Quantity</td>
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<td>1</td>
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<td>Closer 4111 x 3049EDA-72 (90°Cush-n-stop)</td>
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<td>1</td>
<td>Kick Plate 8400 10&quot; x 2&quot; LDW</td>
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<td>1</td>
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**HARDWARE GROUP: 209 (Door L100.1)**

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<td>Closer 4011-72</td>
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<td>LCN</td>
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</tr>
<tr>
<td>1</td>
<td>Kick Plate 8400 10&quot; x 2&quot; LDW</td>
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<td>IVE</td>
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<tr>
<td>1</td>
<td>Wall Stop WS407CCV</td>
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<tr>
<td>1</td>
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<td>PEM</td>
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<tr>
<td>1</td>
<td>Door Bottom 135N-C (Locate at interior side of door)</td>
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<tr>
<td>1</td>
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<tr>
<td>1</td>
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<td>MAG</td>
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**HARDWARE GROUP: 210 (Door L106.1)**

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<td>COR</td>
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<tr>
<td>1</td>
<td>Interchangeable Core 8000-6</td>
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<td>COR</td>
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<tr>
<td>1</td>
<td>Closer 4011 x 3049-72</td>
<td>689</td>
<td>LCN</td>
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<tr>
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<td>Kick Plate 8400 10&quot; x 2&quot; LDW</td>
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<td>IVE</td>
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<tr>
<td>1</td>
<td>Wall Stop WS407CCV</td>
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<td>IVE</td>
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<tr>
<td>1</td>
<td>Acoustic Seals HSS2000 x S44D</td>
<td>DBZ</td>
<td>PEM</td>
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<tr>
<td>1</td>
<td>Acoustic Seals 312R x ER9-C</td>
<td>AL</td>
<td>PEM</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Door Bottom 135N-C (Locate at corridor side of door)</td>
<td>AL</td>
<td>PEM</td>
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<tr>
<td>1</td>
<td>Acoustic Threshold 2008STC x Q38-A</td>
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**HARDWARE GROUP: 211 (Door L107.1)**

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<td>Interchangeable Core 8000-6</td>
<td>626</td>
<td>COR</td>
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<tr>
<td>1</td>
<td>Closer 4111 x 3077CNS-72</td>
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<td>1</td>
<td>Kick Plate 8400 10&quot; x 2&quot; LDW</td>
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<td>IVE</td>
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<tr>
<td>1</td>
<td>Acoustic Seals HSS2000 x S44D</td>
<td>DBZ</td>
<td>PEM</td>
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<tr>
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<td>Acoustic Seals 312R x ER9-C</td>
<td>AL</td>
<td>PEM</td>
<td></td>
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<tr>
<td>1</td>
<td>Door Bottom 135N-C (Locate at corridor side of door)</td>
<td>AL</td>
<td>PEM</td>
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<tr>
<td>1</td>
<td>Acoustic Threshold 2008STC x Q38-A</td>
<td>AL</td>
<td>PEM</td>
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<td>1</td>
<td>Latch Guard LG10</td>
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**HARDWARE GROUP: 212 (Door L136.1)**

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<td>2</td>
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<td>Item</td>
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<td>Set Seals</td>
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<td>Ea Kick Plate</td>
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<td>Ea Floor Stop</td>
<td>FS441</td>
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<td>Set Seals</td>
<td>S88BL</td>
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</tbody>
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END OF SECTION
PART 1 - GENERAL

1.01 SUMMARY

A. Work Included: Furnish all labor, materials, equipment, and related work necessary to complete the glazing work as indicated in the Drawings and specified herein.
1. Glazing for door vision lights and door steel frame side lights.
2. Glazing to interior steel frame windows.
3. Glazing to existing and/or new aluminum storefront.
4. Applied film to existing storefront glazing.
   a. Storefront along (North and East sides):
      i. Office, L156A.
      ii. Computer Laboratory, L150.
      iii. Computer Laboratory, L149.
      v. Computer Laboratory, L147.

B. Related Work:
2. Sealants: Section 07900.
3. Steel Doors and Frames: Section 08100.
   a. Glazing in hollow metal door frame sidelights.
   b. Glazing in hollow metal interior windows.
4. Wood Doors: Section 08210.
   a. Glazing in vision frames.
   b. Glazing for acoustical wood door is provided under Section 08210, Wood Doors.
5. Steel Acoustical Window: Section 08385.
   a. Glazing for steel acoustical window is provided under Section 08385, Steel Acoustical Window.
6. Aluminum Storefront: Section 08400.
   a. Glazing for new or existing aluminum storefront.

1.02 QUALITY ASSURANCE

A. Published specifications, standards, tests, and recommended methods of trade or industry apply to the work of this Section where cited by the abbreviations noted below.
1. Glazing Standards: Comply with Flat Glass Marketing Association (FGMA) "Glazing Manual" except as otherwise noted.
   c. ASTM D1044 Standard Method of Test for Resistance of Transparent Plastics to Surface Abrasion (Taber Abrader Test.)
   e. ASTM E84 Standard Method of Test for Surface Burning Characteristics of Building Materials.

   a. NFPA 80 Fire Doors and Windows.
   c. NFPA 257 Fire Test of Window Assemblies.

7. Underwriters Laboratories, Inc. (UL):
   a. UL 10B Fire Tests of Window Assemblies.
   b. UL 263 Fire tests of Building Construction and Materials.
   c. UL 10C Positive Pressure Fire Tests of Window & Door Assemblies.


B. Fire Resistive Rating: Glaze applications shall meet the radiant heat requirements of ASTM E119. Per ASTM E119 and UL 263 requirements temperature on the non-fire side of glazing and framing at conclusion of fire test exposure shall be below 250°F above ambient room temperature.

C. Certification: Signed by manufacturers of glass and glazing products certifying that products furnished comply with requirements.
   2. Underwriters Laboratories (UL) shall conduct fire test.

D. Listings and Labels - Fire Rated Assemblies: Under current follow-up service by an approved independent agency maintaining a current listing or certification. Label assemblies accordance with limits of manufacturer's listing.

E. Exterior Design Criteria:
   1. Exterior glass and glazing shall be waterproof.
   2. Exterior glass and glazing shall be capable of safely withstanding wind load (positive and negative) acting normal to the plane of the glass as follows:
a. Wind Speed 85 MPH, Exposure C.

F. Allowable Tolerances: Bow or Warp: As measured with glass resting on edge upon two one-inch wide supports.
1. Typical: Maximum bow or warp permitted in light shall not exceed 1/8-inch in 48-inches.

1.03 SUBMITTALS

A. Submit in accordance with the provisions of the General Conditions, Article 3.11.

B. Product Data: Submit manufacturer's product data for each glass and glazing accessory specified include fire rated test results of rated glass and glazing material.

C. Samples:
1. Submit samples for verification purposes in a minimum of 12-inches square sample of each type of glass specified and 12-inches minimum long sample of each colored sealant and gasket exposed to view.
2. Submit samples of applied films in a minimum of 12-inches square sample of each degree of tint/coating.

D. Quality Control Submittals: Manufacturer indicating that glazing materials were tested for compatibility and adhesion with glazing sealant. Include sealant manufacturer's interpretation of test results relative to sealant performance and recommendations for primers and substrate preparation needed for adhesion.

E. Applied Film Manufacturer's Authorized Dealer and Applicator (ADA,):
1. The ADA shall provide documentation that the ADA is certified by the manufacturer to install applied film as per the manufacturer's specifications and in accordance with specific herein.
2. The ADA will provide a commercial building reference list of ten projects where the ADA has installed window film. This list will include the following information:
   a. Name of building.
   b. The name and telephone number of a management contact.
   c. Type of glass.
   d. Type of film.
   e. Amount of film installed.
   f. Date of completion.

1.04 WARRANTY

A. Applied Film:
1. The application shall be warranted by the applied film manufacturer (3M) for a period of ten years in that the film will maintain solar
reflective properties without cracking, crazing, delaminating or peeling.

2. The applied film manufacturer also warrants that SPCS applied films will not fade or discolor for a period of ten years after installation. In the event that the product is found to be defective under warranty, the ADA will replace such quantity of the applied film proved to be defective, and will additionally provide the removal and reapplication labor free of charge.

3. The applied film manufacturer also warrants against glass failure due to thermal shock fracture of the glass and/or seal failure of the window unit (maximum value $500 per window) provided the applied film is applied to recommended types of glass and the failure occurs within sixty months from the start of application. Any glazing failure or seal failure must be reviewed by the applied film manufacturer prior to replacement.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Glass:
   1. Clear Annealed Laminated (Typical Glazing Type): 7/32-inch thick with interlayer of .030 poly-vinyl butyryl (PVB.)
      a. Typical non-rated safety glazing.
   2. Acoustical Glazing: Provide under Section 08210, Wood Doors for vision frame in acoustical wood doors and Section 08385, Steel Acoustic Window for glazing in steel acoustical window.
   3. Fire Rated Glazing:
         i. Thickness: 5/16-inches, polished laminated safety rated.
         ii. Weight: 4.0 pounds per square foot.
         iii. Approximate Visible Transmission: 85 percent.
         iv. Approximate Visible Reflection: 9 percent.
         vi. Positive Pressure Test: UL 10C, UBC 7-2 and 7-4; passes.
         vii. Each piece of fire-rated glazing shall be labeled with a permanent logo including name of product, manufacturer, testing laboratory (UL), fire rating period, safety glazing standards, and date of manufacture.

B. Non Rated Glazing Accessories:
   1. Setting Blocks, Spacers and Edge Blocks: Neoprene, Ethylene Propylene Diene Monomer (EPDM) or silicone blocks as required for
compatibility with glazing sealant, 80 to 90 Shore A durometer hardness conforming to ASTM D1056.

2. Sealant: One part non-acid curing silicone type as manufactured by Dow Corning Corp., 795; General Electric Corp., Silglaze-II 2800; Tremco, Inc., Spectrum 2 or equal.

3. Glazing Tape: Manufacturer's standard solvent free butyl-polyisobutylene formulation with solids content of 100 percent, in extruded tape form, non-staining and non-migrating in contact with non-porous surfaces, packaged in rolls with release paper on one side; with or without continuous spacer rod.


5. Cleaners, Primers, and Sealers: Type recommended by manufacturer of glass and gaskets.

6. Acoustic Glazing Bead: Supplied by acoustical wood door manufacture in Wood Doors: Section 08210 to maintain STC rating and maintain acoustical door warranty.

C. Rated Glazing Accessories:

1. Glazing Tape: Closed cell polyvinyl chloride (PVC) foam, coiled on release paper over adhesive on two sides, maximum water absorption by volume of 2 percent.

D. Applied Film: 3M Color Stable Automotive Window Film, CS5, non-metallized: or equal that meets the following:

1. Performance Requirements:
   a. Visible Light Transmitted: 9 percent.
   b. Total Solar Energy Rejected: 57 percent.
   c. Visible Light Reflection: 5 percent.
   d. UV Rejection: 99 percent
   e. Glare Reduction: 90 percent.
   f. Flammability: The Manufacturer shall provide independent test data showing that the window film shall meet the requirements of a Class A Interior Finish for Building Materials for both Flame Spread Index and Smoke Development Values per ASTM E84.
   g. Abrasion Resistance: The Manufacturer shall provide independent test data showing that the film shall have a surface coating that is resistant to abrasion such that, less than 5% increase of transmitted light haze will result in accordance with ASTM D-044 using 100 cycles, 500 grams weight, and the CS10F Calbrase Wheel.
   h. Adhesive System: The film shall be supplied with a pressure sensitive weatherable acrylate adhesive applied uniformly over the surface opposite the abrasion resistant coating. A water-soluble detackifier shall be incorporated over the pressure sensitive adhesive to facilitate handling. The adhesive shall be essentially optically flat and shall meet the following criteria:
2. Viewing the film from a distance of ten feet at angles up to 45 degrees from either side of the glass, the film itself shall not appear distorted.

2. Size: The roll shall be sized to provide one piece of applied film without (film to film) vertical or horizontal joints.

2.02 GLAZING FABRICATION

Fabricate glass and other glazing products in sizes required to glaze openings indicated for Project, with edge and face clearances, edge and surface conditions, and bite complying with recommendations of product manufacturer and referenced glazing standard as required to comply with system performance requirements.

PART 3 - EXECUTION

3.01 GLAZING PREPARATION

A. Provide spacers for glass sizes larger than 50 united inches (height plus length) as follows:
   1. Locate spacers inside, outside and directly opposite each other. Install correct size and spacing to preserve face clearances, except where gaskets and glazing tapes are used that have demonstrated ability to maintain required face clearances and comply with system performance requirements.
   2. Provide a minimum of 1/8-inch bite of spacers on glass and use thickness equal to sealant width.

B. Clean glazing channels, glazing surface or other framing members to receive glass immediately before glazing. Remove coating not firmly bonded to substrate.

C. Inspect each piece of glass immediately before installation, and eliminate any pieces having observable edge damage or face imperfections.

D. Apply primer or sealer to joint surfaces wherever recommended by sealant manufacturer
   1. Primer shall be applied to all aluminum surfaces to receive silicone or polysulfide sealant, unless sealant manufacturer certifies, in writing, that primer is not required.

3.02 GLAZING INSTALLATION

A. See Door Schedule (on Drawings) for fire rating for the required glazing in door and door frame assemblies.
   1. See Door Schedule (on Drawings) for Frame Type for type of glazing within each light.
   2. See Window Types for type of glazing within each light.

B. Comply with “Glazing Manual” by Flat Glass Marketing Association, except as shown or specified otherwise, and except as specifically recommended otherwise by manufacturers of glass, glazing materials, and frame.
C. Install correct glass size for each opening within tolerances and necessary dimensions established.

D. Unify appearance of each series of lights by setting each piece to match others as nearly as possible.
   1. Inspect each piece and set with pattern, draw, and both oriented in same direction as other pieces.
   2. Do not attempt to cut, seam, nip, or abrade glass.

E. Clean and trim excess glazing materials from glass and stops of frames promptly after installation, and eliminate stains and discoloration.

F. Fire Rated Glazing: Install glazing in strict accordance with fire resistant glazing material manufacturer's specifications. Field cutting or tampering is not permissible.

3.03 GLAZING REPLACEMENT, PROTECTION, AND CLEANING

A. Replace glass, which is broken, chipped, cracked, abraded, or damaged resulting from construction, natural causes, accidents, or vandalism.

B. Clean and polish all glazing and glazing surfaces not more than seven days before acceptance of Work.

C. Protection:
   1. Protect glazing from damage immediately after installation by attaching crossed streamers to framing held away from glazing. Do not apply markers to glazing surface. Remove non-permanent labels, and clean surfaces.
   2. Protect glazing from contact with contaminating substances resulting from construction operations, including weld splatter. If, despite such protection, contaminating substances do come into contact with glass, remove them immediately as recommended by glazing manufacturer.

3.04 APPLIED FILM APPLICATION

A. Examination: Examine glass surfaces to receive applied film and verify that they are free from defects and imperfections, which will affect the final appearance. Correct all such deficiencies before starting film application.

B. Preparation:
   1. The glazing framing and glazing surface will be cleaned thoroughly with a neutral cleaning solution. The inside surface of the glazing shall be bladed with industrial razors to insure the removal of any foreign contaminants.
2. Toweling or other absorbent material shall be placed on the window sill or sash to absorb moisture accumulation generated by the applied film application.

C. Installation: The applied film shall be installed as to the specifications of the manufacturer by an ADA.
   1. Materials will be delivered to the job site with the manufacturer's labels intact and legible.
   2. Each applied film area (as defined as the space between glazing frame components) shall be installed in one full sized piece without (film to film) vertical or horizontal joints.
   3. To minimize waste, the applied film will be cut to specification utilizing a vertical dispenser designed for that purpose. Film edges shall be cut neatly and square at a uniform distance of 1/8-inch to 1/16-inch of the window sealing device.
   4. Clear, clean water shall be used to remove the water soluble overcoat that protects the pressure sensitive adhesive. Water and applied film slip solution shall be used on the glazing to facilitate the proper positioning of the applied film.
   5. To insure efficient removal of excess water from the underside of the film and to maximize bonding of the pressure sensitive adhesive, polyplastic bladed squeegees shall be utilized.
   6. Upon completion, the applied film may have a dimpled appearance from residual moisture. Said moisture shall, under reasonable weather conditions, dry flat with no moisture dimples within a period of 30 calendar days when viewed under normal viewing conditions.
   7. After installation, any left over material shall be removed and the work area will be returned to original condition. Use all necessary means to protect the film before, during and after the installation.
   8. Maintenance: The applied film may be washed using common window cleaning solutions, including ammonia solutions, 30 days after application. Abrasive type cleaning agents and bristle brushes, which could scratch the film, must not be used. Synthetic sponges or soft cloths are recommended.

END OF SECTION
SECTION 09100
NON-LOAD BEARING METAL FRAMING

PART 1 - GENERAL
1.01 SUMMARY

A. Work Included: Furnish all labor, materials, equipment, and related work necessary to complete the non-load bearing metal framing as indicated in the Drawings and specified herein.
1. Non-bearing punched C-studs, ceiling joist studs, and runner track for gypsum board and other boards.
2. All attachment devices required to attach metal framing.
3. Backing for all wall mounted items (such as casework) as shown on Drawings and as specified for the Project in existing and new partitions.
4. Slotted metal top track to permit vertical structural deflection.
5. Resilient channel.
6. Furring channel.
7. Opening metal framing assembly consisting of an engineered header assembly and wide flanged studs.
8. Welded box beam assemblies.
9. Metal stud framing below existing raised floor system.
10. Suspended gypsum board ceilings/soffits.

B. Related Work:
1. Cutting and Patching: Section 01730.
2. Selective Demolition: Section 01732.
3. Casework: Section 06410.
   a. Coordinate the location of required backing for the installation of casework. See Shop Drawings provided under Section 06410 for locations.
4. Building Insulation: Section 07210.
5. Sealants: Section 07900.
7. Acoustical Steel Window: Section 08385.
8. Finish Hardware: Section 08700.
   a. Coordinate the location of required backing for the installation of wall mounted stops.
10. Gypsum Wallboard: Section 09250.
11. Toilet Compartments: Section 10150.
12. Toilet Accessories: Section 10800.
   a. Backing required for surface mounted items in this Section.

1.02 REFERENCED STANDARDS
A. Published specifications, standards, tests, and recommended methods of trade or industry apply to the work of this Section where cited by the abbreviations noted below.

   a. ASTM A607 Specification for Steel, Sheet and Strip, High-Strength, Low-Alloy, Columbium or Vanadium, or Both Hot-Rolled and Cold-Rolled.
   c. ASTM A653 Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
   e. ASTM C645 Standard Specification for Nonstructural Steel Framing Members.
   g. ASTM C754 Standard Specification for Installation of Steel Framing Members to Receive Screw-Attached Gypsum Panel Products.
   h. ASTM C1002 Standard Specification for Steel Self-Piercing Tapping Screws for the Application of Gypsum Panel Products or Metal Plaster Bases to Wood Studs or Steel Studs.
   i. ASTM C1513 Standard Specification for Steel Tapping Screws for Cold-Formed Steel Framing Connections.
   k. ASTM E119 Standard Test Methods for Fire Tests of Building Construction and Materials:
      l. ASTM E136 Standard Test Method for Behavior of Materials in a Vertical Tube Furnace at 750 Degrees C.
      m. ASTM E580 Standard Practice for Installation of Ceiling Suspension Systems for Acoustical Tile and Lay-in Panels in Areas Subject to Earthquake Ground Motions.

2. American Welding Society (AWS):
   a. AWS D1.1 Structural Welding Code—Steel.
   b. AWS D1.3 Structural Welding Code—Sheet Steel.

3. American Iron and Steel Institute (AISI):
   a. North American Specification for the Design of Cold-Formed Steel Structural Members.
   b. Standard for Cold-Formed Steel Framing - General Provisions.


5. California Building Code 2013 (CBC.)


1.03 QUALITY ASSURANCE

A. Section Properties of Studs: Comply with the Specification for the Design of Cold-Formed Steel Structural Members of the American Iron and Steel Institute.

B. Construction Tolerances: Do not exceed 1/8-inch in 8-feet variation from plumb or level.

C. Fire-Resistance Ratings: Comply with fire-resistance ratings as indicated. Provide materials, accessories, and application procedures, which have been listed by UL or tested according to ASTM E119 for the type of construction indicated.

D. Welding: Qualify procedures and personnel according to AWS D1.1 and AWS 1.3.

1.04 DESIGN REQUIREMENTS

Sustainable Design Requirements: Steel used in work of this Section is intended to contribute to meeting requirements for cycled content outlines in LEED NC3.0 Credit MR4.

1.05 SUBMITTALS

A. Submit in accordance with the provisions of the General Condition, Article 3.11

B. Product data: Submit manufacturer’s product data for each item of light-gage framing and accessories.

C. Submit “As Built” drawings indicating location of backing required for surface mounted items, including heights.

D. Welding: Certifications and Qualify Procedures according to AWS D1.1 and AWS D1.3.

E. LEED Submittal:
   1. Steel: Submit letter or product data from manufacture indicating recycled content. Designate percentage of post consumer and post industrial recycled content.
   2. Submit hardcopies of completed Online Documentation required for LEED Credit MR Credit 4.
1.06 DELIVERY AND STORAGE

A. Protect metal framing products from rusting and damage.

B. Deliver to the Project site in manufacturer's unopened container or bundles fully identified with name, brand, type, and grade.

C. Store off the ground in a dry, ventilated space or protected with suitable waterproof coverings.

PART 2 - PRODUCTS

2.01 MATERIALS

A. General: Recycled Content of Steel Products: Provide products with an average recycled content of steel products so postconsumer recycled content plus one-half of preconsumer recycled content is not less than 25 percent.

B. Studs and Runners: Provide punched C-studs with 1¼-inches flange (unless otherwise noted on Drawings) and provide corresponding 1-inch flange (unless otherwise noted on Drawings) channel runners in same gage as studs.

2. General: For screw-type application of wallboard: Atlas, Donn, USG, Western, or approved equal. Where stud size is not indicated, provide the typical stud size indicated in Drawings as partition types and conforms to manufacturer's recommendations and code requirements for minimum size based on partition heights.

a. Provide 3 5/8-inches steel studs and runners for interior partitions, unless otherwise noted.

b. Provide 1 5/8-inches steel studs and runners for furring partitions, unless otherwise noted.

c. Provide 20 or 16-gage steel studs for all partitions as indicated on Drawings. Load bearing partitions are defined as partitions with equipment, casework, bookcase, handrails, plumbing-fixtures and surface mounted items.

d. Provide 4-inches (flange dimension as shown on Drawings) by 16-gage backing plates welded or screwed to studs.

e. Provide nested steel steels as indicated on Drawings.

3. Light Gage Metal Studs: ASTM C645, 20-gage channel studs with corresponding channel tracks in same gage as studs. Minimum yield of 33 ksi.

4. 16-gage and heavier studs and runners shall comply with ASTM A607, minimum yield of 50 ksi.

5. Slotted Metal Top Track: Conform to ASTM A653.

a. 18 gage thick (typical) with a minimum yield of 33 ksi.

b. 2½-inches down-standing legs with ¼-inch by wide by 1½-inches high slots spaced at 1-inch on center.
c. Manufacturer: Slip Track Systems, SLP-TRK, ICC ESR-1042, OSHPD R#0371 (no known equal.)

6. Opening Metal Framing Assembly:
   a. Engineered Header Assembly: ProX Header, 1APM0 02-1086 (no known equal.)
      i. 20 gage thick (typical) conforming to ASTM A653.
      ii. Components:
           a) Outer Member: ProX Outer, X 425 Series.
           b) Insert Member: ProX Insert, XT 162 Series.
           c) Internal Clip: ProX Clip Series: 16 gage.
   b. Wide Flange Studs: 2-inches wide flange stud with ½-inch minimum return conforming to Article 2.01A2.
   c. Fasteners: Self-drilling, self-tapping or "A" point No. 8 wafer head framing screws in accordance with ASTM C1002.
      i. Four each at clip to stud and two each side of flange from header to clip.
      ii. Two each side of flange from track to wide flange stud.

C. Furring Channel: Hat shaped, 20 gage, 2¼-inches wide with 1¼-inches flat web with ¼-inch minimum screw flanges conforming to ASTM C645.
   1. Channels as part of fire rated assembly as indicated on Drawings.

D. Resilient Channel: 25 gage minimum, ½-inch high with single leg mounting flange designed for sound deadening by the resilient channel manufacture.

E. Channel Bridging: Cold-rolled steel, 0.0598-inch minimum thickness of base metal and ¾-inch by 7/16-inch wide flange.

F. Miscellaneous Accessories: Provide stiffener tracks channels angles, straps, bridging, and accessories fabricated from and finished with the same materials as studs and in gage as detailed in Drawings and as required.
   1. Other clips and anchorage accessories as required and detailed.

G. Fasteners:
   1. General: Metal screws as recommended by metal system manufacturer, except as indicated in Drawings. Provide drilled-in anchors into concrete structure in lieu of detailed powder driven fasteners indicated in Drawings when necessary and as required due to the existing site conditions.
   2. Mechanical Fasteners: ASTM C1513, corrosion-resistant-coated, self-drilling, self-tapping steel drill screws of sufficient size to ensure the strength of the connection and as indicated on the Drawings.
      a) Head Type: Low-profile head beneath sheathing, manufacturer's standard.
   3. Powder or Power Actuated Fasteners: Type suitable for intended application, fabricated from corrosion-resistant material, and as indicated on the Drawings and with capability to sustain, without failure, a load equal to 10 times design load.

H. Welding Electrodes: Comply with AWS standards.
2.02 MISCELLANEOUS MATERIALS

A. Fire-Safing Insulation: As specified in Section 07210, Building Insulation.
B. Acoustic Sealants: As specified in Section 07900, Sealants.

2.02 FABRICATION

A. Fabricate cold-formed metal framing and accessories plumb, square, and true to line, and with connections securely fastened, according to referenced AISI's specifications and standards, manufacturer's written instructions, and requirements in this Section.
   1. Fabricate framing assemblies using jigs or templates.
   2. Cut framing members by sawing or shearing; do not torch cut.
   3. Fasten cold-formed metal framing members by welding or screw fastening as standard with fabricator. Wire tying of framing members is not permitted.
      a. Comply with AWS D1.3 requirements and procedures for welding, appearance and quality of welds, and methods used in correcting welding work.
      b. Locate mechanical fasteners and install according to Drawings, with screw penetrating joined members by not less than three exposed screw threads.
   4. Fasten other materials to cold-formed metal framing by welding, bolting, or screw fastening, according to Drawings.
B. Fabrication Tolerances: Fabricate assemblies level, plumb, and true to line to a maximum allowable tolerance variation of 1/8-inch in 10 feet and as follows:
   1. Spacing: Space individual framing members no more than plus or minus 1/8-inch from plan location. Cumulative error shall not exceed minimum fastening requirements of sheathing or other finishing materials.
   2. Square: Fabricate each cold-formed metal framing assembly to a maximum out-of-square tolerance of 1/8-inch.

PART 3 - EXECUTION

3.01 INSPECTION

Inspect surfaces, backing, structural systems, etc., to receive metal framing systems and report any discrepancies. Starting work implies acceptance of existing conditions.

3.02 INSTALLATION

A. Erect metal framing systems in accordance with applicable requirements of References, Standards and Codes Article, referenced manufacturer's specifications, and governing codes. Code requirements shall govern in event of conflict with manufacturer's specifications and as detailed on Drawings.
B. Install metal framing and accessories plumb, square, true to line, true to radius, and with connections securely fastened, according to manufacturer's recommendations and the requirements of this Section.

C. Metal framing installation shall confirm with the 'UL' Design numbers indicated on Drawing and are herein part of the Specification.

D. Attach framing systems securely to building structure. Space and size framing members as indicated on Drawings.

E. At structure-high partitions: Do not fasten any studs, trim or wallboard to flanges of top track to impair free vertical movement.

F. Place 2 beads of acoustic sealant between stud runner tracks and substrates.

G. Backing:
   1. Securely weld or screw cut sections of stud runner track to at least 3 stud locations, leaving the back web flat surface to receive attachment of the surface mounted items specified for the Project.
   2. Verify that any pre-drilling of backing and attachment of spacers to prevent crushing of attached material is done before application of attached material.
   3. Locate backing at the surface mounted location required to secure to wall and/or ceiling. Locate backing at the fastener location of the surface mounted items and as required per the manufacturer's required locations.

H. Resilient Channel Installation:
   1. Install resilient furring channels at right angles (perpendicular) to the framing members. The resilient furring channel shall be positioned with the slotted hole(s) directly over the framing member. The resilient furring channel shall be attached to the framing member using the screw hole provided in the mounting flange. If no screw hole is provided or located at the framing member, attach through the mounting flange.
   2. Resilient furring channels shall be space at 16-inches on-center directly on and over steel framing members but not greater than 24-inches on-center should the steel framing members exceed 16-inches on-center.
   3. Resilient furring channels shall be installed with the mounting flange of the resilient furring channel down, except at the floor or starter row where the mounting flange may be installed with the flange up to accommodate fastening to the framing members.
      a. By keeping the mounting flange down the weight of the gypsum panel products will pull the resilient channel away from the stud improving the sound rating.
4. Install the first (lowest) row of resilient furring channel no more than 2-inches off of the floor and the last (highest) row of resilient furring channel not more than 6-inches from the ceiling.

5. Attach resilient furring channel to framing members with screws only. For steel framing, Type-S x 3/8-inch pan head framing screws may be used.

6. Splicing of resilient furring channel members shall be done by "nesting" the ends (2-inches minimum lap) of the resilient furring channel members directly on and over the framing member and screwing through the mounting flanges into the framing member.

7. Gypsum board shall be attached to the resilient furring channel using a screw length to ensure that the screw point does not make contact with the framing member.

3.03 PROTECTION

A. Protect installed products until completion of Project.

B. Touch-up, repair or replace damaged products before Substantial Completion.

END OF SECTION
PART 1 - GENERAL

1.01 SUMMARY

A. Work Included: Furnish all labor, materials, equipment, and related work necessary to complete gypsum wallboard and cement board work as indicated in the Drawings and specified herein.
   1. Cementitious backer units for ceramic tile.
   2. Sound attenuating gypsum board.
   3. Aluminum reveal and trim molding.
   4. Marking and Identification.

B. Related Work:
   1. Casework: Section 06410.
      a. Prior to application of materials specified herein, internal backing shall be examined, approved and certified. Coordinate with the certification process under Section 06410.
   2. Firestopping and Smokeseals: Section 07270.
   3. Sealants: Section 07900.
   4. Steel Doors and Frames: Section 08100.
   5. Access Panels: Section 08305.
   6. Acoustical Steel Window: Section 08385.
   7. Aluminum Storefront: Section 08400.
   8. Non-Load Bearing Metal Framing: Section 09100.
  10. Painting: Section 09900.
  11. Mechanical: Division 15.

1.02 QUALITY ASSURANCE

A. Published specifications, standards, tests, and recommended methods of trade or industry apply to the work of this Section where cited by the abbreviations noted below.
      c. ASTM C442 Specification for Gypsum Backing Board and Coreboard.
      e. ASTM C475 Standard Specification for Joint Compound and Joint Tape for Finishing Gypsum Board.
g. ASTM C754 Specification for Installation of Steel Framing Members to Receive Screw-Attached Gypsum Board.
h. ASTM C840 Specification for Application and Finishing of Gypsum Board.
i. ASTM C954 Specification for Steel Drill Screws for the Application of Gypsum Board or Metal Plaster Bases to Steel Studs from 0.33-inch to 0.11-inch thickness.
j. ASTM C1002 Specification for Steel Drill Screws for the Application of Gypsum Board or Metal Plaster Bases.
l. ASTM C1280 Specification for Application of Gypsum Sheathing Board.
n. ASTM C1395 Specification for Gypsum Ceiling Board.
o. ASTM C1396 Specification for Gypsum Board.

a. ANSI A97.1 Standard Specifications for the Application and Finishing of Wallboard.
b. ANSI A108.11 Standard for Interior Installation of Cementitious Backer Units.
c. ANSI A118.4 Specifications for Latex-Portland Cement Mortar.
d. ANSI A118.9 Specifications for Cementitious Backer Units.

3. Federal Specifications (FS.)

4. Gypsum Association (GA):
b. GA-216 Application and Finishing of Gypsum Panel Products.


6. Leadership in Energy and Environmental Design (LEED.)

B. Construction Tolerances:
1. Gypsum wallboard surfaces shall have no measurable variation in any two-foot direction, and a maximum variation of 0.01-inch in 10-feet of length when a straightedge is laid on the surface in any direction.
2. Shim work as required to comply with specified tolerances.
3. Do not exceed 1/16-inch offset between places of abutting sheets at edges or ends.

1.03 DESIGN REQUIREMENTS

Sustainable Design Requirements: Products used in work of this Section is intended to contribute to meeting requirements for cycled content outlines in LEED NC3.0 Credit MR4.

1.04 SUBMITTALS
A. Submit in accordance with the provisions of the General Conditions, Article 3.11.

B. Product Data: Submit manufacturer's technical literature for all materials.

C. Certificates: Certificates of compliance with standards designated.

D. Marking and Identification: Submit the graphics if using stencil or submit sign type in conformance to Article 3.04.

E. LEED Submittal:
   1. Recycled Content: Submit letter or product data from manufacture indicating recycled content. Designate percentage of post consumer and post industrial recycled content.
   2. Submit hardcopies of completed Online Documentation required for LEED Credit MR Credit 4.

1.05 DELIVERY, STORAGE, AND HANDLING

A. Deliver materials to the Project site with manufacturer's labels intact and legible.

B. Store materials indoor, under cover, and stack flat.

C. Stack wallboard so that long lengths are not over short lengths.

D. Wallboard shall not be stored or stacked on floors of new work in excess of 50 pounds per square foot equivalent loading.

1.06 JOB CONDITIONS

A. Environmental Conditions:
   1. Temperature: During cold weather, in areas receiving wallboard installation, maintain temperature range between 55 and 70 degrees F. for 24 hours before, during and after gypsum wallboard and joint treatment application.
   2. Ventilation:
      a. Provide ventilation during and following adhesives and joint treatment application.
      b. Use temporary air circulators in enclosed areas lacking natural ventilation.
      c. Under slow drying conditions, allow additional drying time between coats of joint treatment.
      d. Protect installed materials from drafts during hot, dry weather.

B. Protection: Protect adjacent surfaces against damage and stains.

PART 2 - PRODUCTS

2.01 MATERIALS
A. Gypsum Wallboard:
   1. Typical Gypsum Wallboard: ASTM C36 and ASTM C1396 or FS SS-L-30D, Type III, Class 1, %-inch.
   2. Fire Rated Gypsum Wallboard: ASTM C36 and ASTM C1396 or FS SS-L-30D, Type III, Class 1, %-inch, Type "X" UL labeled and approved for one-hour fire rating.
   3. Gypsum Wallboard (Typical and Rated) at wet locations: ASTM C630 and ASTM C1396 or FS SS-L-30D, Type VII, Water resistant.
   4. Edges: Tapered and rounded.

B. SOUND ATTENUATING GYPSUM BOARD
   1. Acceptable Manufacturer: CertainTeed Gypsum, Inc. or equal.
      a. Basis of Design: CertainTeed SilentFX Gypsum Board.
   2. Laminated noise-reducing gypsum board consisting of two layers of dense gypsum board encased in smooth, moisture and mold resistant paper facings laminated together with noiseproofing compound.
   3. Type and Thickness: Type X, 5/8 inch thick where indicated and as otherwise required to meet fire rating for specific element.
   4. Surface Paper: 100% recycled moisture and mold resistant paper on face, back and long edges.
   5. Acoustical Sealant: Green Glue Company, Green Glue Noiseproofing Sealant or equal.

C. Gypsum Board Fasteners: ASTM C1002, Metal screws as recommended by metal system manufacturer. Use S-12 screws for 20-gage or heavier metal.

D. Gypsum Board Joint Treatment Materials:
   1. Joint Tape:
      a. ASTM C475 or FS SS-J-570, Type II.
      b. Perforated tape.
   2. Joint Compound:
      a. ASTM C475 or FS SS-J-570, Type I.
      b. Ready-mixed joint compounds.
      c. All-purpose joint compound.
   3. Prefill Joint Compound:
      a. ASTM C475 or FS SS-J-570, Type I.
      b. Powdered joint compound.

E. Miscellaneous Items: Furnish components not specified herein but shown on the Drawings and other items required to complete the installation.
   1. Accessories shall conform to ASTM C1047.
      a. Extra wide corner angle where noted to cover the edges of two layers of gypsum board.
   2. Aluminum Reveal and Trim Molding: Extruded accessories of profiles and dimensions indicated on Drawings.
      a. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
         i. Gordon, Inc. (Manufacture numbers specified for profile and quality.)
PART 3 - EXECUTION

3.01 INSPECTION

A. Check framing for accurate spacing and alignment.

B. Verify that spacing of installed framing does not exceed maximum allowable for thickness of wallboard to be used.

C. Do not proceed with installation of wallboard until deficiencies are corrected and surfaces to receive wallboard are acceptable.

D. Protrusions of framing, twisted framing members or unaligned members must be repaired before installation of wallboard is started.

E. Verify that backing for wall mounted items are in place.

3.02 APPLICATION

A. Gypsum Wallboard:
a. Attach wallboard to metal studs and backing with 1-inch type S-12 Bugle Head - corrosion resistant at exterior installation.
b. Wallboard installation shall confirm with the 'UL' Design numbers indicated on Drawing and are herein part of the Specification.
c. Float corners 8-inches where walls and ceilings meet and trim does not cover.

2. Cutting and Fitting:
   a. Cut all openings neatly and accurately.
   b. Wallboard, which has chipped or broken edges at any openings or any oversized cut-out will be rejected.
   c. "Back cutting" at openings greater that 30 degrees is not permitted.

3. Screw Fasteners:
   a. Walls shall be screwed at a maximum of 7-inches on center and ceilings at 6-inches on center, if applicable.
   b. Do not break through paper surface of wallboard.

4. Remove and replace any sheets damaged in handling or installation.

5. Leave walls in a clean condition ready for taping and painting.

6. Taping And Finish:
   a. Apply joint compound in accordance with manufacturer's recommendations.
   b. Apply not less than two separate coats of joint compound over joints, fastener heads, and metal flanges to make depressions flush, except as recommended for wall tile installation.
   c. Feather off smooth from nose of flanges and centerline of joints.
   d. Provide minimum 24 hours of drying time between applications of compound.

7. Provide gypsum wallboard finishes as follows in accordance with ANSI A97.1, GA-214 and GA-216:
   a. Level 2: For rooms receiving paneling and other applied finishes over gypsum wallboard.
   b. Level 4: Typical surface for painting, unless otherwise noted. Scrape and sand to smooth surface.

B. Sound Attenuating Gypsum Board Installation:
   1. Cut boards at penetrations, edges, and other obstructions of work; fit tightly against abutting construction, unless otherwise indicated.
   2. Install boards with a ¼-inch setback at wall-to-floor intersections.
   3. Allow no joints greater than 1/8-inch.
   4. Apply acoustic sealant at perimeter of boards and around all penetrations.
   5. Install putty pads at all electrical receptacles and switch locations.
   6. Apply fasteners so fasteners bear tightly against face paper; countersink slightly and avoid damaging face paper.

C. Cementitious Backer Units: Provide where ceramic tile is indicated on Finish Schedule in Drawings.
1. Space board fasteners not less than 3/8-inch for more than 5/8-inch from edges and ends of board. While fasteners are being driven, hold board in firm contact to face of stud framing. Proceed from the center portion of the board and end toward the ends and edges.

2. If board breaks due to fastener. Drive additional fastener approximately 2-inches from previous faulty fastener.

3. Drive fastener so head penetration is just below the board surface without breaking the board surface or stripping the framing member around the fastener.

4. Space fasters at 8-inches on center on vertically and horizontally to studs.

5. Fill gaps between panels with specified latex-Portland cement mortar; embed 2-inches wide fiberglass mesh tape in skim coat of the same mortar over joints and in corners.

6. Apply skim coat of same mortar to bring wall to acceptable tolerances; do not exceed manufacturer's recommended thickness of materials.

7. Allow material to cure in accordance with mortar manufacturer's instructions before application of additional materials.

8. Control Joints: Allow maximum of 30-lineal feet between joints. Provide additional joints:
   a. At change of partition shape such as when a radius begins.

3.03 MARKING AND IDENTIFICATION

A. Fire rated assemblies shall be effectively and permanently identified with signs or stenciling. Such identification shall:
   1. Be located in accessible concealed floor, floor-ceiling or attic spaces.
   2. Be repeated at intervals not exceeding 30 feet measured horizontally along the wall or partition; and
   3. Include lettering not less than 0.5-inch in height, incorporating the wording: "FIRE AND/OR SMOKE BARRIER-PROTECT ALL OPENINGS," or other wording.

3.04 PROTECTION OF FINISHED WORK

Provide proper procedures for the protection of completed wallboard from damage or deterioration until acceptance of the work.

END OF SECTION
PART 1 - GENERAL

1.01 SUMMARY

A. Work Included: Provision of ceramic tile and accessories where shown on the Drawings, as specified, and as needed for a complete and proper installation.

B. Related Work:
1. Cast-in-Place Concrete: Section 03300.
2. Cementitious Underlayment: Section 03550.
3. Sealants: Section 07900.
4. Finish Hardware: Section 08700.
5. Gypsum Wallboard: Section 09250.
   a. Cement board at ceramic wall tile.
6. Toilet Compartments: Section 10150.
7. Toilet Accessories: Section 10800.

1.02 REFERENCED STANDARDS

A. The following references, codes, and standards are hereby made a part of this Section; and lathing shall conform to the applicable requirements therein, except as otherwise specified herein or shown on the Drawings. Nothing in the Drawings or these Specifications shall be construed as permitting work, which is contrary to code requirements.

   a. ANSI A108.1 Installation of Ceramic Tile Portland Cement Mortar.
   b. ANSI A108.5 Installation of Ceramic Tile, with Dry-Set Portland Cement Mortar or Latex Portland Cement Mortar.
   c. ANSI A118.1 Dry-Set Portland Cement Mortar.
   d. ANSI A118.3 - Chemical Resistant, Water-Cleanable Tile Setting and Grouting Epoxy and Water-Cleanable Tile Setting Epoxy Adhesive.
   e. ANSI A118.4 Latex Portland Cement Mortar.
   f. ANSI A136.1 Organic Adhesives, Type I Adhesive and Type II Adhesive.
   g. ANSI A137.1 Standard Specifications for Ceramic Tile.

2. Tile Council of America (TCA); Handbook for Ceramic Tile Installation.


g. ASTM C847 Standard Specification for Metal Lath.

h. ASTM C1028 Standard Test Method for Determining the Static Coefficient of Friction of Ceramic Tile and Other Like Surfaces by the Horizontal Dynamometer Pull-Meter Method.


j. ASTM D87 Standard Test Method for Melting Point of Petroleum Wax (Cooling Curve.)


5. Leadership in Energy and Environmental Design (LEED.)

1.03 PERFORMANCE AND DESIGN REQUIREMENTS

A. Static Coefficient of Friction: Tile on walkway surfaces shall be provided with the following values as determined by testing in conformance with ASTM C1028.

   1. Level Surfaces: Minimum of 0.6 (Wet).

B. Sustainable Design Requirements:

   1. Tiles used in work of this Section is intended to contribute to meeting requirements for cycled content outlines in LEED NC3.0 Credit MR4.

   2. Adhesives used in work of this Section are intended to reduce quantity of indoor air contaminants that are harmful to comfort and well-being of installers and occupants and are to be formulated to be within VOC content limits outlined in LEED NC3.0, Credit EQ4.1.

1.04 QUALITY ASSURANCE

Installer shall be a firm with a minimum of 5 years of successful experience in the industry with comparable projects.

1.05 SUBMITTALS

A. Submit in accordance with the provisions the General Conditions, Article 3.11.
B. Samples:
1. Tile: Submit three full-size samples of each color, size, and type of tile specified.
2. Submit grout colors for color selection.
3. Approved sample shall be used as Architect’s Control Sample.

C. Product Data: Submit manufacturer’s product data on tiles, bonding materials, grouting and adhesive.

D. Manufacturer’s Maintenance Guides: Furnish maintenance guides for the District’s use in maintaining all the Work specified.

E. LEED Submittal:
1. Recycled Content: Submit letter or product data from manufacture indicating recycled content. Designate percentage of post consumer and post industrial recycled content.
2. Adhesively: Submit letter of product data from manufacture stating that adhesives used in work of this Section do not exceed VOC content limits established in South Coast Air Quality Management District, Rule 1168.
3. Submit hardcopies of completed Online Documentation required for LEED MR Credit 4 and EQ Credit 4.1.

1.06 DELIVERY, STORAGE, AND HANDLING

A. Tile cartons shall be grade-sealed by manufacturer in accordance with ANSI A137.1. Grade seals shall be unbroken.

B. Manufactured mortars and grouts shall contain hallmarks certifying compliance with reference standards and are types recommended by tile manufacturer for application.

C. Deliver dry-set mortar in sealed, moisture-proof containers.

1.07 PROJECT CONDITIONS

A. Environmental: Comply with minimum temperature recommendations of manufacturers for bonding and grouting materials.
   1. If manufacturer has no recommendations, maintain temperature at not less than 50 degrees F. during tile installation and for at least 7 days after completion of installation.
   2. Do not install adhesives in an unventilated environment.

B. Protect adjoining work surfaces before tile work begins. Close spaces in which tile is being set to traffic and other work; keep closed until firmly set.

1.08 EXTRA MATERIALS

Provide for District’s use a minimum of 2 percent of the primary sizes and colors of tile specified, boxed and clearly labeled.
PART 2 - PRODUCTS

2.01 MATERIALS

A. General Requirements:
      a. Factory Blending: For tile exhibiting color variations within the
         ranges selected under Submittal of samples, blend tile in the
         factory and package so tile taken from one package shows the
         same range of colors as those taken from other packages.
      b. Mounting: For factory mounted tile, provide back or edge
         mounted tile assemblies as standard with the manufacturer,
         unless otherwise specified.
      c. Factory Applied Temporary Protective Coatings: Where
         indicated under tile type, protect exposed surfaces of tile
         against adherence of mortar and grout by precoating with a
         continuous film of petroleum paraffin wax applied hot. Do not
         coat unexposed tile surfaces.

   2. Colors and Patterns: Colors and patterns of tile shall be selected by
      Architect, unless otherwise indicated.
      a. Selection will be within limits of selected manufacturer's type
         group.
      b. Color and finish of trim shapes shall match selected tile for
         scheduled area.
      c. Field colors shall be selected by Architect from manufacturers’
         standard colors, Price Group 1, Accent colors shall be selected
         by Architect from manufacturers’ accent colors, highest price
         group. Pattern as described on Drawings.

2.02 TILE

A. Wall Tile: 36 percent pre-consumer recycled content. 1.5 percent post-
   consumer recycled content.
   1. Field Tile: Dal-Tile Modern Dimensions 4¼-inches by 12 7/8-inches
      (nominal) by 5/16-inch thick.
      a. Material Type: Glazed.
      b. Color: As indicated on Drawings.

      Accent K061, 1-inch x 12-inches.

B. Floor Tile at Toilets: 7 percent pre-consumer recycled content.
   1. Field Size: 2-inches by 2-inches and 2-inches by 4-inches by ¼-inch
      thick.
      a. Trim: (based upon Daltile.)
         i. Cove C-833: 1-inch by 2-inches.
         iii. Round Outside Corner Cove: SCR-L-833, 1-inch by 2-
             inches or SC813, 2-inches by 2-inches.
2. Type: Unglazed Porcelain Mosaic.
3. Manufacture: Daltile, Keystones; or equal.
   a. Colors: As indicated on Drawings. The Architect shall determine if the color of other manufacturers are equal to the colors indicated on the Drawings from Daltile.
5. Typical flooring tiles shall have a friction coefficient of .06 as determined by testing identical products per ASTM C1028.
6. Base Floor Tile Assembly Height: 2 rolls of 2-inches by 2-inches tiles over 1-inch high cove.
   a. 6-feet high wall tiles provided above base floor tile assembly.

2.03 MISCELLANEOUS TILE

A. Trim Shapes and Bases: Provide bullnose, returns, trimmers, and other shapes, both standard and special, to finish installation and as specified and indicated on the Drawings.

2.04 SETTING MATERIALS

A. Portland Cement: ASTM C150, Type 1.
B. Hydrated Lime: ASTM C206 or ASTM C207, Type S.
C. Sand: ASTM C144.
D. Water: Clean and potable.
E. Dry-Set Mortar: Conforming to ANSI A118.1 or equal to TCA Formula 759.
F. Latex Portland Cement Mortar: Conforming to ANSI A118.4.
H. Organic Adhesive: ANSI A136.1, Type I, with a VOC content of 65 g/L or less when calculated according to 40CFR59, Subpart D (EPA Method 24).
I. Urethane Waterproofing and Tile-Setting Adhesive: One-part liquid-applied urethane with a VOC content of 65 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24), in a consistency suitable for trowel application and intended for use as both waterproofing and tile-setting adhesive in a two-step process.
   1. Comply with ANSI 118.10 for waterproof membranes.
      a. Products:
         i. Bostik; Hydroment Ultra-Set.
         ii. Southern Grouts & Mortars, Inc.; Deck-Seal 1000.
         iii. Or equal.
J. Tile Cleaner: A neutral cleaner capable of removing soil and residue without harming tile and grout surfaces, specifically approved for materials and installations indicated by tile and grout manufacturers.

K. Grout Sealer: Manufacturer's standard silicone product for sealing grout joints that does not change color or appearance of grout.

2.05 GROUTING MATERIALS

A. Epoxy Grout: 100 percent solids epoxy grout conforming to ANSI A118.3, with low odor.

B. Coloring Materials for Colored Joints: Standard commercial brand of chemically inert coloring material accurately measured by weight in definite manner for each batch of grout to produce consistently even color.
   1. Colors shall be selected by the Architect from samples prepared and submitted by the Contractor.

C. Sealant: Provide manufacturer's standard chemically curing, elastomeric sealants of base polymer and characteristics indicated that comply with applicable requirements in Section 07900, Sealants.
   1. Use sealants that have a VOC content of 250 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).

2.06 SOURCE QUALITY CONTROL

A. Grade Marking and Certification.
   1. Ceramic tile shall meet or exceed Standard Grade requirements of ANSI A137.1.
   2. Provide Master Grade certificate and Grade labels in accordance with requirements of ANSI A137.1.

PART 3 - EXECUTION
3.01 INSPECTION OF SURFACES

A. Examine surfaces to receive ceramic tile or accessories before tile installation begins for:
   1. Defects or conditions adversely affecting quality and execution of tile installation.
   2. Deviations beyond allowable tolerances of surfaces to receive tile of 1/8-inch in 8-feet.

B. Condition of Surfaces to Receive Tile:
   1. Surfaces shall be firm, dry, clean and free of oily or waxy films.
   2. Grounds, anchors, plugs, hangers, bucks, and electrical and mechanical work in or behind tile shall be installed prior to proceeding with tile work.

C. Do not proceed with installation work until unsatisfactory conditions are corrected.
3.02 INSTALLATION

A. Install in accordance with manufacturer’s recommendations and with the following standards.

1. Toilet Wall Tile: ANSI A108.5.
   a. Observe the following trim shapes and bases:
      i. Inside corners: Square.
      ii. Outside corners: Bullnose.
      iii. Jambs – square butt joint where tile work projects from face of jamb.
      iv. Miscellaneous: Provide stops, angles, trimmers, returns, and other shapes shown or required to produce a completely finished installation.

2. Bullnose/Coved Base: TCA Method W243 in conjunction with F122.

3. Floor Tile:
   a. Depress slab condition, On Concrete, Concrete Topping, or Cementitious Underlayment: TCA F122 installation method, tile on latex-Portland cement mortar bond coat over waterproofing.
      i. Cementitious underlayment materials specified in Section 03550.
         a). Slope cementitious underlayment 1/8-inch per foot towards drain.
         b). The top of the ceramic tile and therefore the high point of ceramic tile shall be set based upon the threshold details provided in Drawings. The high point shall be maintained through-out along the perimeter of the room.
      b. On Existing Mortar Bed Over Existing Mortar Bed with Lath and Waterproofing Over Existing Concrete: TCA F112 installation method, tile on latex-Portland cement mortar bond coat over waterproofing.
         i. Remove existing ceramic tile and portion of existing mortar bed as indicated on Drawings. Prepare surface for ceramic tile over mortar bed.
            a). Remove existing mortar bed and existing waterproofing where indicated on Drawings. Provide waterproofing.
            b). Provide waterproofing and mortar bed with lath where indicated on Drawings
         ii. Slope mortar bed 1/8-inch per foot towards drain.
         iii. The top of the ceramic tile and therefore the high point of ceramic tile shall be set based upon the threshold details provided in Drawings. The high point shall be maintained through-out along the perimeter of the room.


B. Laying Out Tile Work: Verify layout of each room with Architect before proceeding with installation.
1. Lay out tile work so that insofar as possible, no tile less than half full size occurs.
2. Lay out tiles on walls and floors so that fields and patterns center exactly on individual wall areas.
   a. Exterior angles shall be bullnose.
3. Align joints vertically and horizontally.
4. Tile joints shall be the same width as joints of adjacent tile.

C. Cutting of Tiles:
1. Do all cutting and drilling without marring the tile.
2. Rub cuts smooth with a fine abrasive stone.
3. Set no cut edge against any fixture, cabinet, or other tile without a joint at least 1/16-inch wide.
4. Miter cove tile at inside corners.
5. Fit tile around all electric outlets, plumbing pipes, fixtures, and fittings close enough to permit standard plates and collars to overlap the tile.

D. Setting:
1. Use all products in accordance with the written recommendations and directions of the manufacturer.
2. Proportion mixes in accordance with the latest ANSI Standard Specification.
3. When cutting is required, grind edges smooth. Smooth all exposed cut edges. Ensure cut edges are clean before installing tiles.
4. Firmly imbed tile in setting material with finished surfaces brought to true planes, sloped uniformly, where required, to drain.
5. Fit tile carefully against trim and porcelain accessories, around pipes, electric boxes, and other built-in fixtures so that escutcheons, plates, and collars will completely overlap cut edges.
6. When using glazed tile sheets, drill pipe holes to minimize tearing of sheets.
7. Be sure tile work is free of grout film upon completion.

E. Grouting:
1. Follow grout manufacturer's written recommendations for grouting procedures and precautions.
2. Allow at least 24 hours to elapse before grouting to permit solvents of adhesive material to escape.
3. Thoroughly brush and wash out joints; where required, saturate with clean water before grouting.
4. Fill entire depth of joints with grout.
5. Grout square edge tile joints flush with face of tile making neatly finished smooth surface.
6. Grout joints of other than square edge tiles to full depth, then remove grout to expose modified edges.
7. Take precautions to prevent staining grouted joints.
8. At outlets, pipes, and fittings, caulk with butyl rubber caulking; do not grout.
9. Remove grout haze, observing both tile and grout manufacturers' recommendations as to the use of acid and chemical cleaners.
10. Rinse tile work thoroughly with clean water before and after chemical cleaners.
11. Polish surface of tile work with soft cloth.

3.03 ADJUSTMENT AND CLEANING
A. Remove cracked, stained, broken, or damaged tile; replace with new tile.
B. Clean tile surfaces as thoroughly as possible on completion of grouting.
C. Remove all grout haze, observing grout manufacturers’ recommendations as to use of acid and chemical cleaners.
D. Rinse tile work thoroughly with clean water before and after using chemical cleaners.
   1. Use no acids or abrasive soaps on tile, except as approved by tile manufacturer.
   2. All tile having stains or discolorations shall be replaced.

3.04 PROTECTION
A. Apply a protective coat of neutral cleaner solution, one part cleaner to one part water, to all clean, completed tile walls and surfaces.
B. Maintain building paper cover on floor to protect from construction dirt.
C. Just before final acceptance of tile work, rinse protective coat of neutral cleaner from all tile surfaces.
D. Prohibit foot and wheel traffic on newly tiled floors for at least 3 days, preferably 7 days.

END OF SECTION
PART 1 - GENERAL

1.01 DESCRIPTION

A. Work Included: Provide suspended ceiling grid and acoustical ceiling tiles for a complete as shown and as specified.
   1. 12-inches x 12-inches glue-on ceiling tiles to match existing.
   2. Flat blade aluminum eggcrate louver laid in perimeter ceiling angles.

B. Related Work:
   1. Cutting and Patching: Section 01730.
   2. Selective Demolition: Section 01732.
   4. Miscellaneous Specialties: Section 10900.
      a. Project mounting assembly attached to suspended ceiling assembly.
      b. Ceiling tile and panels shall be cut to provide for NTP (pipe) and electrical junction boxes through tiles and panels.

1.02 INCORPORATED DOCUMENTS

A. Published specifications, standards, tests, or recommended methods of trade or industry apply to the work of this Section where cited by the abbreviations noted below.
      b. ASTM A653 Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
      d. ASTM C635 Metal Suspension System for Acoustical Tile and Lay-in Panel Ceilings.
      e. ASTM C636 Installation of Metal Ceiling Suspension systems for Acoustical Tile and Lay-in Panels.
      h. ASTM E84 Surface Burning Characteristics of Building Materials.

j. ASTM E1264 Classification for Acoustical Ceiling Products.


3. California Building Code (CBC.)


B. Where conflicts exist among the referenced standards, the standard affording the greatest protection shall govern.

1.03 DESIGN REQUIREMENTS

Sustainable Design Requirements: Products used in work of this Section are intended to contribute to meeting requirements for cycled content outlined in LEED NC3.0 Credit MR4.

1.04 SUBMITTALS

A. Submit in accordance with the provisions of the General Conditions, Article 3.11.

B. Materials List: List items proposed to be provided under this Section.

C. Product Data: Manufacturer's literature of acoustical material and suspension system.

D. Shop Drawings: Clearly indicate grids layout and related dimensioning, junctions with other work or ceiling finishes, and interrelation of mechanical and electrical items related to system.

E. Samples:

1. Submit two 12-inches square sample of each type of acoustical material.

2. Submit one 12-inches long sample of each suspension system member and molding.

F. LEED Submittal:

1. Suspension System: Submit letter or product data from manufacture indicating recycled content for each. Designate percentage of post consumer and post industrial recycled content.

2. Panels and Tiles: Submit letter or product data from manufacture indicating recycled content for each. Designate percentage of post consumer and post industrial recycled content.
3. Submit hardcopies of completed Online Documentation required for LEED Credit MR Credit 4.

1.05 QUALITY ASSURANCE

A. Single-Source Responsibility: Provide acoustical panel units and grid components by a single manufacturer.

B. Deflection:
   1. Suspension system components, hangers, and fastening devices supporting light fixtures, ceiling grilles, and acoustical units: maximum allowable deflection 1/360 of the span.
   2. Deflection test: Comply with the requirements of ASTM C635.

C. Fire Performance Characteristics: Identify acoustical ceiling components with appropriate markings of applicable testing and inspecting organization.
   1. Surface Burning Characteristics: As follows, tested per ASTM E84 and complying with ASTM E1264 for Class A products.
      a. Flame Spread: 25 or less.
      b. Smoke Developed: 50 or less.

D. Coordination of Work: Coordinate acoustical ceiling work with installers of related work including, but not limited to building insulation, gypsum board, light fixtures, mechanical systems, electrical systems, and sprinklers.

1.06 DELIVERY, STORAGE, AND HANDLING

A. Deliver materials in the original unopened protective packaging with the manufacturer's labels intact and legible, indicating brand name pattern, size, thickness, and fire rating.

B. Deliver acoustical products only after glazing has been completed, exterior openings have been closed in, and wet work has been completed and dried out.

C. Store materials in their original protective packaging to prevent soiling, damage, and wetting. Open cartons at each end to stabilize moisture content and temperature.

1.07 WARRANTY

A. Acoustical Panel: Submit a written warranty executed by the manufacturer, agreeing to repair or replace acoustical panels that fail within the warranty period. Failures include, but are not limited to:
   1. Acoustical Panels: Sagging and warping.
   2. Grid System: Rusting and manufacturer's defects.

B. Warranty Period:
   1. Acoustical panels: Ten (10) years from date of Substantial Completion.
2. Grid: Ten (10) years from date of substantial completion.

C. The Warranty shall not deprive the District of other rights the District may have under other provisions of the Contract Documents and will be in addition to and run concurrent with other warranties made by the Contractor under the requirements of the Contract Documents.

1.08 PROJECT CONDITIONS

A. Environmental Conditions:
1. Examine the conditions under which the work is to be performed. Do not proceed until unsatisfactory conditions have been corrected.
2. Maintain a uniform temperature in the range of 55 to 70 degrees Fahrenheit prior to, during, and after installation of material installed.

1.09 MAINTENANCE

A. Extra Materials:
1. Prior to final acceptance of the Project, furnish the District with three percent of each type of acoustical material installed.
2. Provide the materials in either unopened manufacturer's cartons or dustproof packaging, plainly marked, indicating type and quality of contents.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Acoustical Board or Panel:
1. General: Provide antimicrobial protection against the growth of mold/mildew and gram positive and gram negative odor and stain causing bacteria.
2. Type 1: CertainTeed Ceilings, Ecophon 3542 1512; or approved equal.
   b. Board Size: 24-inches by 48-inches by ¾-inch thick.
   c. NRC Rating: 0.85.
   d. Recycled Content: 70 percent post-consumer materials and 1 percent pre-consumer materials.
   e. Fully Concealed Edge.
   f. Fire Rating: Class A.
   g. Color: White
3. Type 2:
   a. Type 2A: Armstrong Metal Works Vector, White Micro Perforations with white acoustical fleece and BioAcoustic in-fill backing 5479; or approved equal. **NOTE:** White Fleece requires longer lead time.
   b. Type 2B: Armstrong Metal Works Vector, White Micro Perforations with black acoustical fleece and BioAcoustic in-fill backing 5479; or approved equal.
   c. Material: Electrogalvanized Steel, 0.021-inch thick.
d. Panel Size: 24-inches by 24-inches for ¼-inch reveal.

e. NRC Rating: 0.70.


g. Fire Rating: Class A, Type XX, Pattern G.

h. Quantity of each perforation pattern:
   i. 72% with the white fleece back.
   ii. 28% with the black fleece back.
   iii. Random pattern as indicated on Drawings.

i. Finish/Color: Factory applied powder coated finish, White.

j. Accessories:
   i. 2-inches trim channel (Armstrong AXIOM).
   ii. No cut panels.

4. Type 3: Match existing 12-inches by 12-inches glue-on acoustic ceiling tiles similar to Armstrong World Industries (or equal) from one of the following: 592 Fine Fissured - ⅜-inch thick., 741 Fine Fissured - ½-inch thick, or 746 Fine Fissured - 5/8-inch thick. Factory prime backed for adhesive installation. Field verify existing tile thickness and match accordingly.

a. Surface Texture: Medium.

b. Composition: Mineral Fiber.


d. Noise Reduction Coefficient (NRC): ASTM C423; Classified with UL label on product carton, 0.65.

e. Ceiling Attenuation Class (CAC): ASTM E1414; Classified with UL label on product carton, 35.

f. Articulation Class (AC): ASTM E1111; Classified with UL label on product carton N/A.

g. Flame Spread: ASTM E1264; Class A (UL)

h. Light Reflectance (LR): ASTM E1477; White Panel: Light Reflectance: 0.85.

i. Dimensional Stability: HumiGuard Plus - temperatures up to 120 degrees F and high humidity excluding only exterior use, use over standing water, and direct contact with moisture .

j. Mold/Mildew Inhibitor: The front and back of the product have been treated with BioBlock, a paint that contains a special biocide that inhibits or retards the growth of mold or mildew, ASTM D3273.

k. Moldings: Manufacturer's Slip-On Wall Edge Molding.

l. Size: 10 feet long with 15/16-inch flange for the thickness of tile being installed.

m. Color: White to match tile.

n. Adhesive: W.W. Henry #237 Acousti-Gum or as recommended by ceiling tile manufacture.

B. Mechanical Suspension System: Armstrong World Industries, Prelude XL HRC (heavy duty) with typical 7/8-inch hemmed perimeter angle molding (or equal) with color of the selected ceiling boards/panels; or equal.

1. Metal suspension system shall meet the requirements of ASTM C635, Heavy-duty Classification.
2. Attachment Devices: Size for 5 times design load indicated in ASTM C635, Table 1, Direct Hung.

3. Hanger Wires: Galvanized carbon steel, ASTM A641, soft temper, prestretched, yield-stress load at least 3 times design load, but not with less than 12 gage.

4. Straps, Tubes, and Angles: Provide galvanized steel as required to meet state and local requirements for seismic design loads.

5. Finishes: All components of the suspension system shall be finished in accordance with ASTM C635, normal use environment. Provide manufacturer's standard baked enamel finish for exposed components. Match colors of boards.

6. Components and Manufacturers: Main beams fabricated from painted commercial quality extruded aluminum and cross tees, base metal and end detail, fabricated from painted commercial quality hot dipped galvanized steel complying with ASTM A653.

   a. Main beams and cross tees have 15/16-inch type exposed flange design. Exposed surfaces chemically cleansed, capping prefinished galvanized steel in baked polyester paint. No visual crimp marks or punch-outs on main beams or cross tees.

   b. Main runners and cross tees shall be compatible with the acoustical boards borne by them.

7. Seismic clips from the following manufactures with compatible suspension system.

   a. Armstrong BERC as tested per ICC ESR 1308.
   b. Chicago Metallic 1496 as tested per ICC ESR 2631.
   c. Donn/USG ACM per ICC ESR 1222.

2.02 OTHER MATERIALS

A. Provide other materials not specifically described but required for a complete and proper installation.

B. Flat Blade Aluminum Eggcrate Louver: 1-inch by 1-inch cells by 1-inch high (blade thickness .025-inch) in opening size as indicated on Drawings.

   1. Perimeter Angle Molding (for louver frame): Same as the typical 7/8-inch hemmed perimeter angle molding for suspended ceiling assemblies in Article 2.01B.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Examine areas to receive acoustical treatment and verify that:

   1. Installation of building components located in ceiling space is complete.
2. Spacing, direction, and details of grid members and supports to accommodate installation of light fixtures, diffusers, and other items as shown on the Drawings are correct.

3. Areas are clean and free of materials or rubble that could damage acoustical surfaces.

B. Coordination: Coordinate with other work involved to determine areas of potential interference. Do not start installation of suspension system until interferences have been resolved. Ensure suspension system is located to accommodate fittings and units of equipment which are to be after installation of ceiling grid.

C. Obtain the Constructor's approval before proceeding with the installation of acoustical surfaces.

3.02 INSTALLATION OF SUSPENSION SYSTEM - GENERAL

A. Install suspension system in accordance with manufacturer's printed instructions, reviewed shop drawings, and the requirements of ASTM C636 and DSA IR 25-2.

B. Hangers: Hanger spacing shall be 48-inches maximum center to center and not more than 8-inches from perimeter walls. Plumb hanger wires. Provide additional hangers as required to prevent eccentric deflection and rotation of supporting runners. Where ducts or other equipment prevent regular spacing hangers, reinforce nearest adjacent hangers and related carrying channels are required distance. Do not penetrate ductwork with hanger wires. Provide hanger wires at the intersections of grid members at corners of light fixtures. Provide hanger wire supports for all recessed light fixtures for total support independent of acoustical ceiling systems.

C. Mechanical Suspension System: Space main runners and cross tees to support acoustical boards and other work resting in or on the ceiling as required to comply with specified performance requirements. Support runners directly form hangers; do not bear on walls or partitions.

D. Edge Molding: Install edge molding where suspended ceiling meets vertical surfaces. Miter joints where moldings intersect at corners; do not bend molding around corners. Provide corner caps. Plastic joints or fasteners will not be permitted. Provide fixed condition on 2 adjacent walls, and provide ½-inch space at free wall conditions.

E. Lateral Force Bracing: Provide horizontal restraints consisting of four wired spalled 90 degrees for each other at an angle not exceeding 45 degrees from the plane of the ceiling. Horizontal restraints shall be located 12 feet on center in both directions with the first point within 6 feet from each wall. At each point of horizontal restraint provide also a vertical strut extended and fastened to structure above the resist the vertical component induced by the bracing wires.
F. Perimeter Members: Provide hanger wires at 8-inches maximum form the ends of main runners and cross tees along the ceiling perimeter. Ends of runners and tees shall be tied together to prevent their spreading.

G. Lighting Fixtures: All recessed light fixtures shall be supported independent of the suspended ceiling system.

H. Where required, form expansion joints to accommodate movement and maintain visual closure without distorting system.

I. Hang system independent of walls, columns, ducts, pipes, and conduit. Where suspension system members are spliced, avoid visible displacement of the longitude axis or face plane of adjacent members.

J. Use of scrap or short-cut members is not permitted.

K. Span width of corridor using main runners equal to or greater than corridor width. Joining of two or more short ends to make additional runners will not be permitted.

L. Connect exposed grid members with positive interlocking method as standard with accepted manufacturer.

M. Level grid assembly in each area after installation of mechanical and electrical equipment.

3.03 INSTALLATION OF ACOUSTICAL BOARDS/PANELS

A. Install acoustical boards as shown. Cut to fit around mechanical and electrical items such as diffusers, sprinklers, and lights.

B. Install in completed grid system in accordance with manufacturer's installation instructions and recommendations. Provide additional runners and wall angles as required to accommodate installation of lights, diffusers, grilles, and other items.

C. Balance border areas to avoid units of less than ½ board width wherever possible. Wherever ceiling area is a multiple of full size acoustical boards used in the work, balance alignment to be square and true, and install only full size units for entire ceiling, including borders, unless otherwise shown.

D. Adjustment: Adjust sags with twist, which develop in ceiling system, and replace damaged and faulty parts.

E. Glue-On Tiles:
   1. Ceiling substrate and framing area shall be clean, sound, and free of grease and dirt before attempting to apply tile to it.
   2. Painted Surfaces: Do NOT apply tile to a newly painted ceiling. Existing painted surface shall be well bonded. If the existing paint is flaking or peeling it must be removed.
3. With a putty knife, apply the acoustical adhesive to the tile in small dabs (about the size of a walnut) approximately 3-inches in from each of the four corners. Tiles should have four dabs. As the tile is pressed to the ceiling, the adhesive will spread and cover an area of about 3-inches across and 1/8-inch to 3/16-inch thick.

4. Do not butter too many tiles in advance, as a skin will form on the adhesive dabs and weaken the bond.

5. Level tile by inserting a 1/16-inch thick fiber spline approximately 3-inches long at each corner.

6. Use a 48-inches to 72-inches straightedge and press to the face of the installed tile to help level the ceiling.

3.04 CLEAN-UP PROTECTION

A. Clean exposed surface of acoustical boards in accordance with manufacturer’s instructions.

B. Clean soiled or discolored unit surfaces after installation.

C. Touch up scratches, abrasions, voids, and other defects in painted surfaces.

D. Remove and replace units and members, which are damaged, cannot be cleaned, or are improperly installed.

E. Protect installation from damage during remainder of construction.

END OF SECTION
PART 1 – GENERAL
1.01 SUMMARY

A. Work Included: Tile carpeting, installation materials, installation labor, and installation accessories as indicated on the Drawings.
1. Resilient base and accessories.
2. Perform calcium chloride testing and compatibility with specified carpet tiles. See Finish Schedule, General Notes. Moisture mitigation required when test values exceed values specified herein.
3. High moisture adhesive shall be included on all new concrete substrates, on existing concrete substrate, and on cementitious underlayment.

B. Related Work:
1. Cutting and Patching: Section 01730.
2. Selective Demolition: Section 01732.
3. Cast-in-place Concrete: Section 03300.
5. Casework: Section 06410.
6. Finish Hardware: Section 08700.
7. Electrical: Division 16.
   a. Carpet tile over metal plates for cable underfloor ducts and trenches and junction boxes that are casted-in-concrete in Computer Laboratory - Room L148, Room L149 and Room L150.
   b. Carpet tile shall not be installed until cable underfloor ducts and trenches and junction boxes are populated (installed.)

1.02 REFERENCED STANDARDS

A. Published specifications, standards, tests, and recommended methods of trade or industry apply to the work of this Section where cited by the abbreviations noted below.
   d. ASTM F1869 Standard Test Method for Measuring Moisture Vapor Emission Rate of Concrete Subfloor Using Anhydrous Calcium Chloride.
3. American Association of Textile Colorists and Chemists (AATCC):
   a. AATCC Test Method 16 Colorfastness to Light.
b. AATCC Test Method 134 Electrostatic Propensity of Carpets.


5. International Organization for Standardization (ISO.)


7. California Building Code (CBC.)

1.03 DESIGN REQUIREMENTS

A. Sustainable Design Requirements:
1. Adhesives used in work of this Section are intended to reduce quantity of indoor air contaminants that are harmful to comfort and well-being of installers and occupants and are to be formulated to be within VOC content limits outlined in LEED NC3.0, Credit EQ4.1.
2. Carpet tiles products used in work in this Section are intended to:
   a. Reduce quantity of indoor air contaminants that are harmful to comfort and well-being of installers and occupants and are to be formulated to be within VOC content limits outlined in LEED NC3.0, Credit EQ4.3.
   b. Contribute to meeting requirements for recycle content outlined in LEED NC3.0, Credit MR4.1.

1.04 SUBMITTALS

A. Submit in accordance with the provision of the General Conditions, Article 3.11.

B. Samples: Submit a minimum of three (3) samples of each color and pattern, minimum of 12-inches by 12-inches size.

C. Product Data: Manufacturer's technical data and installation instructions for carpet tile, resilient base, adhesives and accessories.

D. Shop Drawings: Layout tiles and location in relation to in-slab cable trenches.

E. Material Safety Data Sheets are available for adhesives and cleaning agents.

F. LEED Submittal:
   1. Product Data for Credit EQ 4.3:
      a. For carpet tile, documentation indicating compliance with testing and product requirements of Carpet and Rug Institute Green Label Plus program.
      b. For installation adhesive, including printed statement of VOC content.

1.05 OPERATION AND MAINTENANCE DATA

Maintenance Data: Submit maintenance procedures, recommended maintenance materials and suggested schedule for cleaning.

1.06 QUALITY ASSURANCE
A. Work of this section shall be installed by single entity with unity responsibility for submittals, field measurements, installation and warranty.

B. Carpet: Comply with requirements of Carpet and Rug Institute Green label Plus Program.

C. Installation: Complying with requirements of CRI 104 and manufacturer’s installation instructions except as otherwise specified. In case of conflict, comply with more stringent requirement.


1.07 QUALIFICATIONS

A. Manufacturer: Company specializing in manufacture of commercial tufted carpet tile with minimum 10 years documented experience.

B. Installer: Company specializing in installation of commercial tufted carpet tile with minimum 3 years documented experience.

1.08 REGULATORY REQUIREMENTS

A. Carpet Tile Construction Requirements: Comply with requirements of CBC Section 11B-303.

B. Carpet Edge Trim Configuration Requirements: Comply with requirements of CBC Section 11B-302.2

C. Combustibility Requirements for Finish Materials: Conform to CBC Chapter 8 and classified in accordance to ASTM E84.
   1. Smoke Density: Less than 450 per ASTM E662.
   2. Critical Radiant Flux: Class 1 per ASTM E648.

1.09 DELIVERY, STORAGE AND HANDLING

A. Deliver products to site, store, handle and protect in accordance with manufacturer’s instructions and recommendations.

B. Arrange deliveries of products in accordance with construction schedules. Coordinate to avoid conflict with sequence of construction and conditions at site.

C. Deliver products in undamaged condition, in manufacturer’s original containers and packaging with identifying labels intact and legible. Labeling to contain manufacturer’s name, product name and identification number and other related information.
D. Inspect shipments immediately upon delivery to assure compliance with specified requirements and final reviewed submittals and to assure products are undamaged and properly protected. Notify Architect of discrepancies with Contract Documents and final reviewed submittals.

E. Provide equipment and personnel to handle products by methods to prevent soiling and damage to products and packaging.

F. Store products in accordance with CRI 104 with seals and labels intact.
   1. Store materials subject to damage by elements in weathertight enclosures.
   2. Maintain temperature and humidity within ranges required by CRI 104.

1.10 ENVIRONMENTAL REQUIREMENTS

A. Remove carpet tile from cartons and store for minimum 48 consecutive hours prior to installation in area of installation to achieve temperature stability.

B. Maintain temperature between 60 degrees F and 85 degrees F minimum 48 hours prior to, during and minimum 48 hours after installation of materials.

C. Maintain fresh air ventilation during normal working hours during and 72 hours after installation of materials.
   1. Open windows and doors in installation; augment with exhaust fans.
   2. Operate ventilation systems at full capacity.

D. Provide sufficient lighting during installation.

1.11 FIELD MEASUREMENTS

A. Field verify dimensions and other conditions affecting layout and installation of carpet tile.

B. Verify that field measurements are as indicated on Shop Drawings.

1.12 SEQUENCING AND SCHEDULING

Do not begin tile installation until painting and finish work is complete and ceiling and other overhead work have been installed.

1.13 WARRANTY

A. Installer’s Warranty:
   1. Warranty work provided against defects in material and workmanship for period of 2 years from date of Substantial Completion.
   2. Warranty compatibility of materials installed.

B. Manufacturer’s Warranty: Provide manufacturer’s standard limited lifetime
commercial product warranty.

1.14 EXTRA MATERIALS

A. Provide 5 percent of installed area of each style and color carpet tile in full-sized units from same dye lots as installed tile.

B. Deliver carpet tile to District in cartons labeled to identify style, color and location installed; obtain receipt.

PART 2 – PRODUCTS

2.01 CARPET TILES


1. Colors and Sizes:
   a. CPT1: 100 cm x 100 cm in color #75, Medium Gray.
   b. CPT2: 100 cm x 100 cm in color to be determined.

2. Installation Method: Quarter turned.

3. Properties:
   a. Construction: Tufted level loop.
   b. Standard Colorline: 175374, 175375, 175376 Yarn System
   c. Backing System: GlasBacTile.
   d. Yarn System: Blue Chip Type 6.6 Nylon.
   e. Dye Method: 100 percent solution dyed.
   f. Recycled Content: 52 percent post industrial; 0 percent post consumer.
   g. Soil/Stain Protection: Protekt2.
   h. Machine Gauge: 1/10-inch.
   i. Stitched per Inch: 10.5.
   j. Radiant Panel: Class I per ASTM E648.
   k. Smoke Density: <450 per ASTM E662.
   l. Lightfastness: >4.0 at 60 AFUs per AATCC 16E.
   m. Static: <3.0KV per AATCC 134.
   n. Dimensional Stability: <0.10 percent per ISO 2551.

2.02 ACCESSORY MATERIALS

A. Subfloor Filler: Cementitious type containing not more than 7 percent gypsum recommended by carpet tile manufacturer.

B. Adhesive: Releasable contact type recommended by carpet tile manufacturer; VOC content not exceeding limit established by South Coast Air Quality Management District #1168.

C. Resilient Edge Strips:
   1. Manufacturer:
   2. Size: 4-inches.
   3. Edge Strips: Thermoplastic vinyl; color and gloss level extending
through thickness of material.
  a. Carpet Tile to Subflooring: 1-piece undercut reducer; 1¼-inches wide; undercut ¼ inch; dry back for adhesive application; Mercer #800 Imperial Reducer.
  b. Carpet Tile to Sheet Flooring: 1-piece double undercut joining molding; 1 5/8-inches wide; undercut 1/8-inch for resilient flooring and ¼-inch for carpet; dry back for adhesive application; Mercer #710 Carpet to Resilient Transition.
  c. Carpet to Carpet: 2 piece T-shape, 2-inches wide with single flanged retainer track for ¼-inch for carpet to ¼-inch carpet; dry back for adhesive application; Mercer #935 Super 2-inches T with #970 Retainer.

PART 3 – EXECUTION
3.01 EXAMINATION

A. Examine condition of substrates to determine acceptability for installation. Verify that substrates are acceptable for product installation in accordance with manufacturer's instructions and recommendations.

B. Verify that no curing, hardening or bond breaking compounds have been applied to substrates. Do not proceed with installation until existing compounds have been removed.

C. Verify that surfaces are smooth and flat with maximum variation of 1/8 inch in 10 feet non-cumulative and are ready to receive work.

D. Concrete Slabs and Cementitious Substrate:
  1. Verify that concrete slabs are fully cured. Ensure concrete is cured minimum 90 days prior to carpet tile installation.
  2. Verify concrete subfloors are free from scaling and irregularities.
  3. Verify that alkalinity level of concrete slabs is between 7.0 and 9.0 by conducting alkalinity tests.
     a. Perform minimum 1 alkalinity test for every 1,000 sq ft using alkalinity test kit capable of measuring pH range of 1 through 14.
     b. Conduct tests in accordance with kit manufacturer's instruction in weathertight conditioned spaces.
     c. Ensure adhesives, coatings, finishes, dirt, curing compounds, sealant and other substances that can affect test results are removed from test site minimum 48 hours prior to testing.
     d. Maintain temperature between 65 and 85 degrees F and relative humidity between 40 and 60 percent in area of test for minimum 48 hours prior to and during testing.
  4. Verify that concrete slabs are dry by conducting calcium chloride tests in accordance with ASTM F1869 and with manufacturer's instructions.
     a. Conduct minimum 1 calcium chloride test for every 1,000 square feet of flooring or portion thereof, around perimeter, at columns and where moisture is present.
b. Prepare diagram of area or room showing location and results of each test.
c. If test results indicate moisture emission exceeds 3.0 pounds per 1,000 sq ft in 24 hrs, do not proceed with flooring installation until corrective action has been completed.

E. Verify that adhesives are compatible with substrates by conducting adhesive bond tests.
1. Perform adhesive bond tests for each carpet tile backing type and adhesive in each major area prior to installation.
2. Adhere carpet tile in place; examine after 72 hours to determine whether bond is solid and no moisture is present.
3. Do not proceed with installation until results of bond tests are acceptable.

F. Do not begin installation until unsatisfactory conditions have been corrected.

3.02 PREPARATION
A. Moisture Suppression System:
1. When required, use a suitable surface moisture suppression system that is fully warranted by the suppression system manufacturer to perform under the given conditions (moisture content, presence or lack of vapor retarder, surface profile and presence of any known contaminates within the concrete) for at least the same warranty time period as the flooring supplied. Provide written confirmation that the subfloor was prepared correctly prior to the installation of suppression system.
2. Provide written confirmation that any surface moisture suppression system used has been applied as instructed by the suppression system manufacturer, including the required mils thickness, and confirm the amount of gallons used per square footage and that the workmanship is fully warranted. Perform and provide written confirmation of the results of any testing required by the suppression mitigation system manufacturer.

B. Remove concrete subfloor ridges and bumps. Fill low spots, cracks, joints, holes, and other defects with subfloor filler.

C. Remove substances incompatible with flooring adhesive by method acceptable to manufacturer. Clean subfloors of dust, dirt, solvents, oil, grease, paint, plaster and other substances detrimental to proper performance of adhesive and carpet. Allow floors to dry thoroughly.

D. Apply, trowel, and float filler to leave smooth, flat, hard surface. Allow to dry; sand smooth.

E. Prohibit traffic until filler is cured.

3.03 INSTALLATION
A. Carpet tile shall not be installed until cable underfloor ducts and trenches and
junction boxes are populated (installed.)

B. Apply carpet tile in accordance with CRI 104, manufacturer’s instructions and final reviewed Shop Drawings.

C. Do not mix carpet tile from different cartons unless from same dye lot. Do not mix dye lots in same area of installation.

D. Measure to determine center point of each area of installation. Establish and mark longitudinal and transverse centerlines; ensure centerlines are at 90 degree angles.

E. Dry fit row of carpet tiles along enough length of longitudinal and transverse centerlines to determine if center lines must be offset; ensure perimeter tiles will be cut no less than half size tile width.

F. Install carpet tile types by following methods directed by Architect.
   1. Monolithic: Install carpet tile with corners aligned and with pile direction parallel.
   2. Ashlar Method: Install carpet tile with alternate courses of tile offset half size tile width and with pile direction aligned.
   3. Quarter Turn Method: Install carpet tile with corners aligned and with pile direction turned at 90 degrees to every other tile.

G. Fully adhere carpet tile to substrate. Apply adhesive by full-spread method using roller or sprayer; if using sprayer, protect adjoining surfaces with plastic or other material before spraying.

H. Lay carpet tiles closely following centerlines. Snugly join tiles with no visible gaps, peaks or overlaps. Continually check installation to verify tiles are being joined with correct firmness.

I. Tip carpet tiles into place; do not slide across adhesive. Ensure pile yarn is not caught in joints.

J. Trim carpet tiles neatly at walls and around interruptions. Cut carpet tile clean; fit tight to intersection with vertical surfaces without gaps.

K. Complete installation of edge strips concealing exposed edges.

L. Use maximum lengths possible; maintain minimum measurement of 36 inches between joints.
   1. Butt tight to vertical surfaces.
   2. Where splicing cannot be avoided, butt ends tight and flush.
   3. Secure in place with adhesives; bond securely to substrate in straight true lines.

M. Cut and fit carpet tile evenly into edge strips.

3.04 CLEANING

A. Remove access adhesive from floor, base, and wall surfaces without damage.

B. Clean and thoroughly vacuum carpet surfaces with upright beater-bar type vacuum cleaner.

3.05 PROTECTION
A. Prohibit traffic from carpet areas for minimum 24 hours after installation or until adhesive is set.
B. Provide substantial coverings to protect installed carpet from damage from traffic and subsequent construction operations. Remove when no longer needed.

END OF SECTION
PART 1 - GENERAL

1.01 SUMMARY

A. Work Included: Provision of stainless steel overhead braced toilet compartments where shown on the Drawings, as specified, and as needed for a complete and proper installation including, but not limited to, the following:
   1. Stainless steel wall mounted urinal screens.
   2. Attachment and door hardware.

B. Related Work:
   1. Non-Load Bearing Metal Framing: Section 09100.
      a. Coordinate require metal backing.
   2. Gypsum Wallboard: Section 09250.
   3. Tiles: Section 09300.
   4. Toilet Accessories: Section 10800.
   5. Division 15: Mechanical.

1.02 REFERENCED STANDARDS

A. Current published specifications, standards, tests, and recommended methods of trade or industry apply to the work of this Section where cited by the abbreviations noted below.
      a. ASTM A666 Standard Specification for Annealed or Cold-Worked Austenitic Stainless Steel Sheet, Strip, Plate, and Flat Bar.
   2. California Building Code, 2013 (CBC): Conform to the requirements of:
      a. CBC Section 11B-603 Toilets & Bathing Room.
      b. CBC Section 11B-604 Water Closets & Toilet Compartment.

1.03 SUBMITTALS

A. Submit in accordance with the provisions of the General Conditions, Article 3.11.

B. Product Data: Submit manufacturer's detailed technical data for materials, fabrication, and installation, including catalog cuts of anchors, hardware, fasteners, and accessories.

C. Shop Drawings: For fabrication and installation of toilet partition and screen assemblies. Include plans, elevations, sections, details, and attachments to other work.
D. Samples:
   1. Three 6-inches square of stainless steel finish in texture specified.
      a. Submit certification that materials furnished comply with requirements specified.
   2. Submit one sample of the following:
      a. Hardware (Complete.)
      b. Pilaster (12-inches x 12-inches.)
      c. Divider Panel (12-inches x 12-inches.)
      d. Continuous Stainless Steel Mounting Bracket.
      e. Continuous Stainless Steel Hinge.

E. Maintenance Instructions: Provide manufacturer’s printed Instructions for maintenance of installed work, including recommendations for graffiti removal.

F. LEED Documentation:
   1. Steel: Submit letter or product data from manufacturer indicating recycled content. Designate percentage of post-consumer and post-industrial recycled content.
   2. Aluminum: Submit letter or product data from manufacturer indicating recycled content. Designate percentage of post-consumer and post-industrial recycled content.
   3. Stainless Steel Toilet Compartments: Submit letter or product data from manufacturer stating that no materials used in this product contain added urea-formaldehyde resins.
   4. Adhesives: Submit letter or product data from manufacturer stating that adhesives used in work of this section do not exceed VOC content limits established in South Coast Air Quality Management District Rule #1168.
   5. Submit hard copies of completed Online Documentation required for LEED MR Credit 4, EQ Credit 4.1 and EQ Credit 4.2.

1.04 PROJECT CONDITIONS
A. Field Measurements: Verify dimensions in areas of installation by field measurements before fabrication and indicate measurements on shop drawings. Coordinate fabrication schedule with construction progress to avoid delaying the Work.
   1. Established Dimensions: Where field measurements cannot be made without delaying the Work, establish dimensions, and proceed with fabricating units without field measurements. Coordinate supports, adjacent construction, and fixture locations to ensure actual dimensions correspond to established dimensions.

1.05 DESIGN REQUIREMENTS
A. Sustainable Design Requirements:
   1. Steel and aluminum used in work of this section are intended to:
      a. Contribute to meeting requirements for recycled content outlined in LEED NC3.0 for Credit MR4.
      b. Reduce quantity of indoor air contaminants that are harmful to comfort and well-being of installers and occupants and are not
to contain urea formaldehyde resins outlined in LEED NC3.0 Credit EQ4.4.

2. Adhesives used in work of this section are intended to reduce quantity of indoor air contaminants that are harmful to comfort and well-being of installers and occupants and are to be formulated to be within VOC content limits outlined in LEED NC3.0 Credit EQ4.1.

1.06 DELIVERY, STORAGE AND HANDLING

A. Deliver, store, and handle compartments as recommended by manufacturer to protect from damage.

B. Protect materials from damage or wetting during handling and storage on site; work showing dents, deformations, or other defects will not be approved.

C. Discharge materials carefully and store on clean concrete surface or raised platform in secure dry area. Do not dump onto ground.

D. Store materials in original protective packaging to prevent soiling, physical damage or wetting.

E. Handle so as to prevent damage to finished surfaces.

1.07 MANUFACTURER’S WARRANTY

A. Provide manufacturer’s written two-part warranty.
   1. The entire toilet partition shall be warranted for 15 years against breakage, corrosion, and delamination, to include hardware; replaced without charge, excluding labor.
   2. Panels, pilasters, and doors shall be warranted for 25 years against breakage, corrosion, and delamination; replaced without charge, excluding labor.

1.08 FIELD MEASUREMENTS

Verify that field measurements are as indicated on Shop Drawings.

1.09 COORDINATION

Coordinate placement of backing in walls. Backing is specified in Non-Load Bearing Metal Framing, Section 09100.

1.10 QUALIFICATIONS

A. Manufacturer: Company specializing in manufacture of stainless steel toilet compartments with minimum 5 years documented experience.

B. Installer: Company specializing in installation of stainless steel toilet compartments with minimum 3 years documented experience and factory trained and approved by manufacturer.

1.11 WARRANTY

Manufacturer’s Warranty: Provide manufacturer’s limited warranty for stainless steel panels, doors and pilasters which corrode or discolor within 5 years from date of Substantial Completion. Cover cost of replacement materials for materials found defective within warranty period.
PART 2 - PRODUCTS

2.01 MANUFACTURER

A. Global Steel Products Corporation:

B. Manufacturers Offering Acceptable Equivalent Products:
   1. Accurate Partitions Corporation.
   2. Hadrian Manufacturing, Inc.


2.02 MATERIALS

A. Stainless Steel Sheet: ASTM A666, Type 304; stretcher leveled.

B. Extruded Aluminum: ASTM B221, 6063 alloy, T5 temper.

2.03 ACCESSORIES

A. Headrail: Extruded aluminum; tubular construction with anti-grip top.

B. Pilaster Shoes: Stainless steel; minimum 3 inches high; internal cross section conforming to pilaster.

C. Mounting Brackets:
   2. Pilaster-to-Floor: Inverted stirrup mounting foot with stainless steel jack bolt; stainless steel L-brackets mechanically fastened each end of mounting foot and equipped with spring clips.
   3. Urinal Screens: Continuous heavy gage stainless steel brackets.

D. Fasteners: Vandal resistant type stainless steel.
   1. Mounting Brackets to Walls: Sheet metal screws with full thread and tamper resistant heads; length sufficient to penetrate framing minimum 3/8-inch.
   2. Mounting Brackets to Floors: Sleeve type expansion anchors; length sufficient to for minimum 1 1/2-inches embedment into concrete.
   3. Mounting Brackets to Panels and Pilasters: Internally threaded through-bolt fasteners consisting of barrel nuts and machine screws with tamper resistant heads.
   4. Hinges and Strike/Keeper to Pilasters: Internally threaded through-bolt fasteners consisting of barrel nuts and machine screws with tamper resistant heads.
   5. Other Hardware: Sheet metal screws with full thread and tamper-resistant heads.

E. Adhesive: Non-toxic with volatile organic contents not exceeding VOC content limits established in South Coast Air Quality Management District Rule #1168.

2.04 HARDWARE
A. General: Door Hardware shall include Door hardware shall include a coat hook, bumper, stop, keeper, hinges, a concealed mortise style latch with emergency access and chromium plated vandal resistant fasteners.

B. Hinges: Chrome plated die-case Zamac cam-action hinges; cams adjustable to allow door to rest at any position within 270 degrees range.
   1. Upper Hinge: Recessed and interlocked in door with nylon pin within plane of door.
   2. Lower Hinge: Recessed in door; includes mating box and pintle nylon cams which provide bearing surface.

C. Latch: Chrome plated die-case Zamac concealed mortise style configured for emergency access.
   1. Compartments with Grab Bars: Paddle handle providing access without grasping or twisting; manufacturer’s disabled accessible paddle handle/lever.
   2. Other Compartments: Manufacturer’s standard handle.

D. Keeper/Strike: Chrome plated die-case Zamac; 1 piece with rubber bumper.

E. Door Pulls: U-shape wire type; chrome plated.

F. Combination Coat Hook/Door Stop: Chrome plated Zamac hook with rubber bumper tip.

2.05 FABRICATION

A. Fabricate partition doors, panels and pilasters and urinal screen panels with 22 gage embossed stainless steel sheets formed and bonded under pressure with adhesive to full face honeycomb core.
   1. Panels: 1-inch thick; partition panel sized to suit cubicle depths indicated on Drawings; urinal screen panel sized as indicated on Drawings.
   2. Pilasters: 1¼-inches thick; widths to suit cubicle widths and spacing; height as required for 83-inches overall partition height.
   3. Doors: 1-inch thick; sizes to suit access requirements.

B. Seal door and panel edges with 22 gage stainless steel interlocking moldings welded to face sheets and each other at corners to form rigid frame around component. Grind welds smooth.

C. Seal pilaster edges with 22 gage stainless steel interlocking moldings. Weld inverted stirrup with leveling jack bolt to base of pilaster.

D. Provide internal reinforcement in areas of attached hardware, fittings, grab bars and toilet accessories. Mark locations of reinforcement for partition mounted grab bars and toilet accessories.

2.06 FINISHES

A. Stainless Steel Sheet:
   1. Door, Panel and Pilaster Faces: Embossed pattern to match Global “Diamond Finish.”
   2. Other Locations: #4 brushed finish.
B. Extruded Aluminum: Clear anodized with stain finish.

PART 3 – EXECUTION

3.01 EXAMINATION

A. Examine installed work of other trades to determine acceptability for installation. Verify that such work is complete to point where work of this section may begin and is acceptable for product installation in accordance with manufacturer’s instructions and recommendations.

B. Verify that plumbing fixtures are correctly located and correctly spaced.

C. Verify correct location of built-in framing, anchorage, and bracing. Verify that walls are plumb.

D. Verify that doors are correctly located.

E. Do not begin installation until unsatisfactory conditions have been corrected.

3.02 INSTALLATION

A. Install toilet partitions and urinal screens in accordance with manufacturer’s instructions and final reviewed shop drawings.

B. Install partition and screen components secure, straight, plumb, level, square and aligned.

C. Maintain 3/8-inch to ½-inch space between wall and panels and between wall and end pilasters.

D. Attach mounting brackets securely to wall framing and floor slabs. Wet drill ceramic tile prior to installing fasteners.
   1. Securely mounting brackets to wall framing using threaded fasteners.
   2. Secure mounting brackets to floor slabs with expansion anchors.
      Adjust for floor variations with leveling bolt integral with pilaster anchoring shoe; conceal floor fastenings at toilet partitions with stainless steel pilaster shoe trim.

E. Attach panels and pilasters to brackets with tamper resistant metal screws. Locate headrail joints at pilaster center lines.

F. Level, plumb and tighten installation. Align tops of panels. Secure pilaster shoe trims in position.

G. Install doors using specified hardware. Equip each door with hinge, latch, keeper/strike and combination coat hook/door stop. In addition, equip each outswinging door with 1 additional combination coat hook/door stop and equip each door to compartments having grab bars with back-to-back door pulls.
   1. Install strike/keeper on each pilaster in alignment with latch. Locate strike/keepers and latches at midpoints of doors between 30-inches and 44-inches above floor.
   2. Install combination coat hook/door stops on interior faces of each door.
      a. Locate combination coat hook/door stops 48-inches above floor on doors to compartments having grab bars.
b. Locate combination coat hook/door stops 3-inches below tops of doors to other compartments.

3. Equip each door to compartments having grab bars with door pull on both sides. Locate pulls immediately below latches.

4. Install additional combination coat hook/door stops on exterior faces of each outswinging door. Locate 3-inches below tops of doors.

H. Set tops of doors parallel with line of finished ceiling when doors are in closed position.

I. Align tops and bottoms of doors with tops and bottoms of panels.

3.03 ERECTION TOLERANCES

A. Maximum Variation From True Position: ¼-inch.

B. Maximum Variation From Plumb: 1/8-inch.

3.04 ADJUSTING

A. Adjust and align partition hardware to uniform clearance at vertical edges of doors not exceeding 3/16-inch.

B. Adjust partition hinges to locate in-swing doors in partial open position when unlatched. Adjust hinges of outswinging doors to return doors to closed position.

C. Field repair of scratches and damaged components will not be permitted. Replace damaged and scratched materials with new materials.

3.05 CLEANING

Remove protective maskings. Clean surfaces.

END OF SECTION
PART 1 - GENERAL

1.01 SUMMARY

A. Work included: Furnish labor, equipment, materials, and transportation to perform all operations necessary and incidental to properly execute and complete signs as indicated on Drawings and as specified herein.

1. Fire extinguisher signage (new or existing.)
2. Low level exit signs at each electrical exit sign location.
3. Tactile exit signs.
4. Assistive listening device symbol signs.
5. Room number and name signs.
6. Directional signs, including international symbol of accessibility signs, elevator/lift signs, restroom directional signs, and arrow symbol signs.
7. Restroom signs.

B. Related Work:

1. Gypsum Wallboard: Section 09250.
2. Painting: Section 09900.
3. Sealants: Section 07900.
   a. Silicone for mounting wall, door signage and signage mounted on glazing.

1.02 QUALITY ASSURANCE

A. All signs of the same type shall be the products of one manufacturer.

B. Incorporated Documents: Furnish and install items of work and materials in conformance with applicable publications of the following:


   a. Section 11B-216, Signs.
   b. Section 11B-701, Communication Elements and Features.

3. Federal, State, County and Local regulations applicable to this project.


1.03 SUBMITTALS

A. Submit in accordance with the provision of the General Conditions, Article 3.11.
B. Materials List: List items proposed to be provided under this Section.

C. Shop Drawings:
   1. Submit complete drawings indicating materials, sizes, configurations, and applicable substrate mountings.
   2. Submit typography sample for copy.
   3. Submit signage schedule complete with location of each sign and required copy; include all floor plans.

D. Verify with the District for exact wording, names, and quantities before fabrications; requirements may change from those shown on the Drawings.

E. Product Data: Submit manufacturer’s technical data, maintenance requirements, and method of mounting for each type of sign required.

F. Samples: Submit samples of each color and finish of exposed materials and accessories required for signage. Architect’s review of samples will be for color and texture only. When requested, furnish full-size samples of sign materials.

1.04 QUALITY ASSURANCE

Manufacturer’s Qualifications: Manufacturer shall have successful experience in the industry with similar applications of the size and scope of this Project.

1.05 DELIVERY, STORAGE, AND HANDLING

A. Provide factory wrapping, packaging, and other means necessary to prevent damage or deterioration during shipment, handling, storage, and installation.

B. Maintain protective coverings in place and in good repair until removal is necessary.

C. Store products inside enclosed facilities and maintain storage spaces and products in dry condition.

1.06 PROJECT CONDITIONS

A. Examination of Site: Examine related work surfaces before starting Work. Report to the District in writing, any site conditions, which will prevent the proper provision of this Work. Beginning the Work without reporting unsuitable conditions shall constitute acceptance of site conditions by the Contractor, with changes or additions of work caused by unsuitable conditions provided at no additional cost to the District.

B. Coordination: Coordinate and cooperate with other trades to enable Work to proceed as rapidly and efficiently as possible. Additional work incurred resulting from lack of coordination shall be done at the Contractor’s expense.
1.07 WARRANTY

A. The Contractor by commencing signage fabrication work assumes overall responsibility, as part of its warranty of the Work to assure that assemblies, components, and parts shown or required within the Work will comply with the Contract Documents. The Contractor shall further warrant:

1. That all components specified or required to satisfactorily complete the installation is compatible with the conditions of installations.

2. The overall effective integration and correctness of individual parts and the whole of the system.

3. Compatibility with adjoining substrates, finishes, materials, and work by other trades.

4. That there will be no premature failure of materials due to improper design and fabrication of the system. All materials shall fully perform to their normal life expectancy per industry standards.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Wall and Door Mounted Plaques:

1. Plaque: 0.250-inch thick opaque acrylic with satin matte finish, frameless; typical unless otherwise noted.
   a. Blank Plaques: Provide blank plaques to match size and color of signage plaques mounted to glass.

2. Graphic Process: Manufacturer’s standard 1/32-inch minimum raised graphics and text on the front surface. Braille shall accompany text and graphics.
   a. Text: As shown on the Drawings.
   b. Letter Style: To be selected by Architect with a 5/8-inch minimum to 2-inches maximum height in upper case.
   c. Background: The background shall contrast 70% minimum from text and graphics.
   d. Proportions: Stroke width-to-height ratio of between 1:5 and 1:10.
   e. Mounting: Using both foam tape and silicone adhesive.
   f. Braille Standards: The standard dimensions for literary California Contracted Grade 2 Braille conforming to CBC 11B-703.3

B. Fire Extinguisher Signs: Provide above each surface mounted fire extinguisher, fire extinguish cabinets and existing surface mounted fire extinguishers and relocated surface mounted fire extinguishers.

C. Floor-Level Exit Signs: Floor-level exit signs shall meet the requirements of CBC, shall be UL924 listed shall be self-illuminating, non-electrical, non-radioactive, explosion proof, low maintenance, and activated by 5 foot-candles of ambient lighting. System shall have a Class A flame spread rating and life expectancy in excess of 25 years. Provide directional arrows for one-way exiting where it is required. Provide Series 16.000 Low Level Stencil-
Face Exit Marker as manufactured by Active Safety; American Permalight, Inc.; or equal.

D. Exterior Signs (where noted): Retroreflective sheet surfacing on .080-inch thick minimum rustproof T6 aluminum. Stocked sizes, or custom sizes as indicated on Drawings or in sizes for the text or information required on the signs.

1. Lettering and background shall be engineer grade reflective sheeting applied over the surface. Signs will never rust and normally have an average life span of 7 years. High quality materials result in longer lasting signs and excellent resistance to fading meeting ASTM D4956, Type I specification.

2. Retroreflective Products:
   a. Avery-Dennison (T-1000 Series.)
   b. 3M (Scotchlite Engineer Grade 2200 and 3200.)
   c. Nippon Carbide (Nikkalite Engineering Grade 7100 and 8100.)
   d. American Decal (Adcolite 180 and 280.)

3. Text, size and colors as indicated on Drawings.

E. Adhesive: Single-component, mildew-resistant silicone sealant, Type S; Grade NS; Class 25; Uses NT, G, A, and O; formulated with fungicide.

1. Conform to Section 07900, Sealants.

2. Color: Clear.

F. Fasteners: Stainless steel conforming to ASTM F738, pan head snake eye Spanners or equal.

1. Minimum size: #10 for both sheet metal/wood and machine screws.

2. Stainless steel Spanner nuts (or equal) in conjunction with snake eye Spanners for use with exterior signs mounted to galvanized backing plates on decorative fences or gates or chain link fences or gates.

2.02 FABRICATION

A. Fabricate signs to the sizes, shapes, type styles, sign types, and profiles shown on the Drawings and as specified. Colors and background colors to be selected by Architect.

B. Design components to allow for expansion and contraction for a minimal material temperature of 100°F without causing buckling, excessive opening of joints or overstressing of welds and fasteners.

C. Use concealed fasteners whenever and whenever possible.

D. Items shall be shop fabricated so far as practicable. Joints shall be fastened flush to conceal reinforcement.

E. Contact surfaces of connected members shall be ground true. Parts shall be so assembled that joints will be tight and practically unnoticeable, without use of filling compound.
F. Signs shall have fine even texture and shall be flat and sound. Lines shall be sharp, arise unbroken, profiles accurate and ornament true to pattern. Plane surfaces shall be smooth flat. Maximum variation from plane of surface plus or minus 1/32-inch. Filed or cut areas shall have texture restored.

G. Holes for bolts and screws shall be drilled. Fastenings shall be concealed where possible. Exposed ends and edges shall be milled smooth, with corners slightly rounded.

H. Room Number Signage above Doors: 3-inch text height minimum.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Examine the conditions to which the Work is to be applied and anchored. Do not proceed until unsatisfactory conditions have been corrected.

B. Ensure that substrate on which the identifying devices are to be installed is smooth and sound.

3.02 INSTALLATION

A. Protect products against damage during field handling and installation.

B. Protect adjacent construction and finishes as necessary to prevent damage during installation.

C. Meet with the Architect on-site prior to installation to verify typical and specific locations of all signs.

D. Mounting heights shall be as indicated on Drawings. Mounting shall be with adhesive and mechanical fasteners; adhesive only where noted.

E. Coordinate with exterior metal stud framing to locate required backing plate for placement of stainless steel sleeves for exterior signs.
   1. Each letter shall project ¼-inch minimum from face of exterior finish to the back of letter.
   2. Make mounting connection to exterior wall watertight.

3.03 FIELD QUALITY CONTROL

A. Identifying devices shall be mounted level and plumb according to the locations and the dimensions shown on the Drawings. Where otherwise not dimensioned, signs shall be installed where best suited to provide an even and consistent appearance throughout the Project. When the exact position, angle, height, or location is in doubt, contact the Architect for clarification.
B. Fabricate and assemble each unit in the shop as completely as possible and as specified before delivery to the jobsite to ensure that each unit will be installed with its correct components.

C. Field Inspection: Signage installation shall be field inspected conforming to CBC 11B Division 7.

3.04 CLEANING

A. Clean all exposed sign surfaces after completing installation.

B. Remove all packaging and debris from the project site upon completion and leave the site in a condition, which is clean and free of damage and abuse. Protect signs from damage.

END OF SECTION
PART 1 - GENERAL

1.01 SUMMARY

A. Work Included: Furnish all labor, materials, equipment, and related work necessary to complete toilet accessories and mounting fasteners work as indicated in the Drawings and specified herein.

1. Insulate all waste lines and hot water supply lines under lavatories.
2. Install District provided accessory where noted.

B. Related Work:
1. Cutting and Patching: Section 01730.
2. Selective Demolition: Section 01732.
3. Sealants: Section 07900.
4. Non-Load Bearing Metal Framing: Section 09100.
5. Gypsum Wallboard: Section 09250.
6. Tiles: Section 09300.
7. Division 15: Mechanical
   a. Waste lines and hot water supply line under lavatories insulation.

1.02 REFERENCED STANDARDS

A. Published specifications, standards, tests, and recommended methods of trade or industry apply to the work of this Section where cited by the abbreviations noted below.

1. Americans with Disabilities Act (ADA), 2010 ADA Standards for Accessible Design.

1.03 DESIGN REQUIREMENTS

Sustainable Design Requirements: Steel used in work in this Section are intended contribute to meeting requirements for recycle content outlined in LEED NC3.0,
Credit MR4.

1.04 SUBMITTALS

A. Submit in accordance with the provisions of the General Conditions, Article 3.11.

B. Product Data: Manufacturer’s product data for products specified, indicating selected options and accessories.

C. Shop Drawings:
   1. Plans: Locate each specified unit in project.
   2. Elevations: Indicate mounting height of each specified unit in project.
   3. Details: Indicate anchoring and fastening details, required locations and types of anchors and reinforcement, and materials required for correct installation of specified products not supplied by manufacturer of products of this Section.

D. Quality Assurance Submittals:
   1. Manufacturer’s printed installation instructions for each specified product.
   2. Documentation of Manufacturer’s Qualifications, specified in Article 1.05 of this Section.

E. Closeout Submittals: Warranty documents, issued and executed by manufacturer of products of this Section, and countersigned by Contractor.

F. LEED Submittal:
   1. Steel: Submit letter or product data from manufacture indicating recycled content. Designate percentage of post consumer and post industrial recycled content.
   2. Submit hardcopies of completed Online Documentation required for LEED MR Credit 4.

1.05 QUALITY ASSURANCE

D. Manufacturer Qualifications: Minimum five (5) years documented experience producing products specified in this Section.

E. Regulatory Requirements: Conform to ADAAG, CBC, and DSA requirements.

1.06 DELIVERY, STORAGE AND HANDLING

F. Factory-apply strippable protective vinyl coating to sight-exposed surfaces after finishing of products; ship products in manufacturer’s standard protective packaging.

G. Storage and Protection: Store products in manufacturer’s protective packaging to prevent soiling, physical damage, or wetting until installation.
C. Handle to prevent damage to finished surfaces.

1.07 SEQUENCING

H. Coordinate submission of installation instruction so that backing, blocking, framing, and formwork can be properly installed and work of other trades will not be delayed.

B. Supply locating and sizing templates, and other requirements, to fabricators and installers of products referenced in Article 1.01C for building-in products of this Section.

C. Supply reinforcing and anchoring devices required for installation of products of this Section to fabricators and installers of products referenced in Article 1.01C.

1.08 WARRANTY

I. Manufacturer's standard warranty against defects in product workmanship and materials.

J. Manufacturer's 15-year warranty against silver spoilage of mirrors.

PART 2 - PRODUCTS

2.01 MATERIALS

Stainless Steel Sheet: ASTM A240, Type 304, 18-8 alloy unless otherwise noted.

2.02 EQUIPMENT

A. General: Manufacturer indicated establishes quality, performance, and features required. See Division 1 for substitution requirements.

B. Toilet Accessories: All models shall be of 22 gage minimum, stainless steel with satin finish unless otherwise noted. See Drawings for location and quantities.

1. Grab Bar: 18 gage, stainless steel, 1½-inches diameter, with peened grip, concealed mounting and snap-on-flange cover, Bobrick B-6806.99 Series.
   a. TA-1, at Side of Stall: 48-inches long.
   b. TA-2, at Rear of Stall: 36-inches long.


3. TA-3C, Toilet Paper Holder (Surface): Pioneer Chemical Company #14-201-04-7 (14-inches diameter x 4½-inches deep) Jumbo Toilet Tissue Dispensing System.
   a. Dispenser shall be furnished by the District and installed by the Contractor.
4. TA-4A, Paper Towel Dispenser (Surface): Universal Building Services Paper Towel Dispenser (15¾-inches high by 12¼-inches wide by 9 ¼-inches deep.)
a. Dispenser shall be furnished by the District and installed by the Contractor.

5. TA-5, Hand Dryer (Surface): Stainless Steel: Pioneer Chemical Company Model #16-115-05 or Bobrick B-7128 (13½-inches high by 13½-inches wide by 4-inches deep.)

6. TA-7, Soap Dispenser (Surface): Pioneer Chemical Company for 1 Liter Soap and Lotions (9 1/8-inches high by 5 1/8-inches wide by 4 5/8-inches deep.)
a. Dispenser shall be furnished by the District and installed by the Contractor.

7. TA-8B, Framed Mirror: Bobrick B-166 (1824) with 18-inches by 24-inches by ½-inch stainless steel channel frame, 5½-inches shelf projection.

8. TA-9, Toilet Seat Dispenser (Surface): Stainless steel with satin finish. Pioneer: Chemical Company #14-221-004-7 (11-inches high by 15.75-inches by 2-inches deep.
a. Dispenser shall be furnished by the District and installed by the Contractor.

9. TA-10A Waste Receptacle: Free standing plastic trash can (24 gallon, 15-inches diameter x 28-inches high.)
a. Dispenser shall be furnished by the District and installed by the Contractor.

10. TA-11, Insulation: Plumberex Specialty Products, Inc. X4111 for P-trap and X4112 where hot water riser is provided. Include tamper resistant stainless steel screws. Locate on accessible lavatories as indicated on the Drawings.

11. TA-13, Sanitary Napkin Disposal (Surface): Bobrick B-270 (11½-inches high by 9-inches by 9-inches deep.)
a. Dispenser shall be furnished by the Owner and installed by the Contractor.

12. TA-14, Napkin/Tampon Dispenser (Surface): Stainless Steel: Bobrick B-2706 (25 7/8-inches high by 11 7/8-inches wide by 6 9/16-inches deep.) Coin operation will be determined and verify by the District.

B. Locked Dispensing Units: Key alike for all locked accessories, to comply with the Owner keying system.

PART 3 - EXECUTION
3.01 INSPECTION

A. Check areas to receive surface-mounted units for conditions that would affect quality and execution of Work.

B. Verify spacing of plumbing fixtures and partitions that affect installation of accessories.

C. Do not begin installation of accessories until conditions are acceptable.
3.02 INSTALLATION

A. Install accessories in locations shown on the Drawings.

B. Attach surface-mounted accessories to blocking or backing plates installed in walls; plumb and align.
   1. Grab bars shall be attached to withstand loads prescribed by applicable codes.

3.03 ADJUST AND CLEAN

A. Adjust accessories for proper operation.

B. After completion of installation, clean and polish all exposed surfaces.

C. Deliver keys and instruction sheets to District.

END OF SECTION
### SECTION 00011

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END OF SECTION
PART 1 - GENERAL

1.01 SUMMARY

A. Work Included: Provide miscellaneous specialties complete as shown and as specified:
   1. Fire extinguishers and fire extinguisher cabinets.
      a. Recertify existing 2A10BC fire extinguishers with provide valid certification tag attached.
   2. Tack boards and marker boards.
   4. Projector with associated projector mounting assemblies to projector and acoustical ceiling.
   5. In-ground Bike Rack.

B. Related Work:
   2. Cutting and Patching: Section 01730.
   4. Cast-In-Place Concrete: Section 03300.
      a. Concrete footing for in-ground bike rack.
   5. Non-Load Bearing Metal Framing: Section 09100.
      a. Metal stud backing for motorized projector screens.
   7. Acoustical Ceiling: Section 09510.
      a. Projector mounting assembly attached to suspended ceiling assembly.
   8. Signage: Section 10400.
   9. Electrical: Division 16.
      a. Control wiring and powering for motorized projector screens and to projector and associated projector mounting assemblies.

1.02 REFERENCED STANDARDS

A. Published specifications, standards, tests, and recommended methods of trade or industry apply to the work of this Section where cited by the abbreviations noted below.
   1. American Society for Testing and Materials International (ASTM.)
   4. California Building Code (CBC.)
   5. Division of the State Architect, California (DSA.)
   7. Society of Motion Picture and Television Engineers (SMPTE): SMPTE RP 94, Gain Determination of Front Projection Screens.
8. Underwriters Laboratories Inc. (UL).

1.03 SUBMITTALS

A. Submit in accordance with the provisions of the General Conditions, Article 3.11.

B. Product Data: Submit manufacturer's specifications and installation instructions for each item specified.

C. Shop Drawings: Show electrical connections when applies.

D. Samples:
   1. Marker Board Surface and Tack Board Surface: 12-inches square surface.

E. Certifications: Submit certification for requirements of mineral fiber board specified in Article 2.02B2a.

1.04 DELIVERY, STORAGE AND HANDLING

A. Do not deliver or install interior items until spaces are enclosed and weathertight, wet work in spaces is complete and dry, and temporary HVAC system is operating and maintaining ambient temperature and humidity conditions at occupancy levels during the remainder of the construction period.

B. Deliver items in original unopened containers with manufacturer's name, model number and other product identification on legible labels. Keep units in manufacturer's protective packages until time of installation.

C. Store interior items out of weather, protected from damage and moisture.

D. Protect surfaces from abrasion and other damaging effects before, during and after installation.

E. Handling: Protect materials during handling and installation to prevent damage.

1.05 COORDINATION

Coordinate layout and installation of interior surfaces mounted items with adjacent construction, including ceiling suspension systems, light fixtures, HVAC equipment, fire-suppression system, and partitions.

1.06 WARRANTY

A. Tack Boards:
   1. Submit a "Life of the Building" warranty, stating that under normal usage and maintenance, and when installed in accordance with
manufacturer's instructions and recommendations, marker boards are guaranteed for the life of the building. Guarantee covers replacement of defective boards but does not include cost of removal or reinstallation.

2. Submit a standard warranty, stating when installed in accordance with manufacturer's instructions and recommendations, tack boards are guaranteed for one year against defects in materials and workmanship. Guarantee does not cover normal wear and tear, improper handling, any misuse, or any defects caused by vandalism or subsequent abuse. Guarantee covers replacement of defective material but does not include cost of removal or reinstallation.

PART 2 – PRODUCTS

2.01 FIRE EXTINGUISHER AND FIRE EXTINGUISHER CABINETS

A. Fire Extinguisher Manufacture: Amerex #B500 5-pounds capacity, multi-purpose dry chemical carrying valid certification tags; or equal. See Drawings for locations and quantities.

1. Multi-Purpose extinguishers utilize a specially fluidized and siliconized mono ammonium phosphate dry chemical. It chemically insulates Class A fires by melting at approximately 350 degrees F and coats surface to which it is applied. It smothers and breaks the chain reaction of Class B fires and will not conduct electricity back to the operator.

2. Rating: 2A, 10B:C.


4. Brackets: (Or equal)
   b. Surface Mounted Extinguishers (Not in Cabinets): Amerex #821.
      i. Fastening to Concrete: Stainless steel Tapcon ¼-inch by 1½-inches deep or equal.

5. Finish: Red epoxy polyester coating.

B. Fire Extinguisher Cabinet Manufacture: Potter-Roemer or equal. See Drawings for locations and quantities.

2. Type: Potter-Roemer, Alta #FRC7053-B-RR (Typical unless otherwise noted) 3-inches deep trim, semi-recessed.

3. Box: Cold rolled steel with an electrostatically applied, thermally-fused polyester coating with recoatable white finish.

4. Trim and Door: Stainless steel, Type 304 with #4 finish with radius returns and stainless steel continuous hinge.


6. Key: Key locks alike to confirm with District's key standard specified in Finish Hardware, Section 08700.

7. Wall Signage: As specified in Section 10400, Signage.

C. Existing Fire Extinguisher Recertification: Conform to NFPA 10.
1. Should the existing fire extinguisher require the 6 year maintenance, notify the District. Do not perform the inspection described below. The District shall choose to replace the unit.

2. Inspect existing fire extinguisher.
   a. Checks to see if it is fully charged.
   b. Check mechanical parts in working order. Check for broken or missing safety seals. Check for physical damage, corrosion, leakage or clogged nozzle.
   c. Check pressure gauge reading in the proper range and position.
   d. Check that operating instructions are legible and facing outward.
   e. Check for fullness, confirming by weight or lifting.
   f. When the inspection is complete to the satisfaction of the fire extinguisher inspector, the unit shall be attached with a valid certification tab.

3. Existing fire extinguisher shall receive signage specified in Signage: Section 10400.

2.02 TACK BOARDS AND MARKER BOARDS

A. Tack board Manufacture: Claridge Products and Equipment Inc., Series 5 or equal from AARCO Products, Inc., or ADP Lemco Inc. See Drawings for locations and quantities.
   1. Factory framed units.
      a. Fabric: Vinyl fabric shall meet FS CCC-W-408A, Type 1, 15 ounce (19 mils thick.) Koroseal product
      b. Material shall conform to ASTM E84 for flame-spread index of 76-200 and smoke developed 0-450 rating.
   3. Edge Trim: 6063-T5 aluminum in conformance with ASTM B221 with 201-R1 clear satin finish.
      a. 5/8-inch wide face with mitered and wrapped corners.
   4. Size: 4-feet high by length as indicated on Drawings.
   5. Colors: Vinyl color to be selected by Architect from manufacturer's standard colors.

B. Marker board Manufacture: Claridge Products and Equipment Inc., Series 5 or equal from AARCO Products, Inc., or ADP Lemco Inc.. See Drawings for locations and quantities.
   1. Factory framed units.
   2. Writing Surface: Conform to PEI-1001. LCS marker board 24 gage porcelain enamel steel with 7/16-inch mineral fiber board and 0.002-inch aluminum foil back panel.
      a. Mineral fiber board shall contain 100% reclaimed or recycled wood fibers including 3% minimum post consumer wood fibers.
         i. Mineral board shall be urea-formaldehyde free.
4. Edge Trim: 6063-T5 aluminum in conformance with ASTM B221 with 201-R1 clear satin finish.
   a. 5/8-inch wide face with mitered and wrapped corners.
5. Size: 4-feet high by length as indicated on Drawings.
6. Accessories: Each unit shall be provided with the following:
   a. Marker trough: Standard continuous, solid type aluminum tray with ribbed section and injection molded end closures each marker board
   b. Map Rail: Standard continuous (full length of marker board) 1-inch map rail with cork insert and end stops at the top of each marker board.
   c. Anchorage: Steel mount top "Z" hangers and bottom angle clips with # 8 flat head or pan head sheet metal fasteners into metal stud framing locations.

2.03 MOTORIZED PROJECTION SCREENS

A. Manufacture: Da-Lite Screen Company, Inc. or equal.
1. Ensure manufacturer has minimum 5 years experience manufacturing components similar to or exceeding project requirements.
   a. Screen Operation: Electrically operated, UL listed, retractable, with rigid metal roller.
   b. Motor: Housed inside metal roller. Includes automatic thermal overload protection, integral gears, capacitor and electric brake to prevent coasting, and preset, adjustable limit switches to automatically stop viewing surface in the UP or DOWN positions.
      i. Type: 3-wire, permanently lubricated, reversal type designed for mounting inside roller and to suit project requirements.
      ii. Voltage, Frequency: 115 V, 60 Hz.
      iii. Amperage: 2.4 amps maximum.
   c. Electric Controls: Wall mounted switch with integral junction box incorporated into screen housing. Switch mounted to Media Lectern.
      i. Voltage, Frequency: 115 V, 60 Hz.
      ii. Switch: 3 position type with cover plate for UP, DOWN and STOP functions.
   d. Screen Mounting: Wall include mounting hardware.
   e. Screen Case: Designed to receive mounting hardware and sized to suit projection screen.
      i. Material: 21 gage steel.
      ii. Design: Hexagonal flat-backed style with heavy-duty end caps concealing roller ends.
      iii. Length: to accommodate screen size and motor assembly.
   f. Screen Size: 5 feet – 3-inches high by 8 feet 5-inches wide viewing area.
Non-Tensioned Screen Material:

i. Front projection, flame retardant, mildew resistant fiberglass, black backing with without standard black borders, easily cleaned with mild soap and water solution.

ii. Bottom of fabric to form a pocket holding a metal rod.

iii. Seamless.

iv. Gain: 1.5 per SMPTE RP 94.


B. Accessories:

1. Low Voltage Control (LVC) System:

2. Silent Motor with integrated LVC.

3. Video Projector Interface Control: External, DC controls and Low Voltage 3-button switch with cover plate for wall switch operation.

4. Serial Control Board:
   a. SCB-100 RS-232: External, or Built-in or with NET-100 Ethernet-Serial Adapter; to be determined.

5. Installation Hardware: Fasteners and other components of type, size and spacing recommended by manufacturer for complete, functional and secure installation of electric screen.

6. Floating Mounting Bracket: White

2.04 PROJECTOR AND PROJECTOR MOUNTING

A. Suspended Ceiling Mounted Assembly:

1. Manufacture: Premier Mounts PP-FCTA QL or equal.

2. Features:
   a. Weight Capacity: 50 pounds.
   b. Designed to sit hidden above the ceiling tiles within the T-bar of a standard suspended ceiling frame.
   c. Four 14 gage (minimum) 25-feet long steel braided quick-locking cables with turnbuckles.
   d. T-bar plate sits hidden above ceiling tiles.
   e. Split-flange escutcheon ring (2) hole-cutting escutcheon rings.
   f. Electrical and cable knockouts.
   g. 9-inches lateral shift for precise projector placement.
   h. Wingnuts for rapid projector adjustment.
   i. Universal projector mount; Model PDS-PLUS.
   j. Pre-cut NPT with cable outlet, PWH-10B with adapter fitting and additional NPT pipe length necessary to the height location of projector shown on Drawings; or equal.
   i. Finish additional pipe length and fitting to match refinished pipe.

3. Electrical Connections: Coordinate connection for power and projector input and controls.

2.05 IN-GROUND BIKE RACK

B. Size: 86.375-inches long by 35¼-inches high above slab.

C. Material: ASTM A53, Schedule 40 steel pipe (2.375-inches outside diameter with .154-inch thick wall.)

D. Finish: hot-dipped galvanized after fabrication.

E. Installation Methods: Inground Anchor Mount.

F. Fabrication Shaping: Hydraulically mandrel press bending.

G. Concrete: As specified in Section 03300, Cast-In-Place Concrete.

2.06 FASTENERS

A. Stainless Steel Fasteners: AISI Grade 304.
   1. Hilti Kwik Bolt TZ concrete expansion anchors or equal.

PART 3 - EXECUTION

3.01 INSTALLATION

A. General:
   1. Install items in locations shown on the Drawings in accordance with manufacturer's installation instructions.
   2. Anchor all items securely, in plumb, level positions with components properly aligned.
   3. Fasteners:
      a. Stainless steel expansion anchors with tamper resistant bolt heads at exterior mounted items such as site benches.
      b. Stainless steel expansion anchors at all floor anchored mounted items such as metal shelving storage units, and cafeteria server equipment.

B. Tack Boards and Marker Boards:
   1. Chalk lines on wall for placing hangers at same vertical distances as required for height of board.
   2. Mount hangers to wall with specified fasteners.
   3. Using straight edge, shim where necessary so that all anchor points of hanger are in line and level. Anchor securely to wall.
   4. Sections of concealed hanger shall be anchored to wall are punched with 3/16-inch holes and shall be mounted to each stud location (16-inches on center) and not to exceed 24-inches on center. Angle hangers for bottom of board are punched with slotted holes for wall, and non-slotted hole for bottom of board, and shall be mounted at each stud location (16-inches on center) and not to exceed 24-inches on center.
   5. Attach bottom mounting angle clip with required wall fasteners to wall at Architect's specified height. Caution should be exercised to assure that the angle is level.
   6. Lift board into position on wall so that board hangers are slightly above wall hangers. Holding board firmly against wall, lower until board hangers engage with wall hangers.
   7. Using a wood block, tap bottom mounting angle up securely against tray and install screws as provided.
C. Projector Mounting Assembly: Carefully cut ceiling tiles and panels to prevent denting or damaging tile and panels for NTP (pipe) and electrical junction boxes. Ease exposed edges.

3.02 CLEANING

A. General: Wipe components clean prior to final acceptance.

END OF SECTION
PART 1 - GENERAL

1.01 SUMMARY

A. Work Included: Provide all labor, materials, necessary equipment, services and included but limited to all related work to complete surfaced mounted motorized operated roller type window coverings, as indicated on the Drawings and as specified herein or both.

1. Provide multiband motorized window covering units in the quantities indicated to the following rooms:
      i. One 4 multiband full length unit to cover the entire width of the existing North exterior storefront less the width of the door opening.
      ii. One 2 multiband full length unit to cover the entire width of the existing East exterior storefront, between Grid Line 10 and 10.5.
   b. Computer Laboratory, L148.
      i. One 4 multiband full length unit to cover the entire width of the existing North exterior storefront less the width of the door opening.
      ii. One 2 multiband full length unit to cover the entire width of the existing East exterior storefront.
   c. Computer Laboratory, L149: One 4 multiband full length unit to cover the entire width of the existing North exterior storefront less the width of the door opening.
   d. Computer Laboratory, L150: One 4 full length unit to cover the entire width of the existing North exterior storefront less the width of the door opening.
   e. Office, L156A: One multiband 3 full length unit to cover the entire width of the existing North exterior storefront.

2. Each multiband unit shall be divided to align to the centerline of each existing vertical aluminum storefront mullion.

3. Bottom of window covering unit terminates at the existing/new wood rail as indicated on Drawings.

4. Motors: Provide amount of motors to operate units.

5. Coordinate and provide power to motorized window covering.

B. Related Work:

1. Selective Demolition: Section 01732.
   a. Remove existing window covering and patch and plug surfaces from removed fasteners.

2. Aluminum Storefront: Section 08410.

3. Division 16: Electrical.
   a. Coordinate and provide power to motorized window covering units.
   b. Coordinate and connect motor controls with audio visual controls.
1.02 DESIGN REQUIREMENTS
A. Sustainable Design Requirements:
   1. Steel used in work in this Section are intended contribute to meeting requirements for recycle content outlined in LEED NC3.0, Credit MR4.  
   2. Aluminum used in work in this Section are intended contribute to meeting requirements for recycle content outlined in LEED NC3.0, Credit MR4.

1.03 SUBMITTALS
A. Submit in accordance with the provisions of the General Conditions, Article 3.11.
B. Product Data: Submit product literature and installation instructions.
   1. Preparation instructions and recommendations.
   2. Styles, material descriptions, dimensions of individual components, profiles, features, finishes and operating instructions.
   3. Storage and handling requirements and recommendations.
   4. Mounting details and installation methods.
   5. Typical wiring diagrams including integration of EDU controllers with building management system, audiovisual and lighting control systems as applicable.
C. Shop Drawings:
   1. Indicate field-measured dimensions of opening which are to receive window coverings, details on mounting surface and sill conditions, and details of corners.
   2. Plans, elevations, sections, product details, installation details, operational clearances, power and control wiring diagrams, and relationship to adjacent work.
   3. Prepare control, wiring diagrams based on, switching and operational requirements provided by the Architect in electronic format.
   4. Include one-line diagrams, wire counts, coverage patterns, and physical dimensions of each item.
D. Selection Samples: For each finish product specified, one set of shade cloth options and aluminum finish color samples representing manufacturer's full range of available colors and patterns.
E. Verification Samples: For each finish product specified, one complete set of shade components, unassembled, demonstrating compliance with specified requirements. Shade cloth samples and aluminum finish sample as selected. Mark face of material to indicate interior faces.
F. Maintenance Data: Methods for maintaining roller shades, precautions regarding cleaning materials and methods, instructions for operating hardware and controls.
G. Warranty: Provide manufacturer's warranty documents as specified in this Section.
H. Window Covering Schedule: For all roller shades. Use same room designations as indicated on the Drawings and include opening sizes and key to typical mounting details.
I. Manufacturer's Certifications:
1. Compliance with Contract Documents: Certify compliance with requirements of specification including statement that specified warranties will be provided without restriction.

2. Code Compliance: Certify that materials proposed for use comply with applicable building codes and environmental regulations.

3. Installer Approval: Certify that installer is an approved installer of manufacturer.

J. Environmental Submittals:
1. Environmental Certification: Submit written certification from the manufacturer, including third party evaluation, recycling characteristics, and perpetual use certification as specified below. Initial submittals, which do not include the Environmental Certification, below will be rejected. Materials that are simply 'PVC free' without identifying their inputs shall not qualify as meeting the intent of this specification and shall be rejected.

2. LEED Documentation:
   a. Steel: Submit letter or product data from manufacturer indicating recycled content. Designate percentage of post-consumer and post-industrial recycled content.
   b. Aluminum: Submit letter or product data from manufacturer indicating recycled content. Designate percentage of post-consumer and post-industrial recycled content.
   c. Submit hard copies of completed Online Documentation required for LEED MR Credit 4.

3. Third Party Environmental Certification Evaluation: Provide documentation stating that shadecloth had undergone third party evaluation for chemical inputs down to scale of 100 parts per million that have been evaluated for human and environmental safety.
   a. Identify inputs which have been known to be carcinogenic, mutagenic, teratogenic, reproductively toxic and endocrine disrupting.
   b. Identify items that are toxic to aquatic systems, contain heavy metals and organohalogens.
   c. Shadecloth material shall contain no inputs that are known problems to human and environmental health per major criteria cited above except for input required to meet local fire codes.

1.04 REFERENCED STANDARDS
A. Published specifications, standards, tests, or recommended methods of trade or industry apply to the work of this Section where cited by the abbreviations noted below.
   a. NFPA 70 National Electrical Code, Article 100, Definitions.
4. California Electrical Code 2013 (CEC.)
1.05 QUALITY ASSURANCE

A. Source Limitations: Work of this Section to be performed by single manufacturer and their authorized installer with unity responsibility for design, engineering, submittals, field measurements, fabrication, installation and warranty for:
   1. Motorized roller shade system, motors, controls and low-voltage electrical control wiring.
   2. Power wiring.

B. Installer's qualifications:
   1. The installer shall be a firm approved by window covering manufacture.
   2. The installer shall be qualified to install the product specified, as demonstrated by prior experience.

C. Turn-Key Single-Source Responsibility for Interior Roller Shades: To control the responsibility for performance of the electric roller shade system; assign the design, engineering, and installation of electronic drive roller shade control system, shades, addressable controls, communication interfaces, and any required sensors, switches and low voltage control wiring specified in this Section to the manufacturer of the shade and control system. The Architect will not produce a set of electrical drawings for the installation of control wiring for the electric roller shade control system.

D. Environmental Requirements:
   1. Anti-Microbial Characteristics: 'No Growth' per ASTM G21 results for fungi ATCC9642, ATCC 9644, ATCC9645.
   2. Sustainable Design Requirements: Steel and aluminum used in work of this section is intended to contribute to meeting requirements for recycled content outlined in LEED™-NC2.2 Credit MR4.
   3. Recycling Characteristics: Provide documentation that the shade cloth can and is part of a closed loop of perpetual use and not be required to be down cycled, incinerated or otherwise thrown away. Scrap material can be sent back to the mill for reprocessing and recycling into the same quality yarn and woven into new material, without down cycling. Certify that this process is currently underway and will be utilized for this Project.
   4. Perpetual Use Certification: Certify that at the end of the useful life of the shade cloth, that the material can be sent back to the manufacturer for recapture as part of a closed loop of perpetual use and that the material can and will be reconstituted into new yarn, for weaving into new shade cloth. Provide information on each shade band indicating that the shade band can be sent back to the manufacturer for this purpose.

E. Regulatory Requirements
   1. Fire-Test-Response Characteristics: Passes NFPA 701 small and large-scale vertical burn. Materials tested shall be identical to products proposed for use.
   2. Electrical Components: NFPA 70, Article 100 listed and labeled by UL, ETL or other testing agency acceptable to authorities having jurisdiction, marked for intended use and tested as system. Individual testing of components is not acceptable in lieu of system testing.
      a. Electrical control equipment shall comply with requirements of CEC.
3. Motorized system shall have been tested and labeled as integrated system by recognized electrical testing laboratory. Component testing only is not acceptable.

F. Mock-Up: Provide a mock-up of one roller shade assembly for evaluation of mounting, appearance and accessories.
   1. Locate mock-up in window designated by Architect.
   2. Do not proceed with remaining work until, mock-up is accepted by Architect.

1.06 DELIVERY, STORAGE AND HANDLING
A. Deliver shades in factory-labeled packages, marked with manufacturer and product name, fire test response characteristics, and location of installation using the same room designations indicated on Drawings and in the Window Treatment Schedule.
B. Deliver products to site, store, handle and protect in accordance with manufacturer’s instructions and recommendations.
C. Schedule delivery to prevent delays but minimize on-site storage.
D. Do not deliver products to site until concrete, masonry, plaster, painting, and other wet work had been completed and is dry.
E. Store products in clean, dry area, laid flat and blocked off ground to prevent sagging, twisting or warping.
F. Protect products from weather, direct sunlight, surface contamination, corrosion and damage from construction traffic or other causes.

1.07 PROJECT CONDITIONS
A. Environmental Limitations: Install roller shades after finish work including painting is complete and ambient temperature and humidity conditions are maintained at the levels indicated for Project when occupied for its intended use.
B. Power and control wiring shall be complete and certified, fully operational with uninterrupted communication on the lines and minimal noise certified by a commissioning agent (by others).
   1. Noise on the line not to exceed shade manufacturer’s limits.

1.08 WARRANTY
A. Motorized Roller Shade Hardware, and Shadecloth: Manufacturer’s standard non-depreciating twenty-five year limited warranty.
B. Roller Shade EDU’s and EDU Control Systems: Manufacturer’s standard non-depreciating five-year warranty.
C. Roller Shade Installation: One year from date of Substantial Completion.

1.09 MOCK-UPS
A. Construct mock-up of one full size multiband unit specified for evaluation of mounting, appearance and accessories.
B. Locate where directed by Architect.
C. Rework mock-up installations not meeting specified requirements as directed by Architect.

D. Accepted mock-ups will establish minimum standard of quality and workmanship for window shade mounting, appearance and accessories.

E. Retain accepted mock-ups in undisturbed condition until work of this section is complete.

F. Incorporate accepted mock-ups as part of work.

1.10 FIELD MEASUREMENTS
Take field measurements before preparation of Shop Drawings and fabrication to ensure proper fitting of window shade system.

1.11 COORDINATION
A. Coordinate installation of electrically operated shades with installation of audio-visual controls specified under Section 11130 – Audio Visual. Ensure shade control system is interfaced with audio-visual controls.

B. Coordinate installation of electrically operated shades with installation of electrical wiring specified under Division 16 – Electrical. Ensure electrical power of correct characteristics is provided to correct locations.

C. Coordinate installation of electrically operated shades with installation of lighting controls specified under Division 16 – Electrical. Ensure shade control system is interfaced with light controls.

PART 2 - PRODUCTS

2.01 MANUFACTURERS
A. Acceptable Manufacturers: The specified components and attributes are those of MechoShade Systems and are intended to establish a measure of quality, utility, and appearance required for this Project.

1. MechoShade Systems, Inc.

2.02 COMPONENTS
A. Electrically Operated Single Roller Sunscreen Window Shades:
   1. Shadecloth: Visually transparent shadecloth; fabricated from 100 percent thermoplastic olefin for both core yarn and jacket; single thickness; non-raveling 0.030 inch fabric thickness; 3 percent open; MechoShade Systems EcoVeil Series 1550, Color #1554 Black Brown.
   2. Shade Hardware: Configuration to allow for removal of shade roller tube from brackets without removing of hardware from opening and without requiring removal of end or center supports, to allow removal and reinstallation of shadebands without requiring removal of shade tube, drive or operating support brackets and to allow for field adjustment of motor and replacement of operable hardware components without requiring removal of brackets.
      a. Mounting brackets: Minimum 1/8-inch sheet steel or thicker as required to support 150 percent weight of full weight of each shade; configured for pocket mount; compatible with specified shade pocket.
b. Shade Rollers: Extruded aluminum tube; 6063-T6 aluminum alloy; diameter and wall thickness as required to support shade fabric without excessive deflation and to house motor; internal keyways to receive tubular motor; 2 integral fabric mounting channels configured to prevent fabric from disengaging from tube.

c. Shade Mounting Splines: Extruded vinyl spline with asymmetrical insertion-locking channels and embossed fabric guide for use with specified shade roller; sufficient capacity to hold fabric and additional hem/batten weights without disengaging from shade roller; readily removable from shade roller without having to remove shade roller from mounting brackets.

d. Shade Pockets: Extruded aluminum vented shade pocket; 6063-T5 aluminum alloy.

i. Surface Mounting: 1-piece; configured to receive flush closure panel; 4¾-inches wide x 5-inches high overall; available in continuous lengths up to 10 feet without seams or joints; custom color baked enamel finish to match curtain wall framing; #4133 Surface Mounted Pocket.

ii. End Caps: #UPCA 4650 AL.

e. Hem Bar Weights: Extruded aluminum bars; continuous single lengths; appropriate size and weight for shadeband; configured to concealing in fabric hem pocket; mill finish.

B. Motor Drive System - Electronic Drive Unit (EDU):

1. Intelligent Encoded EDU, and Control System: Tubular, asynchronous (non-synchronous) EDU's, with built-in reversible capacitor operating at 120VAC/60Hz, single phase, temperature Class B, thermally protected, totally enclosed, maintenance free with line voltage power supply equipped with locking disconnect plug assembly furnished with each EDU.

2. Quiet: 42 – 46 db.

3. Conceal EDU's inside shade roller tube.

4. Maximum current draw for each shade EDU of 0.9Amps at 120VAC.

5. Use EDU's rated at the same nominal speed for all shades in the same room.

6. Use EDU's with minimum of 34RPM, that shall not vary due to load / lift capacity.

7. Total hanging weight of shade band shall not exceed 80 percent of the rated lifting capacity of the shade EDU and tube assembly.

C. EDU System: (software, two-way communication): Specifications and design are based on the Intelligent EDU Control System, WhisperShade IQ System) as manufactured by MechoSystems. Other systems may be acceptable providing all of the following performance capabilities are provided. EDU and control systems not in complete compliance with these performance criteria shall not be accepted as equal systems.

1. EDU shall support two methods of control.

a. Local Dry Contact Control Inputs.

i. EDU shall be equipped with dry contact inputs to support moving the EDU/shade to the upper and lower limits.

ii. EDU shall be equipped with dry contact inputs to support
moving the EDU/shade to local switch preset positions.

iii. Shall support configuring the EDU under protected sequences so that a typical user would not change the EDU's setup. At a minimum the configuration should include setting limits, setting custom presets and configuring key modes of operation.

b. Network Control:

i. EDU shall be equipped with a bi-directional network communication capability in order to support commanding the operation of large groups of shades over a common backbone. The network communication card shall be embedded into the tubular EDU assembly.

2. Upper and lower stopping points (operating limits) of shade bands shall be programmed into EDU's using either a hand held removable program module / configurator or a local switch.

3. Alignment Positions: Each EDU shall support a minimum of 133 repeatable and precisely aligned shade positions (including limits and presets.)

a. All shades on the same switch circuit or with the same network group address with the same opening height shall align at each limit or preset (intermediate stopping position) when traveling from any position, up or down.

b. Shades of differing heights shall have capability for custom, aligned intermediate stop positions when traveling from any position, up or down.

c. Alignment of shades mechanically aligned on the same EDU shall not exceed ±0.125-inches when commanded to the same alignment position.

d. Alignment of shades on adjacent EDU's shall not exceed ±0.25-inches when commanded to the same alignment position.

e. Local Switch Presets: A minimum of 3 customizable preset positions shall be accessible over the local dry contact control inputs and over the network connection.

i. Upon setting the limits for the shade EDU these preset positions shall automatically default to 25%, 50% and 57% of the shade travel.

ii. These positions shall be capable of being customized to any position between and including the upper and lower limits of the shade. A removable program module / configurator or local switch shall be capable of customizing the position of these presets.

f. Network Presets: A minimum of 29 customizable preset positions (including the 3 local switch presets) shall be accessible via network commands.

i. Upon setting the limits for the shade EDU these preset positions shall automatically default to the lower limit unless customized elsewhere.

ii. These positions shall be capable of being customized to any position between and including the upper and lower limits of the shade. A removable program module / configurator shall be capable of customizing the position of these presets.
4. Network Control:
   a. The system shall have the capability of two-way digital communication with the EDU's over a common backbone.
   b. Each EDU shall possess 8 addresses capable of being employed for various levels of group control. These addresses shall be configurable via a handheld configurator and/or a PC controller. A 9th unique address shall enable the EDU(s) to be independently controlled and configured over the network via a handheld configurator and/or a PC controller.
   c. Low Voltage Communication Network Implementation.
      i. The low voltage network shall employ a bus topology with daisy chained network connections between nodes over a CAT5 cable (4 UTP) or over a 2 UTP cable employing at least 1 pair at 16 AWG for power and 1 pair at 22 AWG for data.
      ii. The low voltage network (±13VDC) shall be powered by the nodes attached to it. These nodes could be line voltage powered EDU's attached to 120 VAC. Alternatively, low voltage nodes shall be powered typically by a centralized low voltage power supply. If a CAT5 network cable is employed and the node draws less than 1W then the node may be powered by DC power supplied by an associated line voltage EDU.
      iii. Network Capacity: 4000 feet maximum, 250 nodes maximum.
      iv. The number and size of a centralized DC supply shall vary depending upon the network requirements.

5. Operating Modes:
   a. Uniform or Normal Modes of Operation:
      i. Uniform mode shall allow for shades to only move to defined intermediate stop positions to maintain maximum uniformity and organization.
      ii. Normal Mode shall allow for shades to move to both intermediate stop positions, plus any position desired between the upper and lower limits as set by the installer.

   a. An address that is transmitted by either a switch or central controller shall be responded to by those EDU's with the same address in their control table.
   b. IS shall provide for interface with other low voltage input devices via a set of dry contact terminals located on the switch.
   c. Standard switch or IS may control an individual, sub-group or group of EDU's in accordance with the address in each EDU.
   d. Switch shall be located in Audio Visual control unit (media lectern) at locations when provided or wall mounted at Office L156A. The number of buttons are as follows:
      i. Server Demonstration Room, L147: Local wall mounted 5 + 5 dual button station to control the two units in Room 147.
      ii. Computer Laboratory, L148:
         1) Media Lectern Mounted master switch to control local wall
mounted station in Server Demonstration Room, L147.
2) Media Lectern Mounted local 5 + 5 dual button station to control the two units in Room L148.
   iii. Computer Laboratory, L149: Local Media Lectern mounted 5 dual button station to control the one unit in L149.
   iv. Computer Laboratory, L150: Local Media Lectern mounted 5 dual button station to control the one unit in L150.
   v. Office, L156A: Local wall mounted 5 dual button station to control the one unit in L156A.

2.03 SHADE FABRICATION

A. Fabricate shades to completely fill glazed openings from pocket-to-sill and from centerline of mullion to centerline mullion, from centerline of mullion to jamb and from jamb-to-jamb unless specifically indicated otherwise.

B. Fabricate shades in single width with warp running vertically; fabricate without horizontal seams.

C. Fabricate shadecloth to hang flat without buckling or distortion.
   1. Fabricate with heat-sealed trimmed edges to hand straight without curling or reveling.
   2. Fabricate unguided shadecloth to roll true and straight without shifting sideways more than 1/8-inch in either direction per 8 feet of shade height due to warp distortion or weave design.

D. Provide battens of roll-formed stainless or tempered steel in shades as required for proper tracking and uniform rolling of shadebands. Ensure width-to-height ratios do not exceed manufacturer’s standards.
   1. Roll form battens concave to match contour of roller tube.
   2. Conceal battens in totally opaque fabric pockets matching inside and outside colors of shadeband. Form pockets no more than 1½-inches high; RF weld batten pockets into shadecloth.

E. Provide information on each solar shadeband indicating that shadeband material can be sent back to manufacturer for recapture as part of closed loop of perpetual use and that shadecloth material can and will be reconstituted into new yarn for weaving into new shadecloth.

2.04 FINISHES

Exposed Metal Surfaces: Baked enamel; colors to be selected.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Examine condition of substrate to determine acceptability for installation. Verify that substrate conditions are acceptable for product installation in accordance with manufacturer’s instructions and recommendations.

B. Verify that glazed openings are ready to receive work.

C. Verify that support framing and backing has been installed, is properly located, and is of proper characteristics.
D. Verify that electrical power to shades has been installed, is properly located, and is of proper characteristics.
   1. Verify that power panels and circuits of sufficient size to accommodate roller shade manufacturer's requirements.
   2. Verify that conduits have been provided with pull wires.

E. Do not begin installation until unsatisfactory conditions have been corrected.

3.02 PREPARATION
A. Clean surfaces thoroughly prior to installation.
B. Prepare surfaces using methods recommended by roller shade manufacturer for specific substrate under project conditions.

3.03 INSTALLATION
A. Shade Control Subcontractor shall furnish and install shade controllers, interfaces, splitters, coupler, sensors, switches, junction boxes, etc mounted in the ceiling in an accessible location. Locations for all visible devices to be coordinated with Architect. The shade control subcontractor shall inspect all material included in this contract prior to installation. Manufacturer shall be notified of unacceptable material prior to installation.

B. Low Voltage: Furnish and install power connection between shade control system and EDU, and shall be capable of providing single line voltage wire pull for each EDU.
   1. Shade Power Wiring: Shall furnish and install line voltage Cable from roller shade motor into line voltage side of control system.
   2. Shall wire from General Contractor, provided, power junction box to each motor on the shade network.
   3. Shall furnish and install a disconnect plug at the end of the power wiring run to each EDU. The disconnect plug must mate with a matching disconnect plug on the motor cable. EDU cable disconnect plug must be prefabricated by the manufacturer to meet UL and ETL systems requirements.

C. Install roller shades and roller shade control system in accordance with the manufacturer's instructions and recommendations for type of mounting and operation required and in accordance with final reviewed shop drawings.

D. Install roller shades level, plumb, square, true, and securely anchored in place with recommended hardware and accessories to provide smooth operation without binding.
   1. Locate so that shadeband is not closer than 2-inches to interior face of glass.
   2. Install shade pockets continuously except where indicated otherwise on Drawings.

E. Secure in place with concealed fasteners.

F. Install motors, line voltage, controllers and control wiring in accordance with wiring diagrams; ensure above ceiling and concealed wiring is plenum rated or installed conduit as required by code.
   1. Run line voltage as dedicated home runs terminating in junction boxes.
   2. Run line voltage from terminating points to motor controller, wire roller shade motors to motor controllers.
3. Run low voltage control wiring from motor controllers to switch/control stations.

E. Coordinate interface and connection of controls with audio-visual controls and lighting controls.

3.04 TOLERANCES
A. Maximum Variation of Gap at Window Opening Perimeter: ¼-inch (±1/8-inch) per 8 feet of shade height.
B. Maximum Offset from Level: 1/8-inch.

3.05 ADJUSTING
A. Adjust and balance roller shades to operate smoothly, easily, safely and free from binding or malfunction throughout entire operational range.
B. Adjust shade and fabric to hang flat without buckling or distortion. Replace units of components that do not hang properly or operate smoothly.
C. Test electrically operated shades for proper operation. Repair of replace units which do not perform correctly.
D. Touch-up damaged finishes and repair minor damage in manner to eliminate evidence of repair. Remove and replace work that cannot be satisfactorily repaired.

3.06 CLEANING
Clean exposed surfaces including metal and fabric using non-abrasive materials and methods recommended by shade manufacturer. Replace work that cannot be satisfactorily cleaned.

3.07 DEMONSTRATION
A. Engage factory-trained service representative to train District's designated personnel to properly operate, adjust and maintain roller shade system.
B. Conduct demonstration and training on project site.
C. Allow minimum 6 hours duration for demonstration and training.

3.08 PROTECTION OF INSTALLED WORK
A. Protect installed products until completion of Project.
B. Touch-up, repair or replace damaged products before Substantial Completion.

END OF SECTION
SECTION 15050

GENERAL MECHANICAL

PART 1 - GENERAL

1.01 GENERAL

A. General Requirements and other Sections, as listed in Table of Contents, are included in and made a part of this Section. Consult these Sections to determine extent and character of related work of other Sections, and provide proper coordination of work specified herein with that specified elsewhere to produce a completely finished and fully operable installation. This Section applies to other Sections of Division 15.

B. Plans are diagrammatic and show general locations of ductwork, equipment, and piping and are not to be scaled; dimensions and existing conditions shall be checked at building.

C. Construction documents have been designed to meet or exceed minimum requirements of Codes; therefore, unless before signing Contract, Contractor has notified Owner's Representative, in writing, of any items in conflict with said codes, Contractor shall thereafter make any minor adjustments necessary to meet said Codes at no cost to Owner.

1.02 REQUIRED SUBMITTALS

A. Shop Drawings: Submit manufacturer's Certified Shop Drawings for heating, ventilating, piping and equipment. Include manufacturer's names, trade names, model numbers, sizes, capacities, operating weights, and other data necessary for complete and prompt identification and review. Submit in accordance with the provisions of the General Conditions, Article 3.11.

B. Record "As-built" Drawings:

1. Provide and keep up-to-date a complete "as-built" record set of black line prints. Mark up these drawings daily to show every change from original drawings and specifications. Show exact "as-built" locations, sizes and kinds of equipment. These prints may be obtained from Architect at cost. Keep these drawings on job site and use only for record set.

2. Upon completion of work, transfer neatly onto a clean set of drawings, using competent draftsperson, changes entered on the above drawing set. Submit to Architect for approval. Submit in accordance with the General Conditions.
C. Maintenance and Operating Instructions:

1. Furnish operating instructions, maintenance instruction, parts lists, and other bulletins and brochures pertinent to operation and maintenance of major equipment provided, in accordance with General Conditions.

2. Properly instruct Owner's personnel in operation and maintenance of material, equipment and apparatus provided.

D. Written guarantees, in accordance with the General Conditions.

1.03 FEES AND PERMITS

Procure and pay for licenses and permits, and pay fees, deposits, assessments and tax charges required to perform installation of material, equipment, and systems herein specified and indicated.

1.04 MATERIAL DELIVERY, STORAGE AND HANDLING

A. Deliver materials in timely manner to insure uninterrupted progress of work. Manufactured materials shall be delivered in unopened original containers with brand and maker's name marked thereon. Materials in broken containers or showing evidence of damage will be rejected and must be immediately removed from site.

B. Store materials, immediately upon receipt, at location designated by Owner so as to preclude damage thereto and permit ready access for identification and inspection of each shipment.

PART 2 - MATERIALS AND PRODUCTS

2.01 General

A. Material, equipment, and apparatus hereinafter specified shall be new, unless specifically noted otherwise. Material, equipment, and apparatus may be taken from stock, but submittal shall include manufacturer's identification and statement indicating conformance with specified Codes, Regulations, Standards, referenced Specifications, and requirements specified herein. Material, equipment and apparatus shall be identified by manufacturer's name, nameplate and pertinent data.

B. Electrical material, equipment, and apparatus specified herein, shall conform to requirements of NEC.

2.02 MISCELLANEOUS STEEL, BOLTS, NUTS, AND WASHERS
A. Miscellaneous steel angles, channels, brackets, rods, clamps, etc., shall be of new materials conforming to ASTM A36. Steel parts exposed to weather or where noted shall be stainless steel or hot dipped galvanized after fabrications.

B. Bolts and nuts, except as otherwise specified, shall conform to ASTM "Standard Specifications for Low Carbon Steel Externally and Internally Threaded Standard Fasteners", Designation A307. Bolts shall have heavy hexagon heads, and nuts shall be of hexagon heavy series. Bolts, washers, nuts, anchor bolts, screws and other hardware, located outdoors or in air intake plenums shall be hot-dipped galvanized, or stainless steel, and galvanized nuts shall have a free running fit. Cadmium plated not acceptable in these locations. Bolts shall be of ample size and strength for purpose intended.

2.03 CONCRETE ANCHORS

A. B-Line, Mason Industries, or approved equal, wedge anchors, U.L. Listed. Powder actuated devices are not permitted.

B. Maximum loading on inserts and rods shall not exceed 75 percent of rating.

2.04 PIPE HANGERS AND SUPPORTS

A. Pipe Supporting Devices: B-Line, Unistrut, or approved equal, with electro-chromate integral factory protective coating to prevent rusting and corrosion. At completion of work, any pipe supporting apparatus or accessory exhibiting rust or corrosion will not be accepted.

B. Support piping so that it is firmly held in place by hangers, supports, and special hangers as required. Support piping where called for in vibration isolation schedule on drawings with spring required.

C. Support Individually Suspended Piping with Hangers and Threaded Rod as follows:

<table>
<thead>
<tr>
<th>Pipe Size</th>
<th>Hanger</th>
<th>Minimum Rod Size</th>
</tr>
</thead>
<tbody>
<tr>
<td>2&quot; and smaller</td>
<td>B-Line B3690</td>
<td>3/8&quot;</td>
</tr>
<tr>
<td>2-1/2&quot; to 3&quot;</td>
<td>B-Line B3690</td>
<td>1/2&quot;</td>
</tr>
<tr>
<td>4&quot; to 5&quot;</td>
<td>B-Line B3100</td>
<td>5/8&quot;</td>
</tr>
</tbody>
</table>

D. Each branch line to have at least one hanger.

E. Support piping near floor with steel stanchions welded to plates and secured to pipe and floor.

F. Space hangers for horizontal pipe with maximum distance between hangers as follows:
1. Copper 1-1/2" and smaller: maximum 6'0"; 2" and larger: maximum 10'-0".

2. Steel 1" and smaller: 6'0"; 1-1/4" and larger: maximum 10'-0".

G. Trapeze Hangers: Single or double 12 gauge channel, B-Line B22 or B22A with B-Line B2000 series pipe clamps and Vibraclamp isolators.

H. Wall Support: Individual pipe sizes up to 3": B-Line B409 series, 4" to 8": B-Line B297 series.

I. Metal Deck Attachment: B-Line B3019.

2.05 SEISMIC RESTRAINTS

A. Anchorage and seismic restraint of permanent equipment and associated systems shall be designed to resist the total design seismic forces prescribed in Section 1613A of the 2013 California Building Code.

B. Seismic restraints may be omitted from suspended piping and duct if all of the following conditions are satisfied:

1. Lateral motion of the system will not cause damaging impact with surrounding systems or cause loss of system vertical support.

2. System must be welded steel pipe, brazed copper pipe, sheet metal duct or similar ductile material with ductile connections.

3. Rod-hung supports less than 12 inches in length must have top connections to the structure such as swivel joints, eye bolts or vibration isolation hangers for the entire length of the system run.

2.06 FIRE-RATED PIPE PENETRATIONS

A. Provide State Fire Marshall approved assemblies at penetrations of floors, fire-rated walls and partitions, and smoke-rated walls and partitions. Fill annular space with UL listed incombustible intumescent putty. Seal both sides of penetrations at walls and floor slabs with incombustible sealant.

B. Piping penetrating floors, fire-rated walls and partitions, and smoke-rated walls and partitions shall be metallic.

2.07 WALL PENETRATIONS

A. Provide metal sleeves where pipes pass through walls, partitions, floors, ceilings or structural members unless otherwise noted.
B. Sleeves in Plaster Walls and Partitions: 18 gauge galvanized sheet steel, both ends flush with finished surface. Pack with mineral fiber and caulk, or per "Fire-Rated Pipe penetration" where required.

C. Clearance: Size sleeves and core drilled holes to provide 1/2" minimum annular clearance around pipe.

D. Plates: Hinged, or chromium plated steel with spring and snap.

2.08 ACCESSIBILITY REQUIREMENTS

A. Faucets: The force to activate controls to be no greater than 5 pounds.

PART 3 - EXECUTION

3.01 INSTALLATION

A. Provide miscellaneous equipment and supplies, at no additional cost to Owner, if required to make systems operable as specified or shown in Drawings.

B. Connect Mechanical systems to existing utilities where applicable.

C. Store, uncrate, hoist, and set into place equipment and material pertinent to Mechanical work of Division 15.

D. Provide carpentry, steel fabrication, and backings involved in making stands and supports required for equipment, where such supports are not specified in work of other Sections.

E. Building will be in use while work of this Contract is in progress. Contractor shall be responsible for Owner's equipment, furnishings and materials of any condition. Contractor shall be responsible for moving and storing Owner's equipment, furnishings and materials as required to perform work of this Contract. Damage to any of Owner's equipment, furnishings and materials shall be repaired or replaced to Owner's satisfaction. This paragraph includes Owner's equipment, furnishings and materials stored in buildings, mechanical spaces and in crawl spaces under buildings.

F. Provide material, equipment and systems indicated on Drawings, but not mentioned in this Division, and vice versa, as though specifically indicated by both Specifications and Drawings. Install material, equipment, and systems generally as indicated. However, accomplish minor changes as directed by Owner's Representative in order to accommodate installation of other material, equipment, and systems without additional expense to Owner.
G. Do not permit or cause any work to be covered or enclosed until it has been inspected, tested, and approved. Should any work be enclosed or covered before such inspection and test, uncover work and after it has been inspected, tested and approved, make repairs with such materials as may be required to restore this work and that of other Sections to its original and proper condition.

H. Properly adjust, repair, or replace any equipment producing objectionable noise or vibration in any occupied areas of building, including providing additional brackets, bracing, vibration isolators, etc., to prevent objectionable noise or vibration from equipment installed under this Division.

I. Protect materials, equipment, and apparatus, both in storage and after installation, until date of acceptance by Owner. Provide temporary storage facilities for material and equipment as necessary. Material, equipment, or apparatus damaged because of improper storage or protection will be rejected, removed from site and replaced at no additional cost to Owner with new, duplicate, material, equipment, or apparatus.

J. Repair damage to premises due to poor workmanship, defective material or equipment. Restore premises to their condition prior to damage and provide new material, equipment or apparatus to replace that damaged. Included is restoration of damage caused by leaks and piping system failures. Work and material used shall be at no additional cost to Owner.

K. Coordinate height of accessible fixtures with those indicated in construction drawings.

L. Interruption of electrical services or existing mechanical systems shall be scheduled at least 24 hours in advance and only at times approved by SFUSD. Contractor shall minimize such interruptions by carefully planning work and by using existing shutoff valves when making connections to existing systems.

3.02 COORDINATION AND CLEARANCE

A. Installations depicted on Drawings are, in many locations, designed to fit tightly into work under other Divisions, that is, without any remaining clearance between work under this Division and work under other Divisions. Completely coordinate work with other Divisions so that lines, grades, slopes and vertical and horizontal location of pipes, invert elevations, equipment, and ducts shall be exactly determined in field and cleared with other Divisions before installation of these items is begun. No extra compensation will be made for failure to observe this clause. Piping, ductwork and equipment shall be installed allowing for work of other Divisions both above and below work of this Division.

B. Piping and ductwork shall be concealed in ceilings, furred walls, partitions and pipe spaces except where specifically noted otherwise.
C. Adequate clearance for protection of piping and equipment, access to operable devices, automatic devices, and for access to lubrication points shall be maintained. Provide minimum 18 inch clear passageway. Unless otherwise shown, piping, diffusers, grilles, and ductwork shall be installed as high as possible to provide maximum headroom.

D. Schedule work in advance and avoid delays and interferences. Conform to construction schedule and make installation when and where directed.

3.03 ACCURACY OF DATA

General arrangement and location of piping, ductwork, apparatus, etc., is shown on Drawings. Minor changes may be necessary to accommodate other work. Should it be necessary to deviate from arrangement or location indicated due to interference with new and/or existing work, make such deviations, such as offsets in piping and ducts that may be necessary, whether shown or not, without extra expense to Owner.

3.04 PAINTING

A. Factory finished equipment shall be primed and painted with two coats of semi-gloss enamel, unless specified otherwise, color of finish coat as selected by Owner.

B. Other painting required for the work, such as patching, shall be provided as required under this Section and per Section 09900 Painting.

3.05 INSTALLATION WORKMANSHIP

A. Workmanship shall be of highest standards of the trades and shall result in a neat, clean, orderly and coordinated installation according to latest practices and consistent with intent of these Contract Documents. Entire installation shall be accomplished by personnel especially trained and qualified in their respective trades.

B. Install material, equipment, and apparatus with like elements and appurtenances in similar location, position, and elevation. Do not install any diagonal or otherwise irregular work without written approval from Owner.

C. Should any part of installation result in an incomplete or inoperable system, or systems, provide additional material or equipment necessary to complete installation as required.

D. Install material, equipment, and apparatus entirely out of way of lighting fixtures, doors, and other interferences.
E. Inspect material, equipment, and apparatus upon delivery and do not install any that may be subject to rejection as a result of damage or other defect and do not install any that are damaged or otherwise defective.

F. Advise Owner, in writing, in event a conflict occurs in location or connection of equipment. Assume all costs for relocation of equipment resulting from failure to properly coordinate installation.

G. Following review of submittals, rough-in for material, equipment and apparatus. Rectify any installation resulting from failure to properly rough-in for equipment.

H. Piping

1. Arrangement: Piping is diagrammatically indicated but shall be generally installed as indicated. Do not scale Drawings for exact location of piping. Install piping to best suit field conditions. Arrange piping neatly along walls and/or in neat, horizontal groups; each group shall be in one plane, insofar as possible, and shall maintain required slope. Install piping to avoid architectural openings, structural members, and other obstructions. Do not sleeve or core drill structural members without written consent of Owner's Representative. Check Structural Drawings prior to placing sleeves or core drilling.
   a. Provide sleeves at points where piping passes through concrete, masonry or plaster floors, walls or ceilings.
   b. Provide escutcheons at points where piping passes through floors, walls, and ceilings.

2. Expansion and Contraction: Install piping with ample provisions for expansion and contraction. Provide expansion loops, swing-joints, and/or expansion joints where indicated and at building expansion joints. Provide for expansion and contraction in mains, risers, and runouts. Do not spring or force piping during installation.

3. Sloping, Air Venting and Draining: Slope piping as specified and as indicated, true to line and grade, and free of traps and air pockets.

4. Copper: Crimping of copper tubing is prohibited. Isolate copper pipe and tubing from hangers and dissimilar metals.

5. Unions: Provide unions or flanges to render items in system easily removable, including valves and piping specialties. Connections between copper and steel piping shall be made with brass nipples, dielectric unions not allowed. Length of brass nipples shall be 6 times nominal diameter.
6. Fittings: Provide standard, manufactured fittings. Field fabricated fittings and miter joints are prohibited. Bushings are prohibited on pressure piping.

7. Do not use wire, plumbers tape or other make-shift devices for hangers.

8. Do not burn or weld any structural member without approval of Owner's Representative.

9. No valve or piece of equipment shall be used to support weight of any pipe.

I. Valves

1. Insure that valves are field checked for packing and lubricating and that disc is for service intended. Replace leaking packing. Service valves which do not operate smoothly with suitable lubricant before placing in operation.

2. Do not install valves with stems pointing downward, unless indicated otherwise. Provide operating handles for valves and cocks without integral operators.

3. Provide valves same size as line size, unless indicated otherwise.

J. Hangers and Supports

1. Securely fasten piping and ductwork to building construction by means of hangers, supports, guides, anchors, and sway braces to maintain pipe alignment, to prevent sagging, and to prevent noise and excessive strain on piping due to movement under operating conditions. Additionally anchor and support lines subject to expansion and contraction as necessary to control excessive movement.

2. Provide hangers and supports to support weight of pipe, its contents and insulation. Provide a hanger not more than 12 inches from point of change of direction of a pipe run in both horizontal and vertical plane. No valve or piece of apparatus shall be used to support weight of piping.

3. Pipe insulation shall be protected from crushing at supports by means of sheet metal saddle.

4. Piping and ductwork support systems shall comply with requirements of 2013 California Building Code.

5. Ductwork shall be level and properly supported.
6. Do not support piping or ductwork from fans, pumps or other equipment.

3.06 IDENTIFICATION

A. Signs and Labels

1. Fasten a red-headed tack to each T-bar suspended ceiling pushout tile at heating coils, fire dampers, valves, control devices, etc.

2. A printed sign shall be posted at water treating equipment stating, "USE NO CHROMATES".

3. A printed sign shall be posted at each automatically started equipment stating, "WARNING THIS MACHINE IS AUTOMATICALLY CONTROLLED AND MAY START AT ANY TIME".

B. Pipe Identification

1. Identify and color-code all piping including piping in furred ceiling spaces. Provide directional arrows on circulating systems. Identification shall be in accordance with ANSI A13.1-1981, Scheme for Identification of Piping Systems (OSHA) and as specified herein.

2. Plastic Markers: Setmark Type "SNA", Brady or equal. Each marker must show approved color-coded background, proper color of legend in relation to background color, approved legend letter size, approved marker length.

3. Location for Pipe Identification:
   a. Adjacent to each valve and fitting (except on plumbing fixtures and equipment).
   b. At each branch and riser take-off.
   c. At each pipe passage through wall, floor and ceiling construction.
   d. On all horizontal runs spaced 25-feet maximum.

C. Valve Identification

1. Provide tags on all control and line shut-off valves. Tags shall note valve service and number as hereinafter specified and shall be Seton Style 250-BL, Brady, or equal, brass tag fastened to the valve stem with copper wire.

2. Provide three (3) typewritten schedules giving numbers, service and locations, and notations of normally open or closed, of all tagged valves, where purpose of location is not easily identifiable. Enclose each schedule in separate transparent plastic binder.
D. Equipment Identification

1. Properly identify each piece of equipment and its controls using engraved laminated plastic descriptive nameplates, attached to equipment and controls using round head brass machine screws, pop rivets or contact cement. Cardholders in any form not acceptable.

3.07 TESTING

A. Provide tests specified hereinafter and as otherwise directed by Engineer. Provide test equipment including test pumps, gauges, instruments, etc. Pressure gauges used shall be graduated in increments not greater than 5 pounds per square inch and shall have a range not more than twice test pressure. Test rotational equipment for proper direction of rotation.

B. Where testing is specified, or directed, complete installation shall comply with requirements hereinafter specified. Provide replacement materials and additional labor as may be required to accomplish this compliance.

C. Tests shall be performed in presence of Owner's Representative. Owner shall be notified of testing schedule three working days prior to tests.

D. Upon completion of testing, certify in writing, that specified tests have been performed and that installation complies with specified requirements.

E. Piping: Remove from system, during testing, equipment which would be damaged by test pressure. Replace removed equipment when testing has been accomplished. System may be tested in sections as work progresses; however, any previously tested portion shall become a part of any later test of a complete system. Work tested in sections, if necessary, or for convenience, shall be at no extra cost to Owner. Tests shall be performed after cleaning. Correct leaks by remaking joints with new material; makeshift remedies will not be permitted. Test time will be accrued only while full test pressure is on system.

F. Valves: Test valve bonnets for tightness. Test operate valves at least once from closed-to-open position while valve is under test pressure.

G. Hangers and Supports: With systems in normal operation, test hangers, supports, and rods to insure that they are plumb and supporting their proper share of load. Provide additional supports for systems and equipment that sway, crawl, or vibrate, as required or as directed by Owner's Representative to eliminate unsatisfactory conditions.

H. The following tests shall be required. Piping is to be tight at the specified conditions. Tests other than operation tests shall be applied for a minimum period of four hours unless otherwise specified. "Tolerance" shall be no pressure drop, except that due to temperature change in a 24-hour period.
Systems  Test pressure  Test media  
Gas     150 psig  Air  

I. Check of systems during application of test pressures should include visual check for leakage, use soap bubble or similar tests for gas systems.

J. When various systems are completed, operation tests shall be run on equipment to demonstrate proper operating conditions. These tests shall be run under observation of Owner's Representative. Systems shall be operated through possible cycles of operation for a period of three consecutive days. Operation tests shall be performed under actual service conditions. Installations must operate smoothly, efficiently, quietly, and without undue noise, vibration, surging or cycling under design conditions. Should any piece of equipment, apparatus, material or work fail in any of these tests, it shall be immediately removed and replaced with new, and portion of work replaced shall again be tested.

3.08 LUBRICATION

A. Equipment shall be thoroughly lubricated before operating and again at time work is accepted. Contractor shall obtain proper type of lubricants to be used from equipment manufacturer.

B. No equipment shall be put into running condition without first checking for proper lubrication, rotation, alignment, support, bracing, safety, blockage and connections and areas affected by running of such equipment.

3.09 CLEANING

A. Thoroughly clean exterior and interior of piping, ducts, equipment and materials before systems are put in operation. Cleaning period shall be of sufficient duration to properly clean systems.

B. New piping shall be completely clean before connection to existing piping. Piping shall be thoroughly blown out with air and then flushed with clean water to remove rust, scale and other contaminants.

C. Remove dirt and debris, including wire and blocking, from throughout building including crawl spaces and pipe spaces. Clean piping access areas of dirt and debris.

D. Clean plenums and air ducts so that no dirt or dust is present in any system.

E. Equipment and material shall be completely dust free, clean and rust free or polished when final acceptance is made.

END OF SECTION
PART 1  GENERAL

1.01  SECTION INCLUDES

A. Piping insulation, jackets and accessories.
B. Ductwork insulation, jackets, and lining.

1.02  SUBMITTALS

A. Product Data: Provide product description, list of materials and thickness for each service or equipment scheduled, locations, and manufacturer's installation instructions.

1.03  ENVIRONMENTAL REQUIREMENTS

A. Maintain ambient temperatures and conditions required by manufacturers of adhesives, mastics, and insulation cements.
B. Maintain temperature during and after installation for minimum period of 24 hours.

PART 2  PRODUCTS

2.01  PIPE INSULATION

A. Manufacturers:
   1. Owens-Corning Fiberglas, SSL-II.
   2. Certainteed.
   4. Armacell.

B. Glass Fiber: ASTM C547; rigid molded, noncombustible.
   1. Thermal Conductivity, k Value: 0.24 Btu-in/hr-ft²-F at 150 degrees F.
   2. Maximum Service Temperature: 450 degrees F.
   3. Vapor Barrier Jacket: White kraft paper reinforced with glass fiber yarn and bonded to aluminized film, secure with self sealing longitudinal laps and butt strips.

C. Fitting Covers
   1. PVC Plastic: One piece molded type fitting covers and sheet material, off white color.
a) Thickness: 20 mil.
b) Connections: Pressure sensitive color matching vinyl tape.

D. Cold Piping Insulation (Condensate Drains)

1. Armacell Armaflex II, Rubatex, or equal, closed cell insulation. Insulation shall be sealed with Armstrong 520 or equal adhesive recommended by manufacturer.
2. Where closed cell insulation can not be installed, fiberglass insulation shall be installed as described above.
3. Insulation for pipe fittings shall be fabricated from miter-cut tubular insulation, sealed with Armacell 520 contact adhesive.
4. Insulation installed outdoors shall have aluminum jacket.
5. Installation shall be in accordance with Armacell manual IP-2268 "Installation of Armaflex Insulations".

2.02 DUCTWORK INSULATION

A. Manufacturers:

1. Owens-Corning Fiberglas.
2. Certainteed.

B. Flexible Glass Fiber: ASTM C177; flexible, non-combustible blanket.

1. Thermal Conductivity, k Value: 0.26 Btu-in/hr-ft²·F at 75 degrees F.
2. Density: 1.5 lb/cu ft.
3. Vapor Barrier Jacket: Kraft paper reinforced with glass fiber yarn and bonded to aluminized film, secured with pressure sensitive tape.

C. Duct Liner: ASTM C553; flexible, noncombustible blanket.

1. Thermal Conductivity, k Value: ASTM C518, 0.26 Btu-in/hr-ft²·F at 75 degrees F.
2. Density: 1.5 lb/cu ft.
3. Maximum Velocity on Coated Air Side: 6,000 ft/min.
5. Liner Fasteners: Galvanized steel, self adhesive pad or welded with press on head.

PART 3 EXECUTION

3.01 EXAMINATION AND PREPARATION

A. Verify that piping and ductwork have been tested before applying insulation materials.

B. Verify that surfaces are clean, foreign material removed, and dry.

3.02 INSTALLATION
A. Install materials in accordance with manufacturer's instructions.

B. Continue insulation vapor barrier through penetrations.

C. Piping Insulation
   1. Neatly finish insulation at supports, protrusions, and interruptions.
   2. Provide insulated cold pipes with continuous vapor barrier jacket. Insulate complete system.
   3. For insulated pipes conveying fluids above ambient temperature, provide standard jackets. Bevel and seal ends of insulation at equipment, flanges, and unions.
   4. Provide protection for insulation at hangers and support points with calcium silicate inserts and sheet metal support shields, for piping 2 inches diameter or larger. For piping 1-1/2" and smaller provide sheet metal saddles to protect insulation from crushing.
   5. Insulate deck and roof drain bodies and horizontal rainwater piping over ceilings.
   6. Insulate domestic cold water piping over ceilings.

D. Duct Liner:
   1. Adhere insulation with adhesive for 100 percent coverage.
   2. Secure insulation with mechanical liner fasteners. Refer to SMACNA Standards for spacing.
   3. Seal liner surface penetrations with adhesive.
   4. Duct dimensions indicated are net inside dimensions required for air flow. Increase duct size to allow for insulation thickness.

E. Outdoor piping and equipment shall be weatherproofed with a 0.016 inch interlocked aluminum jacket sealed watertight, secured with circumferential steel locking bands. No screws or other fasteners penetrating jacket are to be allowed for cold line or cold vessel insulation. Longitudinal joints shall be installed with joint on side of pipe with edge facing downwards to shed rain. Circumferential joints to be overlapped 2" minimum and sealed with Hypalon 9/4 or silicone sealant. Fittings shall be protected with aluminum jackets, PVC jacket material not acceptable.

F. Insulation accessible to students shall be wrapped in metal jacketing.
   1. Galvanized cold form steel, 26 gauge with hemmed edges.
   2. Secure with galvanized self-tapping, pan head #20x1/4" long sheet metal screws.
   3. Install adjacent sections together with ½" overlap.

3.03 PIPING INSULATION SCHEDULE

<table>
<thead>
<tr>
<th>PIPE SIZE Inch</th>
<th>THICKNESS Inch</th>
</tr>
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<tbody>
<tr>
<td>Domestic Cold Water</td>
<td>&lt;8.0</td>
</tr>
</tbody>
</table>
### Domestic Hot Water
- <2.5" < 1.0
- >2.0" < 1.5

### Heating Hot Water
- <8.0" < 1.5

### Closed Cell Insulation

<table>
<thead>
<tr>
<th>Condensate Drains</th>
<th>Thickness</th>
</tr>
</thead>
<tbody>
<tr>
<td>ALL</td>
<td>3/4&quot;</td>
</tr>
</tbody>
</table>

#### 3.04 DUCTWORK INSULATION SCHEDULE

<table>
<thead>
<tr>
<th></th>
<th>Thickness</th>
<th>Finish</th>
</tr>
</thead>
<tbody>
<tr>
<td>A. Flexible Glass Fiber</td>
<td>Inch</td>
<td></td>
</tr>
<tr>
<td>Supply Ducts</td>
<td>1.5</td>
<td>Faced</td>
</tr>
<tr>
<td>Return Ducts</td>
<td>1.5</td>
<td>Faced</td>
</tr>
</tbody>
</table>

| B. Duct Liner          |           |        |
| Where Indicated        | 1.0       |        |

END OF SECTION
SECTION 15400
PLUMBING

PART 1 - GENERAL

1.01 SECTION INCLUDES
   A. Pipe, fittings and valves.
   B. Plumbing Specialties: Cleanouts.
   C. Plumbing Fixtures.
   D. Related work included in other Sections: All other Sections of Division 15.

1.02 INCORPORATED DOCUMENTS: Section 15050, General Mechanical, applies to this Section.

1.03 SUBMITTALS
   A. Product Data: Provide for valves, plumbing specialties and fixtures.

PART 2 - PRODUCTS

2.01 RAINWATER AND SANITARY DRAIN, WASTE AND VENT PIPING
   A. Within Building, Buried and Above Grade: Cast iron pipe and fittings, CISPI 301, hubless, service weight, with neoprene gaskets and stainless steel clamps, per IAPMO Installation Standard IS-6 or copper DWV with wrought or cast copper solder type fittings, per IAPMO Installation Standard IS-3.
   B. Outside Building, Below Grade: Same as within.

2.02 DOMESTIC WATER PIPING
   A. Within Building, Buried and Above Grade: Copper Tubing: ASTM B88, Type L, hard drawn, with cast or wrought copper fittings and lead-free solder joints. Installation per IAPMO Installation Standard IS-3.
      1. Piping and fittings shall conform to California Assembly Bill 1953 for lead free, from 8% lead for pipes or pipe fittings, and 4" lead for plumbing fittings and fixtures to 0.25% lead content within each component that comes in contact with the wetted surfaces of pipes and pipe fittings, plumbing fittings and fixtures.

B. VALVES:
Contra Costa Community College District
Diablo Valley College
D-1037 Library Classrooms

Section 15400-Page 1
Plumbing
October 24, 2014
1. Manufacturers:
   a. Apollo Valves.
   b. Milwaukee Valve Corporation.
   c. NIBCO Inc.

2. Ball valves: Apollo 82LF-100 series, three piece full port lead-free valves, or approved equal

3. Check valves: Apollo 161TLF bronze swing check lead-free valves, or approved equal

2.03 NATURAL GAS PIPING

A. Schedule 40 black steel pipe ANSI B125.2 with 150 psi galvanized malleable iron screwed fittings ANSI B16.3. Piping exposed to weather and in boiler rooms shall be galvanized.

B. Valves: Nibco T-595-70-UL, or equal, sizes 2” and less, and Homestead, Fig. 601 or 602, or equal, sizes 2-1/2” and larger, UL listed, and AGA approved for natural gas service.

2.04 FLANGES AND UNIONS

A. Copper tubing unions: 150 PSI ground joint cast bronze unions with sweat connections.

B. Copper tubing flanges: ANSI B16.24, bronze, 150 PSI to match standard ASA 150 PSI steel flanges with flat face.

C. Flange gaskets: Crane Co. Cranite, Denver Gasket, Inc, or equal, 1/16” full face sheet packing, 150 PSI. Coat gaskets with thread lubricant before installation.

D. Dielectric Connections: 6 inch Clearflow Dielectric Waterway Fitting at each connection between dis-similar metals. Dielectric unions not acceptable.

2.05 CLEANOUTS

A. Manufacturers:
   1. J.R. Smith.
   2. Zurn.
   3. Wade.

B. Floor: Coated cast iron, two piece body with double drainage flange, weep holes, reversible clamping collar, and adjustable nickel-bronze round scoriated cover in service areas and round depressed cover to accept floor finish in finished floor areas.
PART 3  EXECUTION

3.01  PREPARATION

A. Coordinate forming of floor construction to receive drains with waste piping at required invert elevations.

B. Review millwork shop drawings. Confirm location and size of fixtures and openings before rough-in and installation.

C. Verify adjacent construction is ready to receive rough-in work of this Section.

3.02  INSTALLATION

A. Install piping to conserve building space and not interfere with use of space.

B. Provide clearance for installation of insulation and access to valves and fittings.

C. Extend cleanouts to finished floor or wall surface. Lubricate threaded cleanout plugs with mixture of graphite and linseed oil. Ensure clearance at cleanout for rodding of drainage system.

D. Install each fixture with chrome plated flexible supplies with supply stops, nipples, and escutcheons.

E. Adjust stops or valves for intended water flow rate to fixtures without splashing, noise, or overflow.

F. Install unions downstream of valves and at equipment or apparatus connections.

G. Install brass male adapters each side of valves in copper piped system. Sweat solder adapters to pipe.

H. Install valves for shut-off and to isolate equipment, part of systems, or vertical risers.

I. Maintain waterproofing of exterior walls and roofs when installing piping on exterior of walls and over roofs. Seal penetrations watertight. Piping over roofs shall be

Wall: Line type with coated cast iron body and round epoxy coated gasketted cover, and round stainless steel access cover secured with machine screw.

D. Exterior Cleanout To Grade: Heavy duty, adjustable, coated cast iron cleanout with anchor flange and heave duty cleanout cover. Set cleanout in 18" x 18" x 6" thick concrete pad flush with finished grade or paving. Extension from grade to buried sewer line shall be service weight cast iron pipe with cast iron long sweep 1/4 bend or cast iron combination wye and 1/8 bend fitting, full size of buried sewer line.
installed in accordance with Architectural details and requirements of roofing contractor.

3.03 DISINFECTION OF DOMESTIC WATER PIPING

A. Supervision and Testing: Contractor shall employ an approved specialist in disinfecting domestic water systems, such as Bennett Marine Company. Specialist will review results and submit written certification of satisfactory disinfection results.

B. Contractor's Responsibility:

1. Contractor shall take water samples, procure bacteriological analysis, and issue a written Certificate of Disinfection to the District.

2. Disinfecting Agent: One of the following may be used:
   a. Hypochlorite, calcium or sodium, powdered or aqueous.
   b. "Purex", "Clorox", or equal with 5.25% or 16% available chlorine in water solution.

3. Preliminary Preparations:
   a. Service Cock: Provide 1-1/2" or 3/4" service cock or valve within 5 ft of supply line for introducing disinfecting agent into lines.
   b. Flushing: After final pressure tests, each fixture or outlet shall be left wide open until flow shows only clear water.

4. Procedure:
   a. Piping to be disinfected shall be drained.
   b. Inject disinfectant into system through service cock by means of pump or pressure device at a slow, continuous rate simultaneously with reduced flow from water main, until an orthotolidin test at each outlet shows chlorine residual concentration of at least 50 parts per million (ppm).
   c. Close outlets and valves, including main service valve and injection cock, to retain chlorinated water. Maintain this condition for 24 hours.
   d. An orthotolidin test, after 24 hour period, shall indicate a chlorine residual concentration of not less than 50 ppm. An orthotolidin test reading less than 50 ppm shall result in repetition of procedure.
   e. After satisfactory completion of above test, domestic water system shall be drained and flushed until orthotolidin tests show a chlorine residual of not more than 0.5 pp.

5. Alternate procedure: For alteration work involving branch lines of 20 ft length or less, following alternate procedure may, at Contractor's option, be followed:
   a. Ascertain before installation that pipe and fittings are substantially clean.
b. Using a solution of one part "Purex", "Clorox", or equal, to ten parts water, thoroughly swab pipe and fittings immediately prior to assembly.

c. Immediately after assembly, cap or plug assembled piping against entry of contamination, in a manner acceptable to Architect. Maintain this condition until final connection.

d. Immediately after connection, flush new piping thoroughly with water.

6. Preliminary Approval: After satisfactory completion of disinfection procedure, the approved specialist, such as Bennett Marine Company; may issue a temporary approval for immediate use of piping system pending bacteriological analysis of water samples.

7. Bacteriological Analysis of Water:
   a. After final flushing (Paragraph 4.e or 5.d above), water samples shall test negative for coliform aerogenes organisms.
   b. Analysis shall indicate total place count less than 100 bacteria per cc.

8. Final Approval: Upon satisfactory completion of analysis (Paragraph 7.a and 7.b above), approval of water system disinfection results will be given by District. If analysis results are not satisfactory, disinfection procedure shall be repeated until the specified standards are met.

9. Where other industrial water lines connected to domestic mains are protected be an appropriate backflow protector, these lines shall not be included in disinfection procedures.

10. Wherever alteration work results in removal of piping or water outlets, no dead-end branches are to be left in system because of their tendency toward bacteria buildup. It is a requirement of this Specification that dead end lines shall be cut back, valved and capped within 6 inches of a live main.

3.04 CLEANING

A. Thoroughly clean exterior piping, equipment and materials before systems are put in operation. Clean new plumbing fixtures and existing plumbing fixtures in remodeled areas with soap and water. Remove marks and labels. Clean and polish chrome. Remove paint, concrete, plaster and other foreign materials. Clean valve handles and stems of any paint, dirt or other foreign materials. Clean drains of dirt and debris. Remove shipping paper from drain strainers and polish. Remove and clean out dirt and debris from pipe spaces including wire and blocking.

3.05 TESTING AND ADJUSTING

A. Provide equipment required for testing, including pumps, fittings and gauges.
B. Maintain complete record of testing that has been approved, records shall be available for inspection at site.

C. Submit records and certifications approving testing to owner's representative prior to final acceptance of project.

D. Defective work or materials shall be replaced or repaired, as necessary, and inspection and testing repeated. Repairs shall be made with new materials. No caulking of holes or threaded joints will be acceptable.

E. Work shall not be covered until after it is inspected, tested and approved.

F. Piping Pressure Testing:

<table>
<thead>
<tr>
<th>Systems</th>
<th>Test Pressure and Duration</th>
<th>Test Media</th>
</tr>
</thead>
<tbody>
<tr>
<td>Domestic Water</td>
<td>150 psig, 4 hours</td>
<td>Water</td>
</tr>
<tr>
<td>Waste and Vent</td>
<td>10' min. head, 4 hours</td>
<td>Water</td>
</tr>
<tr>
<td>Rainwater</td>
<td>10' min. head, 4 hours</td>
<td>Water</td>
</tr>
<tr>
<td>Natural Gas</td>
<td>10 psig, 1 hour</td>
<td>Air</td>
</tr>
</tbody>
</table>

END OF SECTION
SECTION 15500

HYDRONIC SYSTEMS

PART 1 GENERAL
1.01 SECTION INCLUDES

A. Pipe and pipe fittings, valves.
B. Hydronic specialties.
C. Cleaning of systems.

1.02 SUBMITTALS

A. Product Data: Provide data on specialties, including manufacturers catalogue information. Indicate chemical treatment materials, chemicals, and equipment.

B. Operating and Maintenance Instructions: Include installation instruction, spare parts lists, procedures, and treatment programs.

C. Manufacturer's Field Report: Submit on start-up of treatment systems. Include analysis of system water after cleaning and treatment.

PART 2 PRODUCTS

2.01 HEATING WATER PIPING

A. Steel Pipe: ASTM A53, Schedule 40, black, malleable iron or forged steel fittings, threaded or welded joints.
B. Copper Tubing: ASTM B88, Type L hard drawn, cast brass, wrought copper, or mechanically extracted fittings, lead free solder joints.

2.02 CHILLED WATER PIPING

A. Steel Pipe: ASTM A53, Schedule 40, black, malleable iron or forged steel fittings, threaded or welded joints, or grooved fittings.
B. Copper Tubing: ASTM B88, Type L hard drawn, cast brass or wrought copper fittings, lead free solder joints.

2.03 EQUIPMENT DRAINS AND OVERFLOWS

A. Steel Pipe: ASTM A53, Schedule 40, black, malleable iron or forged steel fittings, threaded or welded joints.
2.04 FLANGES, UNIONS, AND COUPLINGS

A. Pipe Size 2 Inches and Under: Malleable iron unions for threaded ferrous piping; bronze unions for copper pipe, soldered joints.

B. Pipe Size Over 2 Inches: Forged steel flanges for ferrous piping; bronze flanges for copper piping; preformed neoprene gaskets.

C. Grooved and Shouldered Pipe End Couplings: Malleable iron housing, C-shape elastomer composition sealing gasket, steel bolts, nuts, and washers.

2.05 VALVES

A. General: Provide valves on branch connections to mains and to equipment. Valve ratings shall exceed respective system operating pressures. Valves shall be same size as connecting piping, and shall be properly supported and accessible located. Silent check valves shall be provided in vertical lines and pump discharge piping, and may be used in lieu of horizontal swing type. Provide extended stems on insulated piping.

B. Manufacturer: Nibco, Metraflex, Jenkins, or equal.
   1. Ball: Nibco T-595-YSS with stainless steel ball and stem.
   2. Silent check Valves: Metraflex.

C. Balancing Valves: B&G Circuit Setters, Armstrong CBV, or equal. Valves shall have read-out ports fitted with internal EPT insert and check valve. Valves shall have 1/4 inch NPT tapped drain/purge port, memory stop, calibrated name plate and leak-tight shut off at rated working pressure.

D. Drain Valves: Provide drain valves where indicated and at low points in piping, consisting of ball valve with a bronze hose thread adapter for American Standard garden hose, with cap and chain.

E. Butterfly Valves
   2. Ductile iron body, aluminum bronze disc, EPDM resilient replaceable seat, wafer, lug or grooved ends and 10 position lever handle.

2.06 STRAINERS

A. General: Y-type strainers shall be provided where indicated, and preceding each automatic valve, and shall be of same size as pipe lines in which installed. Each strainer shall be equipped with an easily removable cover and stainless steel screen suitable for service intended with a net free area at least four times that of
Kendall Young Associates
720 York Street, Ste 104
San Francisco, CA 94110

Contra Costa Community College District
D-1037 Diablo Valley College
Library Classrooms

entering pipe. Basket shall seal against machined seat both in body and at cap. Cap shall have a gasket seal between it and strainer body. Provide valved blowoff for each strainer of same size as blowoff plugs with maximum size of 1-1/2". Body pressure ratings shall be per scheduled working pressure for equipment served.

B. Manufacturer: Strainers shall be screwed bronze for 2" and smaller. Strainers shall be Armstrong F45C.

2.07 THERMOMETERS

A. General: Thermometers shall be of mercury-in-glass, red-reading type, with 9" scale of proper range for service, enclosed in metal, glass-covered case, with magnified mercury columns, separable wells, straight or angle-mounted as required, and installed in piping systems in manner to be easily read. Provide extension necks where required to clear insulation. Separable sockets shall be brass or bronze.

B. Manufacturers: Thermometers shall be manufactured by Weiss, Palmer, or equal.

2.08 PRESSURE GAGES

A. Manufacturers: Gages shall be manufactured by Ashcroft, Marsh, or equal. Normal system pressure reading shall be in middle of gage range. Minimum 3 inch diameter dial, stainless steel casings.

2.09 VIBRATION ISOLATION

A. Mechanical equipment, unless otherwise noted, shall be isolated from structure by means of resilient vibration and noise isolators.

B. No electrical conduit, fixture, ceiling suspension wires or other elements of building construction shall be attached to or abut against duct and piping systems.

PART 3 EXECUTION

3.01 INSTALLATION

A. Route piping in orderly manner, plumb and parallel to building structure, and maintain gradient. Install piping to conserve building space, and not interfere with use of space and other work. Group piping whenever practical at common elevations.

B. Install piping to allow for expansion and contraction without stressing pipe, joints, or connected equipment.
C. Provide clearance for installation of insulation, and access to valves and fittings.

D. Slope piping and arrange systems to drain at low points. Use eccentric reducers to maintain top of pipe level.

E. Install specialties and equipment in accordance with manufacturer's instructions.

F. Provide manual air vents at system high points.

G. For automatic air vents in ceiling spaces or other concealed locations, provide vent tubing to nearest drain.

H. Provide valved drain and hose connection on strainer blow down connection.

3.02 APPLICATION

A. Use grooved mechanical couplings and fasteners only in accessible locations.

B. Install unions downstream of valves and at equipment or apparatus connections.

C. Install ball or butterfly valves for shut-off and to isolate equipment, part of systems.

D. Provide spring loaded check valves on discharge of condenser water pumps.

E. Provide ball drain valves at low points of piping and at equipment.

3.03 CLEANING SEQUENCE

A. After completion, fill, start, and vent prior to cleaning. Use water meter to record capacity in each system. Place terminal control valves in open position during cleaning.

B. Add cleaner to closed systems at concentration as recommended by manufacturer.

C. Hot Water Heating Systems: Apply heat and circulate for 12 hours minimum. Remove heat and cool; drain systems and refill with clean water. Circulate for 6 hours at design temperatures, then drain. Refill with clean water. Repeat until system cleaner is removed.

D. Chilled Water Systems: Circulate for 48 hours, then drain. Refill with clean water, circulate for 24 hours, then drain. Refill with clean water. Repeat until system cleaner is removed.

E. Flush open systems with clean water for one hour minimum. Drain completely and refill.
F. Remove, clean, and replace strainer screens. Inspect, remove sludge, and flush low points with clean water after cleaning process is completed. Include disassembly of components as required.

END OF SECTION
SECTION 15850
AIR HANDLING

PART 1    GENERAL

1.01 SECTION INCLUDES

A. Centrifugal fans.
B. Fan-coil units.
C. Spring vibration isolators.

1.02 INCORPORATED DOCUMENTS: Section 15050, General Mechanical, applies to this Section.

1.3 SUBMITTALS

A. Product Data: Include catalog performance ratings, construction, and dimensions. Submit in accordance with the provisions of the General Conditions, Article 3.11.
B. Operating and Maintenance Instructions: Include instructions for lubrication, motor and drive replacement, spare parts lists, and wiring diagrams.

1.04 QUALITY ASSURANCE

A. Performance Requirements: AMCA-Certified Rating Seal.

1.05 SOURCE QUALITY CONTROL

A. Sound-Power Level Ratings: Tested according to AMCA 300.
B. Fan Performance Ratings: Tested and rated according to AMCA 210.

1.06 FIELD QUALITY CONTROL

A. Testing by Contractor.
B. Contractor shall demonstrate to District that each power ventilator functions properly.
C. Training of District's personnel.

PART 2    PRODUCTS

Contra Costa Community College District
Diablo Valley College
D-1037 Library Classrooms

Section 15850-Page 1
Air Handling
October 24, 2014
2.01 CENTRIFUGAL FANS

A. Manufacturers:
   1. Cook Fans.
   2. Greenheck Fans.
   3. Penn Barry Fans.

B. Wheel and Inlet
   1. Forward Curved: Steel construction with inlet flange, back plate, shallow blades with inlet and tip curved forward in direction of airflow, mechanically secured to flange and back plate; steel hub swaged to back plate and keyed to shaft with set screw.

C. Housing
   1. Heavy gage steel, spot welded, designed to minimize turbulence with spun inlet bell and shaped cut off.
   2. Factory prime coat before assembly.
   3. Shafts: Hot rolled steel with key way, protectively coated with lubricating oil.
   4. V-Belt Drive: Cast iron or steel sheaves, keyed, adjustable pitch sheaves, matched belts, and rated minimum 1.5 times nameplate rating of motor.
   5. Belt Guard: Fabricate to SMACNA HVAC Duct Construction Standards - Metal and Flexible.

D. Electrical Characteristics and Components
   1. Electrical Characteristics as shown.

2.02 FAN-COIL UNITS

A. Housing: Steel with acoustical insulation.

B. Fan Wheels: Centrifugal.

C. Coils: Hot water and chilled water, capacities as scheduled on drawings.

D. Accessories:
   1. Three way temperature control valve, modulating actuator, DDC control.
   2. Hanging vibration isolators.
   3. Wall mounted DDC thermostat
   4. Filters: MERV 8

E. Manufacturers:
   1. Trane
   2. Carrier
   3. Daikin / McQuay

2.03 SPRING VIBRATION ISOLATORS

A. Manufacturers:
   1. Mason Industries.
2. M. W. Sausse.

B. Spring vibration isolators shall be earthquake resistant type, incorporating leveling bolts, 0.25 inch thick neoprene jacketed pre-compressed molded fiberglass noise isolation pads, neoprene coated springs, hot-dipped galvanized isolator housings, stable spring design with outside diameter at least 0.8 times design spring operating height and have a minimum additional travel of 50%.

PART 3 EXECUTION

3.01 INSTALLATION

A. Install in accordance with manufacturer's instructions.

B. Install fans on vibration isolators.

C. Do not operate fans for any purpose until ductwork is clean, bearings lubricated, and fan has been test run under observation.

D. Install fans with resilient mountings and flexible electrical leads. Install flexible connections specified between fan inlet and discharge ductwork. Flexible connectors shall not be in tension while fan is operating.

END OF SECTION
PART 1 GENERAL

1.01 SECTION INCLUDES

A. Ductwork and ductwork accessories.
B. Volume control dampers.
C. Flexible duct connections.
D. Diffusers, boots, registers, grilles.
E. Related work included in other Sections: All other Sections of Division 15.

1.02 INCORPORATED DOCUMENTS: Section 15050, General Mechanical, applies to this Section.

1.03 SUBMITTALS

A. Product Data: Provide for manufactured products and assemblies, and include electrical characteristics and connection requirements.

B. Operating and Maintenance Instructions: Include instructions for lubrication and spare parts lists.

PART 2 PRODUCTS

2.01 DUCTWORK

A. Materials

2. Sealant: UL listed, Non-hardening, water resistant, fire resistive, used alone or with tape.

B. Metal Ductwork

1. Fabricate and support in accordance with SMACNA HVAC Duct Construction Standards - Metal and Flexible except as indicated.
2. Construct T's, bends, and elbows with radius of 1-1/2 times width of duct on center line. Where not possible provide turning vanes.
3. Increase duct sizes gradually, not exceeding 30 degrees divergence and 45 degrees convergence.
4. Connect flexible ducts to metal ducts with stainless steel draw bands.
5. Round duct shall be spiral lock seams and joints shall be beaded sleeve or crimp. Elbows shall be full radius, die stamped type. Duct and fittings shall be United McGill “Uni-Seal”, MinnieMetal, or equal.
6. Rectangular duct longitudinal seams shall be Pittsburg lock. Transverse joints shall be pocket lock sealed with canvas and adhesive, or Ductmate (no Ductmate Jr.).
7. Duct and plenum joints and field formed seams shall be sealed for air tightness. Tape shall be of 6 oz. canvas saturated with Arabol or Hardcast “Versa-Grip 181” duct sealant without tape. Tape or sealant shall be extended a minimum of one inch beyond joint or seam openings. Tape or sealant shall also be applied at duct connection to diffusers and grilles.
8. Where internal insulation is applied, duct sizes as shown on drawings shall be inside clear dimensions.

2.02 VOLUME CONTROL DAMPERS

A. Fabricate in accordance with SMACNA HVAC Duct Construction Standards - Metal and Flexible, and as indicated.
B. Fabricate single blade dampers for duct sizes to 12 x 30 inch.
C. Fabricate multi-blade damper of opposed blade pattern with maximum blade sizes 12 x 72 inch. Assemble center and edge crimped blades in prime coated or galvanized channel frame with suitable hardware.
D. Provide end bearings, except in round ductwork 12 inches and smaller.
E. Provide locking, indicating quadrant regulators on single and multi-blade dampers. Where width exceeds 30 inches provide regulator at both ends.

2.03 FLEXIBLE DUCT CONNECTIONS

A. UL listed fire-retardant Hypalon coated woven glass fiber fabric and complies with NFPA 90A. Fabric shall be 6 inches wide, crimped into metal edging strip. Suitable for outdoor installation.
B. Ventfabrics Ventlon or equal Duro-Dyne.

2.04 DUCT ACCESS DOORS

A. Fabricate in accordance with SMACNA HVAC Duct Construction Standards - Metal and Flexible.
B. Access doors smaller than 12 inches square may be secured with sash locks. Access doors with sheet metal screw fasteners are not acceptable.

2.05 FLEXIBLE DUCT
A. Product shall bear UL Class 1 Air Duct label as tested under UL 181 and required NFPA 90A as an air duct or connector, and shall meet a C of 0.23. Flexible duct shall be installed in accordance with the installation instructions as shown in the SMACNA HVAC Duct Construction Standards Manual. Flexible Air Duct Connectors installation shall be in accordance with CMC Chapter 6, and length shall not exceed 3 ft. and angular deflection shall not exceed 15 degrees.

B. Use only the minimum length required to make the connection. In no case shall any section of flexible duct have unnecessary bends or kinks. Flexible duct shall only be installed where shown, and only over T-bar ceilings.

C. Flexible Duct Liner: Fibrous glass duct liner, acrylic surface treatment on air side. Manville Permacote Linacoustic (no known equal). Liner for round ducts shall be performed round fiber glass, Manville Permacote Spiracoustic (no known equal).

PART 3 EXECUTION

3.01 INSTALLATION

A. Install products in accordance with manufacturer's instructions.

B. Install flexible connections specified between fan inlet and discharge ductwork. Flexible connectors shall not be in tension while fan is operating.

C. Provide backdraft dampers on discharge of exhaust fans and as indicated.

D. Provide openings in ductwork where required to accommodate thermometers and controllers. Provide pilot tube openings where required for testing of systems, complete with hole plugs to ensure against air leakage.

E. Locate ducts with sufficient space around equipment to allow normal operating and maintenance activities.

F. Connect diffusers to low pressure ducts with 5 feet maximum length of flexible duct. Hold in place with strap or clamp.

G. During construction provide temporary closures of metal or taped polyethylene on open ductwork to prevent construction dust from entering ductwork system.

H. Provide duct access doors for inspection at fire dampers, and elsewhere as indicated. Provide minimum 8 x 8 inch size for hand access, 18 x 18 inch size for shoulder access.

I. Check location of air outlets and inlets and make necessary adjustments in position to conform with architectural features, symmetry, and lighting arrangement.
J. Provide balancing dampers on duct take-off to diffusers, and grilles and registers, regardless of whether dampers are specified as part of the diffuser or register assembly.

K. Ductwork visible behind air outlets and inlets shall be painted matte black. Refer to Division 9.

L. Ductwork shall be constructed to meet Pressure Classification of STV per SMACNA HVAC Duct Construction Standards Table 1-1.

M. Duct sealing shall meet requirements of Seal Classification C of SMACNA HVAC Duct Construction Standards Table 1-2.


END OF SECTION
SECTION 15950

CONTROLS

PART 1 - GENERAL

1.01 SECTION INCLUDES
A. A new Building Automation System (BAS) meeting the Districts' Standards
B. Related work included in other Sections: Sections of Division 15 and 16.

1.02 INCORPORATED DOCUMENTS: Section 15050, General Mechanical, applies to this Section.

1.03 DESCRIPTION
A. General: The control system shall be as indicated on the drawings and described in the specifications.

B. The new BAS system shall meet Contra Costa Community College District (CCCCD) standards for other District schools which currently utilizes an Andover based controls system. New temperature controls shall be compatible with the CCCCD standards, the existing control system and be BACNet compliant. It is the contractor's responsibility to design and install the new temperature controls system and the integration into the existing temperature controls system, including all programming, componentry, wiring, power, shop drawings, instruction, etc.

C. It is the express intent of this specification to ensure that any on-going Building Automation System (BAS) control work, including hardware, software, and programming, is expressly compatible with the existing and future CCCCD BAS infrastructure. Contractor shall coordinate with the CCCCD project manager regarding future controls work in the building and how this project will tie into the future system. At the same time, the contractor must maintain the existing pneumatic system integrity for the remaining components that are still operating under that system.

D. All installed controller componentry shall be manufactured by Andover Continuum (Schneider Electric), Johnson Controls, Honeywell or approved equal. Substitutions or alternatives to this requirement shall require specific value based submissions on a project-by-project basis addressing at least the following minimum concerns; first cost differences, performance improvements, long term service effects, and ability to integrate with the current BAS infrastructure. Any proposed variance to these requirements shall be approved by the District in advance of any contract award.

E. All equipment and system sequence programming of Andover controllers shall be identical to the District's existing standard sequences of operation. The BAS contractor shall program all controllers to reflect the sequence of operations described in the contract documents and schedules provided by CCCCD.

1.04 QUALITY ASSURANCE
A. System Installer Qualifications

The Installer shall have an established working relationship with the Control System Manufacturer of not less than three years. The Installer shall have successfully completed Control System Manufacturer's classes on the control system. The Installer shall present for review the certification of completed training, including the hours of instruction and course outlines upon request. The installer shall have an office within 150 miles of the project site and provide 24 hour response in the event of a customer call.

B. Codes and Standards: Meet requirements of all applicable standards and codes, except when more detailed or stringent requirements are indicated by the Contract Documents, including requirements of this Section.

1. Underwriters Laboratories: Products shall be UL-916-PAZX listed.
3. Federal Communications Commission -- Part J.

C. All products used in this installation shall be new, currently under manufacture, and shall be applied in similar installations for a minimum of 2 years. Spare parts shall be available for at least 5 years after completion of this contract.

1.05 SUBMITTALS

A. Contractor shall provide shop drawings and manufacturers' standard specification data sheets on all hardware and software to be provided.

B. Testing and Commissioning Reports and Checklists

C. Operating and Maintenance Manual -- these shall be as-built versions of the submittal product data.

D. Submittals will include detailed, project specific shop drawings, and product data sheets defining hardware, software, programming, and equipment to be furnished and installed. No work shall begin until submittals have been approved for conformity with the design intent. Provide all submittal material in hard and electronic copy. Submittals shall be provided in editable AutoCAD® or Visio® format. Provide information including but not limited to the following:

1. Cover sheet, table of contents, and symbol sheets.
2. Wiring diagrams and layouts for each control panel.
3. System architectural drawings including diagrams of communication and power wiring.
4. Complete listing of 1/0 points.
5. Complete bill of material.
6. Floor plans indicating all controlled equipment and component locations.
7. Sequences of operation.

E. As-builts will consist of updated documentation as listed above and additional documentation as follows:
1. Testing, commissioning, and acceptance reports used to meet the commissioning requirements.

2. Printed and electronic Operation and Maintenance (O&M) manuals.

3. Warranty contact information.


5. Copy of entire software database.


F. The BAS contractor shall install within each control cabinet, as-built documentation specific to that control panel.

G. Project-specific software and documentation shall become CCCCD's property. This includes, but in not limited to:

1. Record drawings and documentation.

2. Database.

3. Application programming code.

**1.06 WARRANTY**

A. Labor & materials for control system specified shall be warranted free from defects for a period of twelve (12) months after final completion acceptance by the District. Control System failures during the warranty period shall be adjusted, repaired, or replaced at no charge or reduction in service to the Owner. The Contractor shall respond to the District's request for warranty service within 24 hours during customary business hours.

**1.07 OWNERSHIP OF PROPRIETARY MATERIAL**

A. All project developed hardware and software shall become the property of the District, including but not limited to project graphic images, record drawings, project database, job-specific application programming code, and all documentation.

**1.8 TRAINING**

A. The Contractor shall provide a course outline and training manuals for the all training classes at least six weeks prior to the first class. The District reserves the right to modify any or all of the training course outline and training materials. Review and approval by District will be completed at least three weeks prior to first class.

**PART 2 - PRODUCTS**

**2.01 BAS HARDWARE COMPONENTS**

A. Controllers: The BAS contractor shall furnish and install Andover (or approved equal) Controllers for the specific application in which they are intended by the manufacturer. Each controller shall be equipped with a manual override switch for all analog and digital output points. All controllers shall be installed within a Hoffman Nema Type 1 hinged-cover enclosure with back plate. The BAS contractor shall install a 120 Volt, 20 Amp grounded duplex receptacle within each control panel. All internal wiring shall be enclosed within a covered plastic raceway.
B. Actuators: In the event the specific controls project does not encompass the entire building, the BAS contractor shall be responsible for ensuring that any pneumatic tubing that is removed or abandoned does not affect the compressed air system for the remainder of the building. The BAS contractor shall furnish and install electronic actuators for all dampers and valves. Actuators shall be 24Vac, 0 - 10V or 4-20mA, modulating or two-position, as applicable, with spring return as manufactured by Belimo. The BAS contractor shall ensure the proper fail-safe mode for each valve and damper controlled.

C. Dampers: Dampers shall have linear flow characteristics and shall be parallel or opposed blade as specified. Frames shall be 13 gauge galvanized steel channel or 1/8 extruded aluminum with reinforced corner bracing. Blades shall not exceed 8" width or 48" in length. Blades shall be suitable for medium velocity (2000 fpm) performance. Blades shall be not less than 16 gauge. Shaft bearings shall be as recommended by manufacturer for application, oil impregnated sintered bronze, or better. Blade edges and frame top and bottom shall have replaceable seals of butyl rubber or neoprene. Side seals shall be spring-loaded stainless steel. Blade seals shall leak no more than 10 cfm per ft² at 4" WC differential pressure. Blades shall be airfoil type suitable for wide-open face velocity of 1500 fpm. Sections shall not exceed 48" - 60". Each section shall have at least one damper actuator. Dampers shall have exposed linkages.

D. Temperature Sensors: The BAS contractor shall furnish and install outside air, space, duct, and water temperature sensors that are 1 K Ohm platinum RTDs as manufactured by BAPI for the specific application requirement. Where indicated on the project plans, furnish and install stainless steel wall plate sensors in areas of high traffic or where tampering is likely to occur.

E. Relays: Control relays shall be plug-in type, UL listed, and shall have dust cover and LED "energized" indicator. Contact rating, configuration, and coil voltage shall be suitable for application.

F. Current Sensor: Current operated switches shall be self-powered, solid-state with adjustable trip current.

G. Differential Pressure Switches: Shall be UL listed, SPDT snap-acting, pilot duty rated and shall have scale range and differential suitable for intended application - with NEMA 1 enclosure.

PART 3 - EXECUTION

3.01 INSTALLATION REQUIREMENTS

A. Install equipment, piping, wiring/conduit parallel to building lines (i.e. horizontal, vertical, and parallel to walls) wherever possible.

   Install all equipment in readily accessible location as defined by chapter 1 article 100 part A of the NEC. Control panels shall be attached to structural walls unless mounted in equipment enclosure specifically designed for that purpose.

B. Verify integrity of all wiring to ensure continuity and freedom from shorts and grounds.
C. All equipment, installation, and wiring shall comply with acceptable industry specifications and standards for performance, in strict adherence to local codes and standard practices.

3.02 SEQUENCE OF OPERATIONS

A. As shown on drawings. Schedules by CCCCD.

END OF SECTION
SECTION 15990

TESTING, ADJUSTING, AND BALANCING

PART 1  GENERAL

1.01 SECTION INCLUDES

A. Air systems.
B. Water systems.

1.02 QUALIFICATIONS

A. TAB Agency: The TAB agency shall be a subcontractor of the General Contractor and shall report to and be paid by the General Contractor.

B. The TAB agency shall be either a certified member of AABC or certified by the NEBB to perform TAB service for air and water balancing. The certification shall be maintained for the entire duration of duties specified herein.

C. Test Equipment Criteria: The instrumentation shall meet the accuracy/calibration requirements established by AABC National Standards or by NEBB Procedural Standards for Testing, Adjusting and Balancing of Environmental Systems and instrument manufacturer. Provide calibration history of the instruments to be used for test and balance purpose.

1.03 SUBMITTALS

A. Submit names and qualifications of TAB agency and TAB specialists within 10 working days after the notice to proceed. Submit information on three recently completed projects and a list of proposed test equipment.

B. Draft Reports: Submit for review prior to final acceptance of Project.

C. Test Reports: Submit prior to final acceptance of project and for inclusion in operating and maintenance manuals. Provide in soft cover, letter size, 3-ring binder, with index page and tabs, and cover identification. Include reduced scale drawings with air outlets and equipment identified to correspond with data sheets, and indicating thermostat locations. Test Reports shall not be hand-written.

1.04 SCOPE OF WORK

A. Prior to the start of demolition, contractor shall survey and record supply, return and outside air quantities for the existing VAV Air Handler AHU-1 system and the air and water flow rates at the VAV Boxes shown on the drawings. Present this submittal to the Owner prior to the start of demolition.
B. At the end of construction, as one of the required documents in the close-out package, submit a final test report for all HVAC systems in the project scope.

PART 2  PRODUCTS

2.01 PLUGS

A. Provide plastic plugs to seal holes drilled in ductwork for test purposes.

PART 3  EXECUTION

3.01 AGENCIES

A. RS Analysis, Inc.
   1035 Suncast Lane, #130
   Eldorado Hills, CA 95762
   (916) 358-5672

B. National Air Balance Co., Inc.
   4171 Business Center Drive
   Fremont, CA 94538
   (510) 623-7000

C. Or other approved AABC or NEBB independent air balance contractor. Submit past project references and experience prior to acceptance of this contractor

3.02 EXAMINATION AND PREPARATION

A. Before commencing work, verify that systems are complete and operable.

B. Report any defects, deficiencies, or abnormal conditions in mechanical systems which prevent system balance. Beginning of work means acceptance of existing conditions.

C. Recorded data shall represent actually measured or observed condition.

D. Permanently mark settings of valves, dampers, and other adjustment devices. Set and lock memory stops.

3.03 INSTALLATION Tolerances

A. Air Handling Systems: Adjust to within plus or minus 10 percent of design for supply and exhaust systems of design.

B. Air Outlets and Inlets: Adjust to within plus or minus 5 percent of design.
3.04 AIR SYSTEM PROCEDURE

A. Adjust air handling and distribution systems to provide required or design supply, and exhaust air quantities.

B. Make air quantity measurements in ducts by traverse of entire cross sectional area of duct.

C. Measure air quantities at air inlets and outlets.

D. Use volume control devices to regulate air quantities only to extent that adjustments do not create objectionable air motion or sound levels. Effect volume control by duct dampers.

E. Make allowance for air filter resistance at the time of the tests. The main air supplies shall be at design air quantities and at an air resistance across the filter bank midway between the design specifications for clean and dirty filters.

3.05 WATER BALANCING

A. Adjust water flow at each VAV heating coil, fan-coil unit, and branch balancing valve to flow rate shown.

B. Record temperature and pressure entering and leaving each VAV heating coil and fan-coil unit at full load.

END OF SECTION
SECTION 16050

BASIC ELECTRICAL MATERIALS AND METHODS

PART 1 GENERAL

1.01 SUMMARY

A. This Section includes the following:
   1. Electrical equipment coordination and installation.
   2. Sleeves for raceways and cables.
   3. Sleeve seals.
   4. Common electrical installation requirements.

1.02 SUBMITTALS

A. Submit in accordance with the provisions of the General Conditions, Article 3.11.
B. Product Data: For each type of product indicated.

1.03 QUALITY ASSURANCE

A. Test Equipment Suitability and Calibration: Comply with NETA ATS, "Suitability of Test Equipment" and "Test Instrument Calibration."

1.04 COORDINATION

A. Coordinate arrangement, mounting, and support of electrical equipment:
   1. To allow maximum possible headroom unless specific mounting heights that reduce headroom are indicated.
   2. To provide for ease of disconnecting the equipment with minimum interference to other installations.
   3. To allow right of way for piping and conduit installed at required slope.
   4. So connecting raceways, cables, wireways, cable trays, and busways will be clear of obstructions and of the working and access space of other equipment.
B. Coordinate installation of required supporting devices and set sleeves in cast-in-place concrete, masonry walls, and other structural components as they are constructed.
C. Coordinate location of access panels and doors for electrical items that are behind finished surfaces or otherwise concealed. Access doors and panels are specified in Division 8 Section "Access Doors and Frames."
D. Coordinate electrical testing of electrical, mechanical, and architectural items, so equipment and systems that are functionally interdependent are tested to demonstrate successful interoperability.

PART 2 PRODUCTS

2.01 SLEEVES FOR RACEWAYS AND CABLES

A. Steel Pipe Sleeves: ASTM A 53/A 53M, Type E, Grade B, Schedule 40, galvanized steel, plain ends.
B. Consider retaining first paragraph below if raceways or cables penetrate exterior walls below grade.
C. Cast-Iron Pipe Sleeves: Cast or fabricated "wall pipe," equivalent to ductile-iron pressure pipe, with plain ends and integral waterstop, unless otherwise indicated.
D. Coordinate sleeve selection and application with selection and application of firestopping specified in Division 7 Section "Through-Penetration Firestop Systems."

2.02 SLEEVE SEALS

A. Description: Modular sealing device, designed for field assembly, to fill annular space between sleeve and raceway or cable.
1. Sealing Elements: EPDM interlocking links shaped to fit surface of cable or conduit. Include type and number required for material and size of raceway or cable.
2. Pressure Plates: Plastic. Include two for each sealing element.
3. Connecting Bolts and Nuts: Carbon steel with corrosion-resistant coating of length required to secure pressure plates to sealing elements. Include one for each sealing element.

PART 3 EXECUTION

3.01 COMMON REQUIREMENTS FOR ELECTRICAL INSTALLATION
A. Comply with NECA 1.
B. Measure indicated mounting heights to bottom of unit for suspended items and to center of unit for wall-mounting items.
C. Headroom Maintenance: If mounting heights or other location criteria are not indicated, arrange and install components and equipment to provide maximum possible headroom consistent with these requirements.
D. Equipment: Install to facilitate service, maintenance, and repair or replacement of components of both electrical equipment and other nearby installations. Connect in such a way as to facilitate future disconnecting with minimum interference with other items in the vicinity.
E. Right of Way: Give to raceways and piping systems installed at a required slope.

3.02 SLEEVE INSTALLATION FOR ELECTRICAL PENETRATIONS
A. Electrical penetrations occur when raceways, cables, wireways, cable trays, or busways penetrate concrete slabs, concrete or masonry walls, or fire-rated floor and wall assemblies.
B. Coordinate sleeve selection and application with selection and application of firestopping specified in Division 7 Section "Through-Penetration Firestop Systems."
C. Concrete Slabs and Walls: Install sleeves for penetrations unless core-drilled holes or formed openings are used. Install sleeves during erection of slabs and walls.
D. Fire-Rated Assemblies: Install sleeves for penetrations of fire-rated floor and wall assemblies unless openings compatible with firestop system used are fabricated during construction of floor or wall.
E. Cut sleeves to length for mounting flush with both surfaces of walls.
F. Extend sleeves installed in floors 2 inches above finished floor level.
G. Size pipe sleeves to provide 1/4-inch annular clear space between sleeve and raceway or cable unless sleeve seal is to be installed or unless seismic criteria require a different clearance.
H. Seal space outside of sleeves with grout for penetrations of concrete and masonry and with approved joint compound for gypsum board assemblies.
I. Interior Penetrations of Non-Fire-Rated Walls and Floors: Seal annular space between sleeve and raceway or cable, using joint sealant appropriate for size, depth, and location of joint. Refer to Division 7 Section "Joint Sealants" for materials and installation.
J. Fire-Rated-Assembly Penetrations: Maintain indicated fire rating of walls, partitions, ceilings, and floors at raceway and cable penetrations. Install sleeves and seal raceway and cable penetration sleeves with firestop materials. Comply with Division 7 Section "Through-Penetration Firestop Systems."
K. Roof-Penetration Sleeves: Seal penetration of individual raceways and cables with flexible boot-type flashing units applied in coordination with roofing work.
L. Aboveground, Exterior-Wall Penetrations: Seal penetrations using sleeves and mechanical sleeve seals. Select sleeve size to allow for 1-inch annular clear space between pipe and sleeve for installing mechanical sleeve seals.
M. Underground, Exterior-Wall Penetrations: Install cast-iron "wall pipes" for sleeves. Size sleeves to allow for 1-inch annular clear space between raceway or cable and sleeve for installing mechanical sleeve seals.

3.03 FIRESTOPPING

A. Apply firestopping to electrical penetrations of fire-rated floor and wall assemblies to restore original fire-resistance rating of assembly. Firestopping materials and installation requirements are specified in Division 7 Section "Through-Penetration Firestop Systems."

END OF SECTION
SECTION 16060
GROUNDING AND BONDING

PART 1 GENERAL

1.01 SUMMARY
A. This Section includes methods and materials for grounding systems and equipment.

1.02 SUBMITTALS
A. Submit in accordance with the provisions of the General Conditions, Article 3.11.
B. Product Data: For each type of product indicated.
C. Field quality-control test reports.

1.03 QUALITY ASSURANCE
A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.
B. Comply with UL 467 for grounding and bonding materials and equipment.

PART 2 PRODUCTS

2.01 CONDUCTORS
A. Insulated Conductors: Copper wire or cable insulated for 600 V unless otherwise required by applicable Code or authorities having jurisdiction.
B. Bare Copper Conductors:
   4. Bonding Cable: 28 kcmil, 14 strands of No. 17 AWG conductor, 1/4 inch in diameter.
   5. Bonding Conductor: No. 4 or No. 6 AWG, stranded conductor.
   6. Bonding Jumper: Copper tape, braided conductors, terminated with copper ferrules; 1-5/8 inches wide and 1/16 inch thick.
   7. Tinned Bonding Jumper: Tinned-copper tape, braided conductors, terminated with copper ferrules; 1-5/8 inches wide and 1/16 inch thick.

2.02 CONNECTORS
A. Listed and labeled by a nationally recognized testing laboratory acceptable to authorities having jurisdiction for applications in which used, and for specific types, sizes, and combinations of conductors and other items connected.
B. Bolted Connectors for Conductors and Pipes: Copper or copper alloy, bolted pressure-type, with at least two bolts.
   1. Pipe Connectors: Clamp type, sized for pipe.
C. Welded Connectors: Exothermic-welding kits of types recommended by kit manufacturer for materials being joined and installation conditions.

2.03 GROUNDING ELECTRODES
A. Ground Rods: Copper-clad 3/4 inch by 10 feet in diameter.
PART 3 EXECUTION

3.01 APPLICATIONS

A. Conductors: Install green colored insulated solid conductor for No. 6 AWG and smaller, and black insulated stranded conductors for No. 4 AWG and larger with 6 inches long green electrical tape wrapping at all splices, unless otherwise indicated.

B. Underground Grounding Conductors: Install bare copper conductor, No. 2/0 AWG minimum. Bury at least 24 inches below grade.

C. Isolated Grounding Conductors: Green-colored insulation with continuous yellow stripe. On feeders with isolated ground, identify grounding conductor where visible to normal inspection, with alternating bands of green and yellow tape, with at least three bands of green and two bands of yellow.

D. Conductor Terminations and Connections:
   1. Pipe and Equipment Grounding Conductor Terminations: Bolted connectors.
   2. Underground Connections: Welded connectors, except at test wells and as otherwise indicated.
   3. Connections to Ground Rods at Test Wells: Bolted connectors.

3.02 EQUIPMENT GROUNDING

A. Install insulated equipment grounding conductors with the following items, in addition to those required by NFPA 70:
   1. Feeders and branch circuits.
   2. Lighting circuits.
   3. Receptacle circuits.
   5. Three-phase motor and appliance branch circuits.
   6. Flexible raceway runs.
   7. Armored and metal-clad cable runs.
   8. Busway Supply Circuits: Install insulated equipment grounding conductor from grounding bus in the switchgear, switchboard, or distribution panel to equipment grounding bar terminal on busway.

B. Air-Duct Equipment Circuits: Install insulated equipment grounding conductor to duct-mounted electrical devices operating at 120 V and more, including air cleaners, heaters, dampers, humidifiers, and other duct electrical equipment. Bond conductor to each unit and to air duct and connected metallic piping.

C. Water Heater, Heat-Tracing, and Antifrost Heating Cables: Install a separate insulated equipment grounding conductor to each electric water heater and heat-tracing cable. Bond conductor to heater units, piping, connected equipment, and components.

D. Isolated Grounding Receptacle Circuits: Install an insulated equipment grounding conductor connected to the receptacle grounding terminal. Isolate conductor from raceway and from panelboard grounding terminals. Terminate at equipment grounding conductor terminal of the applicable derived system or service, unless otherwise indicated.

E. Isolated Equipment Enclosure Circuits: For designated equipment supplied by a branch circuit or feeder, isolate equipment enclosure from supply circuit raceway with a nonmetallic raceway fitting listed for the purpose. Install fitting where raceway enters enclosure, and install a separate insulated equipment grounding conductor. Isolate conductor from raceway and from panelboard
grounding terminals. Terminate at equipment grounding conductor terminal of the applicable derived system or service, unless otherwise indicated.

F. Signal and Communication Equipment: For telephone, alarm, voice and data, and other communication equipment, provide No. 4 AWG minimum insulated grounding conductor in raceway from grounding electrode system to each service location, terminal cabinet, wiring closet, and central equipment location.


2. Terminal Cabinets: Terminate grounding conductor on cabinet grounding terminal.

3.03 INSTALLATION

A. Grounding Conductors: Route along shortest and straightest paths possible, unless otherwise indicated or required by Code. Avoid obstructing access or placing conductors where they may be subjected to strain, impact, or damage.

B. Ground Rods: Drive rods until tops are 2 inches below finished floor or final grade, unless otherwise indicated.

1. Interconnect ground rods with grounding electrode conductor below grade and as otherwise indicated. Make connections without exposing steel or damaging coating, if any.

2. For grounding electrode system, install at least three rods spaced at least two-rod length from each other and located at least the same distance from other grounding electrodes, and connect to the service grounding electrode conductor.

C. Test Wells: Ground rod driven through drilled hole in bottom of handhole. Handholes are specified in Division 2 Section "Underground Ducts and Utility Structures," and shall be at least 12 inches deep, with cover.

1. Test Wells: Install at least one test well for each service, unless otherwise indicated. Install at the ground rod electrically closest to service entrance. Set top of test well flush with finished grade or floor.

D. Bonding Straps and Jumpers: Install in locations accessible for inspection and maintenance, except where routed through short lengths of conduit.

1. Bonding to Structure: Bond straps directly to basic structure, taking care not to penetrate any adjacent parts.

2. Bonding to Equipment Mounted on Vibration Isolation Hangers and Supports: Install so vibration is not transmitted to rigidly mounted equipment.

3. Use exothermic-welded connectors for outdoor locations, but if a disconnect-type connection is required, use a bolted clamp.

E. Grounding and Bonding for Piping:

1. Metal Water Service Pipe: Install insulated copper grounding conductors, in conduit, from building's main service equipment, or grounding bus, to main metal water service entrances to building. Connect grounding conductors to main metal water service pipes, using a bolted clamp connector or by bolting a lug-type connector to a pipe flange, using one of the lug bolts of the flange. Where a dielectric main water fitting is installed, connect grounding conductor on street side of fitting. Bond metal grounding conductor conduit or sleeve to conductor at each end.

2. Water Meter Piping: Use braided-type bonding jumpers to electrically bypass water meters. Connect to pipe with a bolted connector.

3. Bond each aboveground portion of gas piping system downstream from equipment shutoff valve.

F. Bonding Interior Metal Ducts: Bond metal air ducts to equipment grounding conductors of associated fans, blowers, electric heaters, and air cleaners. Install bonding jumper to bond across flexible duct connections to achieve continuity.
3.04 FIELD QUALITY CONTROL

A. Perform the following tests and inspections and prepare test reports:
   1. After installing grounding system but before permanent electrical circuits have been energized, test for compliance with requirements.
   2. Test completed grounding system at each location where a maximum ground-resistance level is specified, at service disconnect enclosure grounding terminal, and at ground test wells.
      a. Measure ground resistance not less than two full days after last trace of precipitation and without soil being moistened by any means other than natural drainage or seepage and without chemical treatment or other artificial means of reducing natural ground resistance.
      b. Perform tests by fall-of-potential method according to IEEE 81.

B. Report measured ground resistances that exceed the following values:
   1. Power and Lighting Equipment or System with Capacity 500 kVA and less: 10 ohms.
   2. Power and Lighting Equipment or System with Capacity 500 to 1000 kVA: 5 ohms.
   3. Power and Lighting Equipment or System with Capacity More Than 1000 kVA: 3 ohms.
   4. Power Distribution Units or Panelboards Serving Electronic Equipment: 3 ohms.

C. Excessive Ground Resistance: If resistance to ground exceeds specified values, notify Architect promptly and include recommendations to reduce ground resistance.

END OF SECTION
SECTION 16072

ELECTRICAL SUPPORT AND SEISMIC RESTRAINTS

PART 1 GENERAL

1.01 SUMMARY

A. This Section includes the following:
   1. Hangers and supports for electrical equipment and systems.
   2. Seismic restraints for electrical equipment and systems.
   3. Construction requirements for concrete bases.

1.02 SUBMITTALS

A. Submit in accordance with the provisions of the General Conditions, Article 3.11.

B. Shop Drawings: Include required restraints and attachments to structure with associated hardware.
   1. Tabulate types and sizes of seismic restraints, complete with report numbers and rated strength in tension and shear as evaluated by California OSHPD and an agency acceptable to authorities having jurisdiction.
   2. Annotate to indicate application of each product submitted and compliance with requirements.

C. Shop Drawings: Include required restraints and attachments to structure with associated hardware.

1.03 QUALITY ASSURANCE

A. Comply with seismic-restraint requirements in the California Building Code, Code of Regulations of OSHPD and unless requirements in this Section are more stringent.

B. Welding: Qualify procedures and personnel according to AWS D1.1/D1.1 M, "Structural Welding Code - Steel."

1.04 PROJECT CONDITIONS

A. Seismic Design Category: D , $S_{DS} 1.00, S_{D1} 0.64$

PART 2 - PRODUCTS

2.01 MANUFACTURERS

A. In other Part 2 articles where titles below introduce lists, the following requirements apply to product selection:
   1. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, manufacturers specified.

2.02 SUPPORT, ANCHORAGE, AND ATTACHMENT COMPONENTS

A. Rated Strength: Adequate in tension, shear, and pullout force to resist maximum loads calculated or imposed under this Project, with a minimum structural safety factor of five times the applied force.

B. Steel Slotted Support Systems: Comply with MFMA-3, factory-fabricated components for field assembly, and provide finish suitable for the environment in which installed.

   1. Manufacturers:
      a. Cooper B-Line; a division of Cooper Industries.
      b. ERICO International Corporation.
      c. Allied Support Systems; Power-Strut Unit.
      d. GS Metals Corp.
      e. Michigan Hanger Co., Inc.; O-Strut Div.
2. Channel Dimensions: Selected for structural loading and applicable seismic forces.

C. Raceway and Cable Supports: As described in NECA 1.

D. Conduit and Cable Support Devices: Steel hangers, clamps, and associated fittings, designed for types and sizes of raceway or cable to be supported.

E. Support for Conductors in Vertical Conduit: Factory-fabricated assembly consisting of threaded body and insulating wedging plug or plugs for non-armored electrical conductors or cables in riser conduits. Plugs shall have number, size, and shape of conductor gripping pieces as required to suit individual conductors or cables supported. Body shall be malleable iron.

F. Structural Steel for Fabricated Supports and Restraints: ASTM A 36/A 36M, steel plates, shapes, and bars; black and galvanized.

G. Mounting, Anchoring, and Attachment Components: Items for fastening electrical items or their supports to building surfaces include the following:

1. Mechanical-Expansion Anchors: Insert-wedge-type, stainless steel, for use in hardened portland cement concrete with tension, shear, and pullout capacities appropriate for supported loads and building materials in which used.
      Provide stainless steel for exterior and in contact with interior slab-on-grade conditions.

2. Concrete Inserts: Steel or malleable-iron slotted-support-system units similar to MSS Type 18; complying with MFMA-3 or MSS SP-58.

3. Clamps for Attachment to Steel Structural Elements: MSS SP-58, type suitable for attached structural element.


5. Toggle Bolts: All-steel springhead type.


2.03 SEISMIC-RESTRAINT COMPONENTS

A. Rated Strength, Features, and Application Requirements for Restraint Components: As defined in reports by California OSHPD and an agency acceptable to authorities having jurisdiction.

1. Structural Safety Factor: Strength in tension, shear, and pullout force of components used shall be at least five times the maximum seismic forces to which they will be subjected.

B. Angle and Channel-Type Brace Assemblies: Steel angles or steel slotted-support-system components; with accessories for attachment to braced component at one end and to building structure at the other end.

C. Cable Restraints: ASTM A 603, zinc-coated, steel wire rope attached to steel or stainless-steel thimbles, brackets, swivels, and bolts designed for restraining cable service.

1. Manufacturers:
   a. Amber/Booth Company, Inc.
   b. Loos & Co., Inc.
   c. Mason Industries, Inc.

2. Seismic Mountings, Anchors, and Attachments: Devices as specified in Part 2 "Support, Anchorage, and Attachment Components" Article, selected to resist seismic forces.

3. Hanger Rod Stiffener: Steel tube or steel slotted-support-system sleeve with internally bolted connections reinforcing steel angle clamped to hanger rod, of design recognized by California OSHPD and an agency acceptable to authorities having jurisdiction.

4. Bushings for Floor-Mounted Equipment Anchors: Neoprene units designed for seismically rated rigid equipment mountings, and matched to type and size of anchor bolts and studs used.
5. Bushing Assemblies for Wall-Mounted Equipment Anchorage: Assemblies of neoprene elements and steel sleeves designed for seismically rated rigid equipment mountings, and matched to type and size of attachment devices used.

2.04 FABRICATED METAL EQUIPMENT SUPPORT ASSEMBLIES
A. Description: Welded or bolted, structural-steel shapes, shop or field fabricated to fit dimensions of supported equipment.
B. Materials: Comply with requirements in Division 5 Section "Metal Fabrications" for steel shapes and plates.

PART 3 EXECUTION
3.01 APPLICATION
A. Comply with NECA 1 for application of hangers and supports for electrical equipment and systems, unless requirements in this Section or applicable Code are stricter.

3.02 SUPPORT AND SEISMIC-RESTRAINT INSTALLATION
A. Comply with NECA 1 for installation requirements, except as specified in this Article.
B. Raceway Support Methods: In addition to methods described in NECA 1, EMT, IMC, and RMC may be supported by openings through structure members, as permitted in NFPA 70.
C. Install seismic-restraint components using methods approved by the evaluation service providing required submittals for component.
D. Strength of Support and Seismic-Restraint Assemblies: Where not indicated, select sizes of components so strength will be adequate to carry present and future static and seismic loads within specified loading limits. Minimum static design load used for strength determination shall be weight of supported components plus 200 lb.
E. Mounting and Anchorage of Surface-Mounted Equipment and Components: Anchor and fasten electrical items and their supports to building structural elements by the following methods, unless otherwise indicated by Code:
   1. To Wood: Fasten with lag screws or through bolts.
   2. To New Concrete: Bolt to concrete inserts.
   3. To Masonry: Approved toggle-type bolts on hollow masonry units and expansion anchor fasteners on solid masonry units.
   4. To Existing Concrete: Expansion anchor fasteners.
   5. To Steel: Welded threaded studs complying with AWS D1.1/D1.1M, with lock washers and nuts complying with MSS SP-69 and Spring-tension clamps.
   6. To Light Steel: Sheet metal screws.
   7. Items Mounted on Hollow Walls and Nonstructural Building Surfaces: Mount on slotted-channel racks attached to substrate.
F. Drill holes for expansion anchors in concrete at locations and to depths that avoid reinforcing bars.

3.03 INSTALLATION OF FABRICATED METAL SUPPORTS
A. Comply with installation requirements in Division 5 Section "Metal Fabrications" for site-fabricated metal supports.
B. Cut, fit, and place miscellaneous metal supports accurately in location, alignment, and elevation to support and anchor electrical materials and equipment.
C. Field Welding: Comply with AWS D1.1/D1.1M.

3.04 ACCOMMODATION OF DIFFERENTIAL SEISMIC MOTION
A. Make flexible connections in runs of raceways, cables, wireways, cable trays, and busways where they cross expansion and seismic-control joints, where adjacent sections or branches are
supported by different structural elements, and where they terminate with connection to electrical equipment that is anchored to a different structural element from the one supporting them as they approach equipment.

END OF SECTION
PART 1 GENERAL

1.01 SUMMARY
A. This Section includes the following:
   1. Identification for conductors and communication and control cable.
   2. Warning labels and signs.
   3. Equipment identification labels.

1.02 SUBMITTALS
A. Submit in accordance with the provisions of the General Conditions, Article 3.11.
B. Product Data: For each electrical identification product indicated.

1.03 QUALITY ASSURANCE
A. Comply with ANSI A13.1.

1.04 COORDINATION

PART 2 PRODUCTS

2.01 CONDUCTOR AND COMMUNICATION- AND CONTROL-CABLE IDENTIFICATION MATERIALS
A. Marker Tape: Vinyl or vinyl -cloth, self-adhesive wraparound type, with circuit identification legend machine printed by thermal transfer or equivalent process.

2.02 WARNING LABELS AND SIGNS
B. Self-Adhesive Warning Labels: Factory printed, multicolor, pressure-sensitive adhesive labels, configured for display on front cover, door, or other access to equipment, unless otherwise indicated.
C. Baked-Enamel Warning Signs: Preprinted aluminum signs, punched or drilled for fasteners, with colors, legend, and size required for application. 1/4-inch grommets in corners for mounting. Nominal size, 7 by 10 inches.
D. Metal-Backed, Butyrate Warning Signs: Weather-resistant, nonfading, preprinted, cellulose-acetate butyrate signs with 0.0396-inch galvanized-steel backing; and with colors, legend, and size required for application. 1/4-inch grommets in corners for mounting. Nominal size, 10 by 14 inches.
E. Fasteners for Signs: Self-tapping, stainless-steel screws or stainless-steel machine screws with nuts and flat and lock washers.
F. Warning label and sign shall include, but are not limited to, the following legends:
   1. Multiple Power Source Warning: "DANGER - ELECTRICAL SHOCK HAZARD - EQUIPMENT HAS MULTIPLE POWER SOURCES."
   2. Workspace Clearance Warning: "WARNING - OSHA REGULATION - AREA IN FRONT OF ELECTRICAL EQUIPMENT MUST BE KEPT CLEAR FOR 36 INCHES."
2.03 EQUIPMENT IDENTIFICATION LABELS

A. Adhesive Film Label with Clear Protective Overlay: Machine printed, in black, by thermal transfer or equivalent process. Minimum letter height shall be 3/8 inch. Overlay shall provide a weatherproof and ultraviolet-resistant seal for label.

B. Self-Adhesive, Engraved, Laminated Acrylic or Melamine Label: Adhesive backed, with white letters on a dark-gray background. Minimum letter height shall be 3/8 inch.

PART 3 EXECUTION

3.01 APPLICATION

A. Auxiliary Electrical Systems Conductor and Cable Identification: Use marker tape to identify field-installed alarm, control, signal, sound, intercommunications, voice, and data wiring connections.

1. Identify conductors, cables, and terminals in enclosures and at junctions, terminals, and cable pull points. Identify by system and circuit designation.

2. Use system of designations that is uniform and consistent with system used by manufacturer for factory-installed connections.

B. Warning Labels for Indoor Cabinets, Boxes, and Enclosures for Power and Lighting: Comply with 29 CFR 1910.145 and apply self-adhesive warning labels. Identify system voltage with black letters on an orange background. Apply to exterior of door, cover, or other access.

1. Equipment with Multiple Power or Control Sources: Apply to door or cover of equipment including, but not limited to, the following:
   a. Power transfer switches.
   b. Controls with external control power connections.

2. Equipment Requiring Workspace Clearance According to NFPA 70: Unless otherwise indicated, apply to door or cover of equipment but not on flush panelboards and similar equipment in finished spaces.

C. Equipment Identification Labels: On each unit of equipment, install unique designation label that is consistent with wiring diagrams, schedules, and Operation and Maintenance Manual. Apply labels to disconnect switches and protection equipment, central or master units, control panels, control stations, terminal cabinets, and racks of each system. Systems include power, lighting, control, communication, signal, monitoring, and alarm systems unless equipment is provided with its own identification.

1. Labeling Instructions:
   a. Indoor Equipment: Self-adhesive, engraved, laminated acrylic or melamine label. Unless otherwise indicated, provide a single line of text with 1/2-inch- high letters on 1-1/2-inch-high label; where 2 lines of text are required, use labels 2 inches high.
   b. Outdoor Equipment: Engraved, laminated acrylic or melamine label, drilled for screw attachment.
   c. Elevated Components: Increase sizes of labels and legend to those appropriate for viewing from the floor.

2. Equipment to Be Labeled:
   a. Panelboards, electrical cabinets, and enclosures.
   b. Electrical switchgear and switchboards.
   c. Transformers.
   d. Motor-control centers.
   e. Disconnect switches.
   f. Enclosed circuit breakers.
   g. Motor starters.
   h. Push-button stations.
   i. Power transfer stations.
   j. Contactors.
3.02 INSTALLATION

A. Verify identity of each item before installing identification products.

B. Location: Install identification materials and devices at locations for most convenient viewing without interference with operation and maintenance of equipment.

C. Apply identification devices to surfaces that require finish after completing finish work.

D. Self-Adhesive Identification Products: Clean surfaces before application, using materials and methods recommended by manufacturer of identification device.

E. Attach nonadhesive signs and plastic labels with screws and auxiliary hardware appropriate to the location and substrate.

F. Color-Coding for Phase and Voltage Level Identification, 600 V and Less: Use the colors listed below for ungrounded service, feeder, and branch-circuit conductors.
   1. Color shall be factory applied.
   2. Colors for 208/120-V Circuits:
      a. Phase A: Black.
      b. Phase B: Red.
      c. Phase C: Blue.

END OF SECTION
SECTION 16120

CONDUCTORS AND CABLES

PART 1 GENERAL

1.01 SUMMARY
A. This Section includes building wires and cables and associated connectors, splices, and terminations for wiring systems rated 600 V and less.

1.02 SUBMITTALS
A. Submit in accordance with the provisions of the General Conditions, Article 3.11.
B. Field quality-control test reports.

1.03 QUALITY ASSURANCE
A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.
B. Comply with NFPA 70.

PART 2 PRODUCTS

2.01 MANUFACTURERS
A. In other Part 2 articles where subparagraph titles below introduce lists, the following requirements apply for product selection:
   1. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the manufacturers specified.

2.02 CONDUCTORS AND CABLES
A. Manufacturers:
   2. General Cable Corporation.
B. Refer to Part 3 "Conductor and Insulation Applications" Article for insulation type, cable construction, and ratings.
C. Conductor Material: Copper complying with NEMA WC 5 or 7; solid conductor for No. 10 AWG and smaller, stranded for No. 8 AWG and larger.
D. Conductor Insulation Types: Type THW, XHHW, USE complying with NEMA WC 5 or 7.

2.03 CONNECTORS AND SPLICES
A. Manufacturers:
   1. AFC Cable Systems, Inc.
2. AMP Incorporated/Tyco International.
3. Hubbell/Anderson.
4. O-Z/Gedney; EGS Electrical Group LLC.
5. 3M Company; Electrical Products Division.

B. Description: Factory-fabricated connectors and splices of size, ampacity rating, material, type, and class for application and service indicated.

PART 3 EXECUTION

3.01 CONDUCTOR AND INSULATION APPLICATIONS

A. Service Entrance: Type XHHW, single conductors in raceway.
B. Exposed Feeders: Type THHN-THWN, single conductors in raceway.
C. Feeders Concealed in Ceilings, Walls, and Partitions: Type THHN-THWN, single conductors in raceway.
D. Feeders Concealed in Concrete, below Slabs-on-Grade, and in Crawlspace: Type THHN-THWN, single conductors in raceway.
E. Exposed Branch Circuits, including in Crawlspace: Type THHN-THWN, single conductors in raceway.
F. Branch Circuits Concealed in Ceilings, Walls, and Partitions: Type THHN-THWN, single conductors in raceway.
G. Branch Circuits Concealed in Concrete and below Slabs-on-Grade: Type THHN-THWN, single conductors in raceway.
I. Fire Alarm Circuits: Type THHN-THWN, in raceway.
J. Class 1 Control Circuits: Type THHN-THWN, in raceway.
K. Class 2 Control Circuits: Type THHN-THWN, in raceway.

3.02 INSTALLATION

A. Conceal cables in finished walls, ceilings, and floors, unless otherwise indicated.
B. Use manufacturer-approved pulling compound or lubricant where necessary; compound used must not deteriorate conductor or insulation. Do not exceed manufacturer's recommended maximum pulling tensions and sideway pressure values.
C. Use pulling means, including fish tape, cable, rope, and basket-weave wire/cable grips, that will not damage cables or raceway.
D. Install exposed cables parallel and perpendicular to surfaces of exposed structural members, and follow surface contours where possible.
E. Support cables according to Division 16 Section "Basic Electrical Materials and Methods."
F. Seal around cables penetrating fire-rated elements according to Division 7 Section "Through-Penetration Firestop Systems."
G. Identify and color-code conductors and cables according to Division 16 Section "Electrical Identification."
H. Make splices and taps that are compatible with conductor material and that possess equivalent or better mechanical strength and insulation ratings than unspliced conductors.
1. Use oxide inhibitor in each splice and tap conductor for aluminum conductors.

I. Wiring at Outlets: Install conductor at each outlet, with at least 6 inches of slack.

3.03 FIELD QUALITY CONTROL

A. Testing: Perform each electrical test and visual and mechanical inspection stated in NETA ATS, Section 7.3.1. Certify compliance with test parameters.

B. Test Reports: Prepare a written report to record the following:
   1. Test procedures used.
   2. Test results that comply with requirements.
   3. Test results that do not comply with requirements and corrective action taken to achieve compliance with requirements.

END OF SECTION
SECTION 16130
RACEWAYS AND BOXES

PART 1 GENERAL

1.01 SUMMARY
A. This Section includes raceways, fittings, boxes, enclosures, and cabinets for electrical wiring.
B. See Division 2 Section "Underground Ducts and Utility Structures" for exterior ductbanks, manholes, and underground utility construction.
C. See Division 7 Section "Through-Penetration Firestop Systems" for firestopping materials and installation at penetrations through walls, ceilings, and other fire-rated elements.
D. See Division 16 Section "Basic Electrical Materials and Methods" for supports, anchors, and identification products.
E. See Division 16 Section "Electrical Supports and Seismic Restraints" for seismic restraints and bracing of raceways, boxes, enclosures, and cabinets.
F. See Division 16 Section "Wiring Devices" for devices installed in boxes and for floor-box service fittings.

1.02 SUBMITTALS
A. Submit in accordance with the provisions of the General Conditions, Article 3.11.
B. Product Data: For surface raceways, wireways and fittings, floor boxes, hinged-cover enclosures, and cabinets indicated.
C. Shop Drawings: Show fabrication and installation details of components for raceways, fittings, boxes, enclosures, and cabinets.

1.03 QUALITY ASSURANCE
A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.
B. Comply with NFPA 70.

PART 2 PRODUCTS

2.01 MANUFACTURERS
A. In other Part 2 articles where subparagraph titles below introduce lists, the following requirements apply for product selection:
   1. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the manufacturers specified.

2.02 METAL CONDUIT AND TUBING
A. Manufacturers:
   1. AFC Cable Systems, Inc.
   2. Alflex Inc.
   3. Anamet Electrical, Inc.; Anaconda Metal Hose.
   4. Electri-Flex Co.
   5. Grinnell Co./Tyco International; Allied Tube and Conduit Div.
   6. LTV Steel Tubular Products Company.
   7. Manhattan/CDT/Cole-Flex.
   8. O-Z Gedney; Unit of General Signal.
9. Wheatland Tube Co.
B. Rigid Steel Conduit: ANSI C80.1.
C. IMC: ANSI C80.6.
D. EMT and Fittings: ANSI C80.3.
   1. Fittings: Compression type.
E. FMC: Aluminum.
F. LFMC: Flexible steel conduit with PVC jacket.
G. Fittings: NEMA FB 1; compatible with conduit and tubing materials.

2.03 NONMETALLIC CONDUIT AND TUBING

A. Manufacturers:
   2. Anamet Electrical, Inc.; Anaconda Metal Hose.
   3. Arnco Corp.
   4. Cantex Inc.
   7. ElecSYS, Inc.
   8. Electri-Flex Co.
   9. Lamson & Sessions; Carlon Electrical Products.
10. Manhattan/CDT/Coile-Flex.
11. RACO; Division of Hubbell, Inc.
12. Spiralduct, Inc./AFC Cable Systems, Inc.

B. RNC: NEMA TC 2, Schedule 40 and Schedule 80 PVC.
C. RNC Fittings: NEMA TC 3; match to conduit or tubing type and material.

2.04 METAL WIREWAYS

A. Manufacturers:
   1. Hoffman.
   2. Square D.
   3. AW Circle.

B. Material and Construction: Sheet metal sized and shaped as indicated.

C. Fittings and Accessories: Include couplings, offsets, elbows, expansion joints, adapters, hold-down straps, end caps, and other fittings to match and mate with wireways as required for complete system.

D. Select features, unless otherwise indicated, as required to complete wiring system and to comply with NFPA 70.

E. Wireway Covers: Hinged type or as indicated.
F. Finish: Manufacturer’s standard enamel finish.

2.05 NONMETALLIC WIREWAYS

A. Manufacturers:
   1. Hoffman.
   2. Lamson & Sessions; Carlon Electrical Products.

B. Description: PVC plastic, extruded and fabricated to size and shape indicated, with snap-on cover and mechanically coupled connections with plastic fasteners.
C. Fittings and Accessories: Include couplings, offsets, elbows, expansion joints, adapters, hold-down straps, end caps, and other fittings to match and mate with wireways as required for complete system.

D. Select features, unless otherwise indicated, as required to complete wiring system and to comply with NFPA 70.

2.06 SURFACE RACEWAYS

A. Surface Metal Raceways: Galvanized steel with snap-on covers. Finish with manufacturer's standard prime coating.
   1. Manufacturers:
      a. Airey-Thompson Sentinel Lighting; Wiremold Company (The).
      b. Thomas & Betts Corporation.
      d. Wiremold Company (The); Electrical Sales Division.

B. Types, sizes, and channels as indicated and required for each application, with fittings that match and mate with raceways.

2.07 BOXES, ENCLOSURES, AND CABINETS

A. Manufacturers:
   1. Cooper Crouse-Hinds; Div. of Cooper Industries, Inc.
   2. Emerson/General Signal; Appleton Electric Company.
   3. Erickson Electrical Equipment Co.
   6. O-Z/Gedney; Unit of General Signal.
   7. RACO; Division of Hubbell, Inc.
  10. Spring City Electrical Manufacturing Co.

B. Sheet Metal Outlet and Device Boxes: NEMA OS 1.

C. Cast-Metal Outlet and Device Boxes: NEMA FB 1, Type FD, with gasketed cover.

D. Nonmetallic Outlet and Device Boxes: NEMA OS 2.

E. Floor Boxes: Cast metal, fully adjustable, rectangular.

F. Small Sheet Metal Pull and Junction Boxes: NEMA OS 1.

G. Cast-Metal Pull and Junction Boxes: NEMA FB 1, cast aluminum with gasketed cover.

H. Hinged-Cover Enclosures: NEMA 250, Type 1, with continuous hinge cover and flush latch.
   1. Metal Enclosures: Steel, finished inside and out with manufacturer's standard enamel.

I. Cabinets: NEMA 250, Type 1, galvanized steel box with removable interior panel and removable front, finished inside and out with manufacturer's standard enamel. Hinged door in front cover with flush latch and concealed hinge. Key latch to match panelboards. Include metal barriers to separate wiring of different systems and voltage and include accessory feet where required for freestanding equipment.

2.08 FACTORY FINISHES

A. Finish: For raceway, enclosure, or cabinet components, provide manufacturer's standard primecoat finish ready for field painting.
B. Finish: For raceway, enclosure, or cabinet components, provide manufacturer's standard paint applied to factory-assembled surface raceways, enclosures, and cabinets before shipping.

PART 3 EXECUTION

3.01 RACEWAY APPLICATION

A. Outdoors:
   1. Exposed: Rigid steel with steel threaded watertight fittings.
   2. Concealed: Rigid steel or IMC.
   5. Connection to Vibrating Equipment (Including Transformers and Hydraulic, Pneumatic, Electric Solenoid, or Motor-Driven Equipment): LFMC.
   6. Boxes and Enclosures: NEMA 250, Type 3R.

B. Indoors:
   1. Exposed: EMT.
   2. Concealed: EMT.
   3. Connection to Vibrating Equipment (Including Transformers and Hydraulic, Pneumatic, Electric Solenoid, or Motor-Driven Equipment): FMC; except use LFMC in damp or wet locations.
   4. Damp or Wet Locations: Rigid steel conduit.
   5. Boxes and Enclosures: NEMA 250, Type 1, except as follows:
      a. Damp or Wet Locations: NEMA 250, Type 4, stainless steel.

C. Minimum Raceway Size: 3/4-inch trade size (DN 16).

D. Raceway Fittings: Compatible with raceways and suitable for use and location.
   1. Intermediate Steel Conduit: Use threaded rigid steel conduit fittings, unless otherwise indicated.
   2. PVC Externally Coated, Rigid Steel Conduits: Use only fittings approved for use with that material. Patch all nicks and scrapes in PVC coating after installing conduits.

3.02 INSTALLATION

A. Keep raceways at least 6 inches away from parallel runs of flues and steam or hot-water pipes. Install horizontal raceway runs above water and steam piping.

B. Complete raceway installation before starting conductor installation.

C. Support raceways as specified in Division 16 Section "Electrical Supports and Seismic Restraints."

D. Install temporary closures to prevent foreign matter from entering raceways.

E. Protect stub-ups from damage where conduits rise through floor slabs. Arrange so curved portions of bends are not visible above finished slab.

F. Make bends and offsets so ID is not reduced. Keep legs of bends in same plane and keep straight legs of offsets parallel, unless otherwise indicated.

G. Conceal conduit and EMT within finished walls, ceilings, and floors, unless otherwise indicated.
   1. Install concealed raceways with a minimum of bends in shortest practical distance, considering type of building construction and obstructions, unless otherwise indicated.

H. Raceways Embedded in Slabs: Install in middle 1/3 of slab thickness where practical and leave at least 2 inches of concrete cover.
   1. Secure raceways to reinforcing rods to prevent sagging or shifting during concrete placement.
   2. Space raceways laterally to prevent voids in concrete.
   3. Run conduit larger than 1-inch trade size (DN 27) parallel or at right angles to main reinforcement. Where at right angles to reinforcement, place conduit close to slab support.
4. Change from nonmetallic tubing to Schedule 80 nonmetallic conduit, rigid steel conduit, or IMC before rising above floor.

I. Install exposed raceways parallel or at right angles to nearby surfaces or structural members and follow surface contours as much as possible.
   1. Run parallel or banked raceways together on common supports.
   2. Make parallel bends in parallel or banked runs. Use factory elbows only where elbows can be installed parallel; otherwise, provide field bends for parallel raceways.

J. Join raceways with fittings designed and approved for that purpose and make joints tight.
   1. Use insulating bushings to protect conductors.

K. Tighten set screws of threadless fittings with suitable tools.

L. Terminations:
   1. Where raceways are terminated with locknuts and bushings, align raceways to enter squarely and install locknuts with dished part against box. Use two locknuts, one inside and one outside box.
   2. Where raceways are terminated with threaded hubs, screw raceways or fittings tightly into hub so end bears against wire protection shoulder. Where chase nipples are used, align raceways so coupling is square to box; tighten chase nipple so no threads are exposed.

M. Install pull wires in empty raceways. Use polypropylene or monofilament plastic line with not less than 200-lb tensile strength. Leave at least 12 inches of slack at each end of pull wire.

N. Telephone and Signal System Raceways, 2-Inch Trade Size (DN 53) and Smaller: In addition to above requirements, install raceways in maximum lengths of 150 feet and with a maximum of two 90-degree bends or equivalent. Separate lengths with pull or junction boxes where necessary to comply with these requirements.

O. Install raceway sealing fittings at suitable, approved, and accessible locations and fill them with UL-listed sealing compound. For concealed raceways, install each fitting in a flush steel box with a blank cover plate having a finish similar to that of adjacent plates or surfaces. Install raceway sealing fittings at the following points:
   1. Where conduits pass from warm to cold locations, such as boundaries of refrigerated spaces.
   2. Where otherwise required by NFPA 70.

P. Stub-up Connections: Extend conduits through concrete floor for connection to freestanding equipment. Install with an adjustable top or coupling threaded inside for plugs set flush with finished floor. Extend conductors to equipment with rigid steel conduit; FMC may be used 6 inches above the floor. Install screwdriver-operated, threaded plugs flush with floor for future equipment connections.

Q. Flexible Connections: Use maximum of 72 inches of flexible conduit for recessed and semirecessed lighting fixtures; for equipment subject to vibration, noise transmission, or movement; and for all motors. Use LFMC in damp or wet locations. Install separate ground conductor across flexible connections.

R. Surface Raceways: Install a separate, green, ground conductor in raceways from junction box supplying raceways to receptacle or fixture ground terminals.

S. Set floor boxes level and flush with finished floor surface.

T. Set floor boxes level. Trim after installation to fit flush with finished floor surface.

U. Install hinged-cover enclosures and cabinets plumb. Support at each corner.
3.03 PROTECTION

A. Provide final protection and maintain conditions that ensure coatings, finishes, and cabinets are without damage or deterioration at time of Substantial Completion.
1. Repair damage to galvanized finishes with zinc-rich paint recommended by manufacturer.
2. Repair damage to PVC or paint finishes with matching touchup coating recommended by manufacturer.

END OF SECTION
PART 1 GENERAL

1.01 SUMMARY

A. This Section includes the following:
   1. Single and duplex receptacles, ground-fault circuit interrupters, and integral surge suppression units.
   3. Device wall plates.
   4. Floor service outlets, poke-through assemblies, service poles, and multioutlet assemblies.

1.02 SUBMITTALS

A. Submit in accordance with the provisions of the General Conditions, Article 3.11.
B. Product Data: For each type of product indicated.
C. Shop Drawings: List of legends and description of materials and process used for premarking wall plates.
D. Samples: One for each type of device and wall plate specified, in each color specified.
E. Field quality-control test reports.

1.03 QUALITY ASSURANCE

A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.
B. Comply with NFPA 70.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
   1. Wiring Devices:
      a. Hubbell Incorporated; Wiring Device-Kellems.
      b. Leviton Mfg. Company Inc.
      c. Pass & Seymour/Legrand; Wiring Devices Div.
   2. Poke-Through, Floor Service Outlets and Telephone/Power Poles:
      a. Hubbell Incorporated; Wiring Device-Kellems.
      b. Pass & Seymour/Legrand; Wiring Devices Div.
      c. Square D/Groupe Schneider NA.
      d. Thomas & Betts Corporation.
      e. Wiremold Company (The).

2.02 RECEPTACLES

A. Straight-Blade-Type Receptacles: Comply with NEMA WD 1, NEMA WD 6, DSCC W-C-596G, and UL 498.
B. Straight-Blade and Locking Receptacles: Heavy-Duty grade.
C. Straight-Blade Receptacles: Hospital grade, Decora Type.
D. GFCI Receptacles: Straight blade, non-feed-through type, Hospital grade, with integral NEMA WD 6, Configuration 5-20R duplex receptacle; complying with UL 498 and UL 943. Design units for installation in a 2-3/4-inch deep outlet box without an adapter.

E. Receptacles with quick-connect pre-wired pigtails are not allowed.

F. All general use 20 amp receptacles are to be spec grade Leviton, Hubbell, or Pass & Seymour or Approved. All must be self grounding type, one-piece design, minimum 0.05” solid brass strap, high strength, heat resistant, glass reinforced nylon base. Devices shall accept up to #10 wire, side or back wired with screw terminals – no plug-in terminations – NO SUBSTITUTIONS.

2.03 PENDANT CORD/CONNECTOR DEVICES
A. Description: Matching, locking-type plug and receptacle body connector, NEMA WD 6, Configurations L5-20P and L5-20R, Heavy-Duty grade.
   2. External Cable Grip: Woven wire-mesh type made of high-strength galvanized-steel wire strand, matched to cable diameter, and with attachment provision designed for corresponding connector.

2.04 SWITCHES
B. Snap Switches: Heavy-Duty grade, quiet type.
C. Combination Switch and Receptacle: Both devices in a single gang unit with plaster ears and removable tab connector that permit separate or common feed connection.
   2. Receptacle: NEMA WD 6, Configuration 5-15R.
D. Dimmer Switches: Modular, full-wave, solid-state units with integral, quiet on/off switches and audible frequency and EMI/RFI filters.
   1. Control: Continuously adjustable slider with single-pole or three-way switching to suit connections.
   2. Incandescent Lamp Dimmers: Modular, 120 V, 60 Hz with continuously adjustable rotary knob, toggle switch, or slider; single pole with soft tap or other quiet switch; EMI/RFI filter to eliminate interference; and 5-inch wire connecting leads.
   3. Fluorescent Lamp Dimmer Switches: Modular; compatible with dimmer ballasts; trim potentiometer to adjust low-end dimming; dimmer-ballast combination capable of consistent dimming with low end not greater than 20 percent of full brightness.

2.05 WALL PLATES
A. Single and combination types to match corresponding wiring devices.
   1. Plate-Securing Screws: Metal with head color to match plate finish.
   2. Material for Finished Spaces: Smooth, high-impact thermoplastic 0.035-inch-thick.
   4. Material for Wet Locations: Cast aluminum with spring-loaded lift cover, and listed and labeled for use in "wet locations."

2.06 FLOOR SERVICE FITTINGS
A. Type: Modular, flush-type, dual-service units suitable for wiring method used.
B. Compartments: Barrier separates power from voice and data communication cabling.
C. Service Plate: Round solid brass with satin finish.
D. Power Receptacle: NEMA WD 6, Configuration 5-20R, gray finish, unless otherwise indicated.
E. Voice and Data Communication Outlet: Two modular, keyed, color-coded, RJ-45 Category 6 (data) (voice) jacks for UTP cable.
2.07 MULTIOUTLET ASSEMBLIES
   A. Components of Assemblies: Products from a single manufacturer designed for use as a complete, matching assembly of raceways and receptacles.
   B. Raceway Material: Metal, with manufacturer's standard finish.
   C. Wire: No. 12 AWG.

2.08 FINISHES
   A. Color:
      1. Wiring Devices Connected to Normal Power System: White, unless otherwise indicated or required by NFPA 70.
      3. TVSS Devices: Blue.

PART 3 EXECUTION
3.01 INSTALLATION
   A. Install devices and assemblies level, plumb, and square with building lines.
   B. Install wall dimmers to achieve indicated rating after derating for ganging.
   C. Install unshared neutral conductors on line and load side of dimmers.
   D. Arrangement of Devices: Unless otherwise indicated, mount flush, with long dimension vertical, and with grounding terminal of receptacles on top. Group adjacent switches under single, multigang wall plates.
   E. Remove wall plates and protect devices and assemblies during painting.
   F. Adjust locations of floor service outlets and service poles to suit arrangement of partitions and furnishings.

3.02 IDENTIFICATION
   A. Comply with Division 16 Section "Electrical Identification."
      1. Receptacles: Identify panelboard and circuit number from which served. Use hot, stamped or engraved machine printing with white-filled lettering on face of plate, and durable wire markers or tags inside outlet boxes.

3.03 CONNECTIONS
   A. Ground equipment according to Division 16 Section "Grounding and Bonding."
   B. Connect wiring according to Division 16 Section "Conductors and Cables."

3.04 FIELD QUALITY CONTROL
   A. Perform the following field tests and inspections and prepare test reports:
      1. After installing wiring devices and after electrical circuitry has been energized, test for proper polarity, ground continuity, and compliance with requirements.
      2. Test GFCI operation with both local and remote fault simulations according to manufacturer's written instructions.
   B. Remove malfunctioning units, replace with new units, and retest as specified above.

END OF SECTION
PART 1 GENERAL
1.01 SUMMARY
A. This Section includes the following lighting control devices:
   1. Time switches.
   2. Low voltage relay control panel.
   3. Occupancy sensors and power pack.
B. See Division 16 Section "Wiring Devices" for wall-box dimmers and manual light switches.

1.02 DEFINITIONS
A. LED: Light-emitting diode.
B. PIR: Passive infrared.

1.03 SUBMITTALS
A. Submit in accordance with the provisions of the General Conditions, Article 3.11.
B. Product Data: For each type of product indicated.
C. Shop Drawings: Show installation details for occupancy and light-level sensors.
   1. Lighting plan showing location, orientation, and coverage area of each sensor.
   2. Interconnection diagrams showing field-installed wiring.
D. Field quality-control test reports.
E. Operation and maintenance data.

1.04 QUALITY ASSURANCE
A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.

PART 2 PRODUCTS
2.01 MANUFACTURERS
A. In other Part 2 articles where titles below introduce lists, the following requirements apply to product selection:
   1. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, manufacturers specified.

2.02 GENERAL LIGHTING CONTROL DEVICE REQUIREMENTS
A. Line-Voltage Surge Protection: An integral part of the devices for 120- and 277-V solid-state equipment. For devices without integral line-voltage surge protection, field-mounting surge protection shall comply with IEEE C62.41 and with UL 1449.

2.03 TIME SWITCHES
A. Manufacturers:
   1. Area Lighting Research, Inc.
   2. Fisher Pierce.
   4. Intermatic, Inc.
2.04 LOW VOLTAGE RELAY CONTROL PANEL

A. Heavy duty relay design with 14,000 Amps SCCR (Short Circuit Current Rating)
B. Multi-phase load control capability with optional contractors.
C. Switch inputs automatically configure for use with occupancy sensors.
D. Relay status LEDs afford visual ON/OFF status at panel.
E. Mechanical override integral to each relay.
F. Pilot light outputs provide lighting status at remote switches
G. WinControl Designer software for user-friendly panel design and documentation.
H. Lifetime toll-free technical support and free programming assistance.
I. Group switching of up to eight channels for a 24-relay panel, 16 channels for a 48-relay panel.
J. Smartwiring for easy pushbutton programming of relays or groups of relays.
K. Accepts control from time clock scheduling, astronomic control, or building automation interface.
L. Programmed lighting control scenarios and scheduling of each channel (i.e., blink warning, occupied/unoccupied, manual ON, auto ON) via optional network clock.
M. Multiple power supply options: 115/277 VAC, 220-240 VAC, 115/347 VAC; 50/60 Hz.
N. Single pole relays, mechanically latching type, individually replaceable, with mechanical override and visual status indication as manufactured by Watt Stopper.
O. Ethernet connectivity for remote programming and control.

2.05 SWITCH-BOX OCCUPANCY SENSORS

A. Manufacturers:
   1. Bryant Electric; a Hubbell Company.
   2. Hubbell Lighting Inc.
   4. Lightolier Controls; a Genlyte Company.
   5. Lithonia Lighting.
   6. MYTECH Corporation.
   7. Novitas, Inc.
   8. RAB Electric Manufacturing, Inc.
   9. Sensor Switch, Inc.
   10. TORK.
   11. Unenco Electronics; a Hubbell Company.
   12. Watt Stopper (The).
2.06 INDOOR OCCUPANCY SENSORS

A. Manufacturers:
1. Hubbell Lighting Inc.
3. Lithonia Lighting.
4. MYTECH Corporation.
5. Novitas, Inc.
6. RAB Electric Manufacturing, Inc.
7. Sensor Switch, Inc.
8. TORK.
10. Watt Stopper (The).

B. Description: Wall- or ceiling-mounting, solid-state, PIR-type units with a separate relay unit.
1. Operation: Unless otherwise indicated, turn lights on when covered area is occupied and off when unoccupied; with a time delay for turning lights off, adjustable over a minimum range of 1 to 15 minutes.
2. Sensor Output: Contacts rated to operate the connected relay, complying with UL 773A. Sensor shall be powered from the relay unit.
3. Relay Unit: Dry contacts rated for 20-A ballast load at 120- and 277-V ac, for 13-A tungsten at 120-V ac, and for 1 hp at 120-V ac. Power supply to sensor shall be 24-V dc, 150-mA, Class 2 power source as defined by NFPA 70.
4. Mounting:
   a. Sensor: Suitable for mounting in any position on a standard outlet box.
   b. Relay: Externally mounted though a 1/2-inch knockout in a standard electrical enclosure.
   c. Time-Delay and Sensitivity Adjustments: Recessed and concealed behind hinged door.
5. Indicator: LED, to show when motion is being detected during testing and normal operation of the sensor.
6. Bypass Switch: Override the on function in case of sensor failure.
7. Automatic Light-Level Sensor: Adjustable from 2 to 200 fc (215 to 2150 lx); keeps lighting off when selected lighting level is present.
8. Detector Sensitivity: Detect occurrences of 6-inch minimum movement of any portion of a human body that presents a target of at least 36 sq. in.
9. Detection Coverage (Room): Detect occupancy anywhere in a circular area of 1000 sq. ft. (93 sq. m) when mounted on a 96-inch- high ceiling.
10. Detection Coverage (Corridor): Detect occupancy within 90 feet when mounted on a 10-foot-high ceiling.

2.07 MULTIPOLe CONTACTORS

A. Manufacturers:
2. ASCO Power Technologies, LP; a division of Emerson Electric Co.
5. GE Industrial Systems; Total Lighting Control.
7. Hubbell Lighting Inc.
B. Description: Electrically operated and electrically held, complying with NEMA ICS 2 and UL 508.
   1. Current Rating for Switching: Listing or rating consistent with type of load served, including tungsten filament, inductive, and high-inrush ballast (ballast with 15 percent or less total harmonic distortion of normal load current).
   2. Control-Coil Voltage: Match control power source.

2.08 CONDUCTORS AND CABLES
A. Power Wiring to Supply Side of Remote-Control Power Sources: Not smaller than No. 12 AWG, complying with Division 16 Section "Basic Electrical Materials and Methods."
B. Classes 2 and 3 Control Cable: Multiconductor cable with stranded copper conductors not smaller than No. 18 AWG, complying with Division 16 Section "Conductors and Cables."
C. Class 1 Control Cable: Multiconductor cable with stranded copper conductors not smaller than No. 14 AWG, complying with Division 16 Section "Conductors and Cables."
D. Install unshielded, twisted-pair cable for control and signal transmission conductors, complying with Division 16 Section "Voice and Data Communication Cabling."

PART 3 EXECUTION

3.01 SENSOR INSTALLATION
A. Install and aim sensors in locations to achieve at least 90 percent coverage of areas indicated. Do not exceed coverage limits specified in manufacturer's written instructions.

3.02 WIRING INSTALLATION
A. Wiring Method: Comply with Division 16 Section "Conductors and Cables." Minimum conduit size shall be 1/2 inch.
B. Wiring within Enclosures: Bundle, lace, and train conductors to terminal points. Separate power-limited and nonpower-limited conductors according to conductor manufacturer's written instructions.
C. Install field-mounting transient voltage suppressors for lighting control devices in Category A locations that do not have integral line-voltage surge protection.
D. Size conductors according to lighting control device manufacturer's written instructions, unless otherwise indicated.
E. Splices, Taps, and Terminations: Make connections only on numbered terminal strips in junction, pull, and outlet boxes; terminal cabinets; and equipment enclosures.

3.03 IDENTIFICATION
A. Identify components and power and control wiring according to Division 16 Section "Electrical Identification."
B. Label time switches and contactors with a unique designation.

3.04 FIELD QUALITY CONTROL
A. Perform the following field tests and inspections and prepare test reports:
   1. After installing time switches and sensors, and after electrical circuitry has been energized, adjust and test for compliance with requirements.
   2. Operational Test: Verify actuation of each sensor and adjust time delays.
B. Remove and replace lighting control devices where test results indicate that they do not comply with specified requirements.
C. Additional testing and inspecting, at Contractor's expense, will be performed to determine compliance of replaced or additional work with specified requirements.

D. Contractor to include commissioning, adjustment, and testing of all occupancy sensors and time clock based lighting controls as part of the contractor's construction services. Commissioning shall include the services of a factory trained technician for the lighting control systems. Also include training (by the technician) for District personnel at final completion. Include an additional site visit by the technician at 4 weeks after initial site visit and system commissioning, in order to verify system operation and re-program system parameters as may be requested by the District.
PART 1 GENERAL

1.01 SUMMARY

A. This Section includes distribution panelboards and lighting and appliance branch-circuit panelboards.

1.02 SUBMITTALS

A. Submit in accordance with the provisions of the General Conditions, Article 3.11.

B. Product Data: For each type of panelboard, overcurrent protective device, accessory, and component indicated. Include dimensions and manufacturers' technical data on features, performance, electrical characteristics, ratings, and finishes.

C. Shop Drawings: For each panelboard and related equipment.
   1. Dimensioned plans, elevations, sections, and details. Show tabulations of installed devices, equipment features, and ratings. Include the following:
      a. Enclosure types and details for types other than NEMA 250, Type 1.
      b. Bus configuration, current, and voltage ratings.
      c. Short-circuit current rating of panelboards and overcurrent protective devices.
      d. UL listing for series rating of installed devices.
      e. Features, characteristics, ratings, and factory settings of individual overcurrent protective devices and auxiliary components.
   2. Wiring Diagrams: Power, signal, and control wiring.
   3. Field quality-control test reports.
   4. Operation and maintenance data.

1.03 QUALITY ASSURANCE

A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.

B. Comply with NEMA PB 1.

C. Comply with NFPA 70.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

   1. Panelboards, Overcurrent Protective Devices, Controllers, Contactors, and Accessories:
      a. Eaton Corporation; Cutler-Hammer Products.
      c. Siemens Energy & Automation, Inc.
      d. Square D.

2.02 MANUFACTURED UNITS

A. Enclosures: Surface-mounted cabinets. NEMA PB 1, Type 1.
   1. Front: Secured to box with concealed trim clamps. For surface-mounted fronts, match box dimensions.
   2. Hinged Front Cover: Entire front trim hinged to box and with standard door within hinged trim cover. Door-in-door Type.
B. Phase and Ground Buses: Hard-drawn copper, 98 percent conductivity.

C. Conductor Connectors: Suitable for use with conductor material.
   1. Ground Lugs and Bus Configured Terminators: Compression type.

D. Service Equipment Label: UL labeled for use as service equipment for panelboards with main service disconnect switches.

E. Future Devices: Mounting brackets, bus connections, and necessary appurtenances required for future installation of devices.

F. Panelboard Short-Circuit Rating:
   1. UL label indicating series-connected rating with integral or remote upstream overcurrent protective devices. Include size and type of upstream device allowable, branch devices allowable, and UL series-connected short-circuit rating.
   2. Fully rated to interrupt symmetrical short-circuit current available at terminals.

2.03 LIGHTING AND APPLIANCE BRANCH-CIRCUIT PANELBOARDS

A. Branch Overcurrent Protective Devices: Bolt-on circuit breakers, replaceable without disturbing adjacent units.

B. Doors: Door-in-Door Type; Concealed hinges; secured with flush latch with tumbler lock; keyed alike. Provide extra sets for project site, SFUSD Buildings & Grounds and fire Safety coordinator.

2.04 OVERCURRENT PROTECTIVE DEVICES

A. Molded-Case Circuit Breaker: UL 489, with interrupting capacity to meet available fault currents.
   2. GFCI Circuit Breakers: Single- and two-pole configurations with 30-mA trip sensitivity.
   3. Molded-Case Circuit-Breaker Features and Accessories: Standard frame sizes, trip ratings, and number of poles.
      a. Lugs: Mechanical style, suitable for number, size, trip ratings, and conductor materials.
      b. Application Listing: Appropriate for application; Type SWD for switching fluorescent lighting loads; Type HACR for heating, air-conditioning, and refrigerating equipment.
   4. Use bolt-on circuit breakers on all panels.

B. Fused Switch: NEMA KS 1, Type HD; clips to accommodate specified fuses; lockable handle.

2.05 CONTROLLERS

A. Motor Controllers: NEMA ICS 2, Class A, combination controller equipped for panelboard mounting and including the following accessories:
   1. Individual control-power transformers.
   2. Fuses for control-power transformers.
   4. Indicating lights.
   5. Seal-in contact.
   6. Two convertible auxiliary contacts.
   7. Push buttons.
   8. Selector switches.

B. Contactors: NEMA ICS 2, Class A, combination controller equipped for panelboard mounting and including the following accessories:
   1. Individual control-power transformers.
   2. Fuses for control-power transformers.
   3. Indicating lights.
   4. Seal-in contact.
   5. Two convertible auxiliary contacts.
7. Selector switches.

C. Controller Disconnect Switches: Fused switch and interlocked with controller.
   1. Auxiliary Contacts: Integral with disconnect switches to de-energize external control-power source.

D. Contactors in Main Bus: NEMA ICS 2, Class A, mechanically held general-purpose controller.
   1. Control-Power Source: Control-power transformer, with fused primary and secondary terminals, connected to main bus ahead of contactor connection.
   2. Control-Power Source: 120-V branch circuit.

2.06 ACCESSORY COMPONENTS AND FEATURES
A. Furnish accessory set including tools and miscellaneous items required for overcurrent protective device test, inspection, maintenance, and operation.
B. Furnish portable test set to test functions of solid-state trip devices without removal from panelboard.
C. Fungus Proofing: Permanent fungicidal treatment for panelboard interior, including overcurrent protective devices and other components.

PART 3 EXECUTION
3.01 INSTALLATION
A. Install panelboards and accessories according to NEMA PB 1.1.
B. Comply with mounting and anchoring requirements specified in Division 16 Section "Electrical Supports and Seismic Restraints."
C. Mount top of trim 74 inches above finished floor, unless otherwise indicated.
D. Mount plumb and rigid without distortion of box. Mount recessed panelboards with fronts uniformly flush with wall finish.
E. Install overcurrent protective devices and controllers.
   1. Set field-adjustable switches and circuit-breaker trip ranges.
F. Install filler plates in unused spaces.
G. Stub four 1-inch (27-GRC) empty conduits from panelboard into accessible ceiling space or space designated to be ceiling space in the future. Stub four 1-inch (27-GRC) empty conduits into raised floor space or below slab not on grade.
H. Identify field-installed conductors, interconnecting wiring, and components; provide warning signs as specified in Division 16 Section "Electrical Identification."
I. Panelboard Nameplates: Label each panelboard with engraved metal or laminated-plastic nameplate mounted with corrosion-resistant screws.
J. Ground equipment according to Division 16 Section "Grounding and Bonding."
K. Connect wiring according to Division 16 Section "Conductors and Cables."

3.02 FIELD QUALITY CONTROL
A. Prepare for acceptance tests as follows:
   1. Test insulation resistance for each panelboard bus, component, connecting supply, feeder, and control circuit.
   2. Test continuity of each circuit.
B. Perform the following field tests and inspections and prepare test reports:
   1. Perform each electrical test and visual and mechanical inspection stated in NETA ATS, Section 7.5 for switches and Section 7.6 for molded-case circuit breakers. Certify compliance with test parameters.
2. Correct malfunctioning units on-site, where possible, and retest to demonstrate compliance; otherwise, replace with new units and retest.

END OF SECTION
SECTION 16511

INTERIOR LIGHTING

PART 1 GENERAL

1.01 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.02 SUMMARY

A. This Section includes the following:
   1. Interior lighting fixtures, lamps, and ballasts.
   2. Emergency lighting units.
   3. Exit signs.
   4. Lighting fixture supports.

B. Related Sections include the following:
   1. Division 16 Section "Wiring Devices" for manual wall-box dimmers for incandescent lamps.
   2. Division 16 Section "Lighting Control Devices" for automatic control of lighting, including time switches, photoelectric relays, occupancy sensors, and multipole lighting relays and contactors.

1.03 DEFINITIONS

A. BF: Ballast factor.
B. CRI: Color-rendering index.
C. CU: Coefficient of utilization.
D. HID: High-intensity discharge.
E. LER: Luminaire efficacy rating.
F. Luminaire: Complete lighting fixture, including ballast housing if provided.
G. RCR: Room cavity ratio.

1.04 SUBMITTALS

A. Submit in accordance with the provisions of the General Conditions, Article 3.11.
B. Product Data: For each type of lighting fixture, arranged in order of fixture designation. Include data on features, accessories, finishes, and the following:
   1. Physical description of lighting fixture including dimensions.
   2. Emergency lighting units including battery and charger.
   5. Air and Thermal Performance Data: For air-handling lighting fixtures. Furnish data required in "Submittals" Article in Division 15 Section "Diffusers, Registers, and Grilles."
   6. Sound Performance Data: For air-handling lighting fixtures. Indicate sound power level and sound transmission class in test reports certified according to standards specified in Division 15 Section "Diffusers, Registers, and Grilles."
   7. Life, output, and energy-efficiency data for lamps.
   8. Photometric data, in IESNA format, based on laboratory tests of each lighting fixture type, outfitted with lamps, ballasts, and accessories identical to those indicated for the lighting fixture as applied in this Project.
      a. For indicated fixtures, photometric data shall be certified by a qualified independent testing agency. Photometric data for remaining fixtures shall be certified by the manufacturer.
b. Photometric data shall be certified by a manufacturer's laboratory with a current accreditation under the National Voluntary Laboratory Accreditation Program (NVLAP) for Energy Efficient Lighting Products.

C. Shop Drawings: Show details of nonstandard or custom lighting fixtures. Indicate dimensions, weights, methods of field assembly, components, features, and accessories.

D. Coordination Drawings: Reflected ceiling plan(s) and other details, drawn to scale, on which the following items are shown and coordinated with each other, based on input from installers of the items involved:
   1. Lighting fixtures.
   2. Suspended ceiling components.
   3. Structural members to which suspension systems for lighting fixtures will be attached.
   4. Other items in finished ceiling including the following:
      a. Air outlets and inlets.
      b. Speakers.
      c. Sprinklers.
      d. Smoke and fire detectors.
      e. Access panels.
   5. Perimeter moldings.

E. Samples for Verification: Interior lighting fixtures designated for sample submission in Interior Lighting Fixture Schedule. Each sample shall include the following:
   1. Lamps: Specified units installed.
   2. Accessories: Cords and plugs.

F. Product Certificates: For each type of ballast for bi-level and dimmer-controlled fixtures, signed by product manufacturer.

G. Qualification Data: For agencies providing photometric data for lighting fixtures.

H. Field quality-control test reports.

I. Operation and Maintenance Data: For lighting equipment and fixtures to include in emergency, operation, and maintenance manuals.

J. Warranties: Special warranties specified in this Section.

1.05 QUALITY ASSURANCE

A. Luminaire Photometric Data Testing Laboratory Qualifications: Provided by manufacturers' laboratories that are accredited under the National Volunteer Laboratory Accreditation Program for Energy Efficient Lighting Products.

B. Luminaire Photometric Data Testing Laboratory Qualifications: Provided by an independent agency, with the experience and capability to conduct the testing indicated, that is an NRTL as defined by OSHA in 29 CFR 1910.7.

C. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.

D. Comply with NFPA 70.

E. FMG Compliance: Lighting fixtures for hazardous locations shall be listed and labeled for indicated class and division of hazard by FMG.

F. Mockups: Provide interior lighting fixtures for room or module mockups, complete with power and control connections.
   1. Obtain Architect's approval of fixtures for mockups before starting installations.
2. Maintain mockups during construction in an undisturbed condition as a standard for judging the completed Work.
3. Approved fixtures in mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

1.06 COORDINATION
A. Coordinate layout and installation of lighting fixtures and suspension system with other construction that penetrates ceilings or is supported by them, including HVAC equipment, fire-suppression system, and partition assemblies.

1.07 WARRANTY
A. Special Warranty for Emergency Lighting Batteries: Manufacturer's standard form in which manufacturer of battery-powered emergency lighting unit agrees to repair or replace components of rechargeable batteries that fail in materials or workmanship within specified warranty period.
1. Warranty Period for Emergency Lighting Unit Batteries: 10 years from date of Substantial Completion. Full warranty shall apply for first year, and prorated warranty for the remaining nine years.
2. Warranty Period for Emergency Fluorescent Ballast: Seven years from date of Substantial Completion. Full warranty shall apply for first year, and prorated warranty for the remaining six years.

B. Special Warranty for Ballasts: Manufacturer's standard form in which ballast manufacturer agrees to repair or replace ballasts that fail in materials or workmanship within specified warranty period.
1. Warranty Period for Electronic Ballasts: Five years from date of Substantial Completion.

C. Special Warranty for T8 Fluorescent Lamps: Manufacturer's standard form, made out to Owner and signed by lamp manufacturer agreeing to replace lamps that fail in materials or workmanship, f.o.b. the nearest shipping point to Project site, within specified warranty period indicated below.
1. Warranty Period: Two years from date of Substantial Completion.

1.08 EXTRA MATERIALS
A. Furnish extra materials described below that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.
1. Lamps: 10 for every 100 of each type and rating installed. Furnish at least one of each type.
2. Plastic Diffusers and Lenses: 1 for every 100 of each type and rating installed. Furnish at least one of each type.
3. Battery and Charger Data: One for each emergency lighting unit.
4. Ballasts: 1 for every 100 of each type and rating installed. Furnish at least one of each type.
5. Globes and Guards: 1 for every 20 of each type and rating installed. Furnish at least one of each type.

PART 2 PRODUCTS
2.01 MANUFACTURERS
A. In other Part 2 articles where titles below introduce lists, the following requirements apply to product selection:

B. In Interior Lighting Fixture Schedule where titles below are column or row headings that introduce lists, the following requirements apply to product selection:
1. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, manufacturers specified.
2. Basis-of-Design Product: The design for each lighting fixture is based on the product named. Subject to compliance with requirements, provide either the named product or a comparable product by one of the other manufacturers specified.
2.02 LIGHTING FIXTURES AND COMPONENTS, GENERAL REQUIREMENTS

A. Recessed Fixtures: Comply with NEMA LE 4 for ceiling compatibility for recessed fixtures.

B. Incandescent Fixtures is not allowed.

C. Fluorescent Fixtures: Comply with UL 1598. Where LER is specified, test according to NEMA LE 5 and NEMA LE 5A as applicable.

D. HID Fixtures: Comply with UL 1598. Where LER is specified, test according to NEMA LE 5B.

E. Metal Parts: Free of burrs and sharp corners and edges.

F. Sheet Metal Components: Steel, unless otherwise indicated. Form and support to prevent warping and sagging.

G. Doors, Frames, and Other Internal Access: Smooth operating, free of light leakage under operating conditions, and designed to permit relamping without use of tools. Designed to prevent doors, frames, lenses, diffusers, and other components from falling accidentally during relamping and when secured in operating position.

H. Reflecting surfaces shall have minimum reflectance as follows, unless otherwise indicated:
   1. White Surfaces: 85 percent.
   2. Specular Surfaces: 83 percent.
   3. Diffusing Specular Surfaces: 75 percent.
   4. Laminated Silver Metallized Film: 90 percent.

I. Plastic Diffusers, Covers, and Globes:
   1. Acrylic Lighting Diffusers: 100 percent virgin acrylic plastic. High resistance to yellowing and other changes due to aging, exposure to heat, and UV radiation.
      a. Lens Thickness: At least 0.125 inch (3.175 mm) minimum unless different thickness is indicated.
      b. UV stabilized.
   2. Glass: Annealed crystal glass, unless otherwise indicated.

J. Electromagnetic-Interference Filters: Factory installed to suppress conducted electromagnetic-interference as required by MIL-STD-461E. Fabricate lighting fixtures with one filter on each ballast indicated to require a filter.

K. Air-Handling Fluorescent Fixtures: For use with plenum ceiling for air return and heat extraction and for attaching an air-diffuser-boot assembly specified in Division 15 Section "Diffusers, Registers, and Grilles."
   1. Air Supply Units: Slots in one or both side trims join with air-diffuser-boot assemblies.
   2. Heat Removal Units: Air path leads through lamp cavity.
   3. Combination Heat Removal and Air Supply Unit: Heat is removed through lamp cavity at both ends of the fixture door with air supply same as for air supply units.
   4. Dampers: Operable from outside fixture for control of return-air volume.
   5. Static Fixture: Air supply slots are blanked off, and fixture appearance matches active units.

2.03 BALLASTS FOR LINEAR FLUORESCENT LAMPS

A. Electronic Ballasts: Comply with ANSI C82.11; rapid-start type, unless otherwise indicated, and designed for type and quantity of lamps served. Ballasts shall be designed for full light output unless dimmer or bi-level control is indicated.
   1. Sound Rating: A.
   2. Total Harmonic Distortion Rating: Less than 10 percent.
   3. Transient Voltage Protection: IEEE C62.41, Category A or better.
   4. Operating Frequency: 20 kHz or higher.
   5. Lamp Current Crest Factor: 1.7 or less.
   6. BF: 0.9 or higher.
   7. Power Factor: 0.95 or higher.
8. Parallel Lamp Circuits: Multiple lamp ballasts shall comply with ANSI C 82.11 and shall be connected to maintain full light output on surviving lamps if one or more lamps fail.

B. Ballasts for Bi-Level Controlled Lighting Fixtures: Electronic type.
   1. Operating Modes: Ballast circuit and leads provide for remote control of the light output of the associated lamp between high- and low-level and off.
      a. High-Level Operation: 100 percent of rated lamp lumens.
      b. Low-Level Operation: 50 percent of rated lamp lumens.
   2. Ballast shall provide equal current to each lamp in each operating mode.
   3. Compatibility: Certified by manufacturer for use with specific bi-level control system and lamp type indicated.

2.04 BALLASTS FOR COMPACT FLUORESCENT LAMPS

A. Description: Electronic programmed rapid-start type, complying with ANSI C 82.11, designed for type and quantity of lamps indicated. Ballast shall be designed for full light output unless dimmer or bi-level control is indicated:
   1. Lamp end-of-life detection and shutdown circuit.
   2. Automatic lamp starting after lamp replacement.
   3. Sound Rating: A.
   4. Total Harmonic Distortion Rating: Less than 20 percent.
   5. Transient Voltage Protection: IEEE C62.41, Category A or better.
   6. Operating Frequency: 20 kHz or higher.
   7. Lamp Current Crest Factor: 1.7 or less.
   8. BF: 0.95 or higher, unless otherwise indicated.
   9. Power Factor: 0.95 or higher.
   10. Interference: Comply with 47 CFR, Chapter 1, Part 18, Subpart C, for limitations on electromagnetic and radio-frequency interference for nonconsumer equipment.

2.05 EMERGENCY FLUORESCENT POWER UNIT

A. Internal Type: Self-contained, modular, battery-inverter unit, factory mounted within lighting fixture body and compatible with ballast. Comply with UL 924.
   1. Emergency Connection: Operate 1 fluorescent lamps continuously at an output of 1100 lumens each. Connect unswitched circuit to battery-inverter unit and switched circuit to fixture ballast.
   2. Night-Light Connection: Operate one fluorescent lamp continuously.
   3. Test Push Button and Indicator Light: Visible and accessible without opening fixture or entering ceiling space.
      a. Push Button: Push-to-test type, in unit housing, simulates loss of normal power and demonstrates unit operability.
      b. Indicator Light: LED indicates normal power on. Normal glow indicates trickle charge; bright glow indicates charging at end of discharge cycle.
   5. Charger: Fully automatic, solid-state, constant-current type with sealed power transfer relay.
   6. Remote Test: Switch in hand-held remote device aimed in direction of tested unit initiates coded infrared signal. Signal reception by factory-installed infrared receiver in tested unit triggers simulation of loss of its normal power supply, providing visual confirmation of either proper or failed emergency response.
   7. Integral Self-Test: Factory-installed electronic device automatically initiates code-required test of unit emergency operation at required intervals. Test failure is annunciated by an integral audible alarm and flashing red LED.
2.06 BALLASTS FOR HID LAMPS
A. Electronic Ballast for Metal-Halide Lamps: Include the following features unless otherwise indicated:
   1. Lamp end-of-life detection and shutdown circuit.
   2. Sound Rating: A.
   3. Total Harmonic Distortion Rating: Less than 15 percent.
   4. Transient Voltage Protection: IEEE C62.41, Category A or better.
   5. Lamp Current Crest Factor: 1.5 or less.
   6. Power Factor: .9 or higher.
   7. Interference: Comply with 47 CFR, Chapter 1, Part 18, Subpart C, for limitations on electromagnetic and radio-frequency interference for nonconsumer equipment.
   8. Protection: Class P thermal cutout.
   9. Retain subparagraph and associated subparagraphs below for bi-level ballasts.
   10. Bi-Level Dimming Ballast: Ballast circuit and leads provide for remote control of the light output of the associated fixture between high- and low-level and off.
        a. High-Level Operation: 100 percent of rated lamp lumens.
        b. Low-Level Operation: 50 percent of rated lamp lumens.
        c. Compatibility: Certified by ballast manufacturer for use with specific bi-level control system and lamp type indicated. Certified by lamp manufacturer that ballast operating modes are free from negative effect on lamp life and color-rendering capability.

B. Auxiliary Instant-On Quartz System: Factory-installed feature automatically switches quartz lamp on when fixture is initially energized and when power outages occur. System automatically turns quartz lamp off when HID lamp reaches approximately 60 percent light output.

2.07 EXIT SIGNS
A. Description: Comply with UL 924; for sign colors, visibility, luminance, and lettering size, comply with authorities having jurisdiction.

2.08 EMERGENCY LIGHTING UNITS
A. Description: Self-contained units complying with UL 924.
   1. Battery: Sealed, maintenance-free, lead-acid type.
   2. Charger: Fully automatic, solid-state type with sealed transfer relay.
   3. Operation: Relay automatically turns lamp on when power supply circuit voltage drops to 80 percent of nominal voltage or below. Lamp automatically disconnects from battery when voltage approaches deep-discharge level. When normal voltage is restored, relay disconnects lamps from battery, and battery is automatically recharged and floated on charger.
   4. Test Push Button: Push-to-test type, in unit housing, simulates loss of normal power and demonstrates unit operability.
   5. LED Indicator Light: Indicates normal power on. Normal glow indicates trickle charge; bright glow indicates charging at end of discharge cycle.
   6. Wire Guard: Heavy-chrome-plated wire guard protects lamp heads or fixtures.
   7. Integral Time-Delay Relay: Holds unit on for fixed interval of 15 minutes when power is restored after an outage.
   8. Remote Test: Switch in hand-held remote device aimed in direction of tested unit initiates coded infrared signal. Signal reception by factory-installed infrared receiver in tested unit triggers simulation of loss of its normal power supply, providing visual confirmation of either proper or failed emergency response.
   9. Integral Self-Test: Factory-installed electronic device automatically initiates code-required test of unit emergency operation at required intervals. Test failure is annunciated by an integral audible alarm and flashing red LED.
   10. For damp-rated fixtures, mount ballast inside the fixture and test switch in remote location to be approved by District Electrical Engineer.
2.09 FLUORESCENT LAMPS

A. T8 rapid-start lamps, rated 32 W maximum, nominal length of 48 inches (1220 mm), 3100 initial lumens (minimum), CRI 85 (minimum), color temperature 3500 K, and average rated life 24,000 hours, unless otherwise indicated.

B. Compact Fluorescent Lamps: 4-Pin, CRI 80 (minimum), color temperature 3500 K, average rated life of 10,000 hours at 3 hours operation per start.
1. 13 W: T4, triple tube, rated 900 initial lumens (minimum).
2. 18 W: T4, triple tube, rated 1200 initial lumens (minimum).
3. 26 W: T4, triple tube, rated 1800 initial lumens (minimum).
4. 32 W: T4, triple tube, rated 2400 initial lumens (minimum).
5. 42 W: T4, triple tube, rated 3200 initial lumens (minimum).
6. 55 W: T4, triple tube, rated 4300 initial lumens (minimum).

2.10 HID LAMPS

A. Metal-Halide Lamps: ANSI C78.1372, with a minimum CRI 65, and color temperature 4000 K.

2.11 LIGHTING FIXTURE SUPPORT COMPONENTS

A. Comply with Division 16 Section "Electrical Supports and Seismic Restraints" for channel- and angle-iron supports and nonmetallic channel and angle supports.

B. Single-Stem Hangers: 1/2-inch (13-mm) steel tubing with swivel ball fittings and ceiling canopy. Finish same as fixture.

C. Twin-Stem Hangers: Two, 1/2-inch (13-mm) steel tubes with single canopy designed to mount a single fixture. Finish same as fixture.

D. Wires: ASTM A 641/A 641M, Class 3, soft temper, zinc-coated steel, 12 gage (2.68 mm).

E. Wires for Humid Spaces: ASTM A 580/A 580M, Composition 302 or 304, annealed stainless steel, 12 gage (2.68 mm).

F. Rod Hangers: 3/16-inch (5-mm) minimum diameter, cadmium-plated, threaded steel rod.

G. Hook Hangers: Integrated assembly matched to fixture and line voltage and equipped with threaded attachment, cord, and locking-type plug.

PART 3 EXECUTION

3.01 INSTALLATION

A. Lighting fixtures: Set level, plumb, and square with ceilings and walls. Install lamps in each fixture.

B. Support for Lighting Fixtures in or on Grid-Type Suspended Ceilings: Use grid as a support element.
1. Install a minimum of four ceiling support system rods or wires for each fixture. Locate not more than 6 inches (150 mm) from lighting fixture corners.
2. Support Clips: Fasten to lighting fixtures and to ceiling grid members at or near each fixture corner with clips that are UL listed for the application.
3. Fixtures of Sizes Less Than Ceiling Grid: Install as indicated on reflected ceiling plans or center in acoustical panel, and support fixtures independently with at least two 3/4-inch (20-mm) metal channels spanning and secured to ceiling tees.
4. Install at least one independent support rod or wire from structure to a tab on lighting fixture. Wire or rod shall have breaking strength of the weight of fixture at a safety factor of 3.

C. Suspended Lighting Fixture Support:
1. Pendants and Rods: Where longer than 48 inches (1200 mm), brace to limit swinging.
3. Continuous Rows: Use tubing or stem for wiring at one point and tubing or rod for suspension for each unit length of fixture chassis, including one at each end.

D. Air-Handling Lighting Fixtures: Install with dampers closed and ready for adjustment.
E. Adjust aimable lighting fixtures to provide required light intensities.
F. Connect wiring according to Division 16 Section "Conductors and Cables."

3.02 FIELD QUALITY CONTROL

A. Test for Emergency Lighting: Interrupt power supply to demonstrate proper operation. Verify transfer from normal power to battery and retransfer to normal.

B. Prepare a written report of tests, inspections, observations, and verifications indicating and interpreting results. If adjustments are made to lighting system, retest to demonstrate compliance with standards.

END OF SECTION
PART 1 – GENERAL

1.01 WORK INCLUDED
A. Devices, equipment and writing
B. System programming, testing, training and warranty
C. Record Drawings and Operation Manuals

1.02 RELATED WORK
A. Section 16050: Basic Electrical Materials and Methods

1.03 SUBMITTALS
A. Submit in accordance with the provisions of the General Conditions, Article 3.11.
B. Submit all requirements indicated on sub-paragraph “B” under paragraph 3.07 “Record drawings and operation manuals” for engineer’s approval prior to commencing work.

PART 2 – PRODUCTS

2.01 RACEWAYS, FITTINGS BOXES AND TERMINAL CABINETS
A. All fire alarm wiring is to be installed in approved raceways; refer to Section 16050: Basic Electrical Materials and Methods.

2.02 FIRE ALARM SYSTEM WIRING AND CONDUCTORS
A. Refer to the Drawings and Section 16050: Basic Electrical Materials and Methods.

2.03 FIRE ALARM SYSTEM COMPONENTS
A. All control and extender panels shall include manufacturer's permanent identification showing the manufacturer, model number, serial number, CSFM approval listing number and UL approval.
B. All peripheral devices shall include manufacturer's permanent identification of the model number and UL approval.
C. Major fire alarm system components are listed on the Drawings; other peripheral devices are specified herein.

2.04 PERIPHERAL DEVICES AND ACCESSORIES
A. Provide factory backboxes or rough-in boxes for fire alarm devices and equipment. Note that fire alarm devices should be installed flush in new construction and surface onto existing construction unless otherwise noted.

1. Provide factory surface-mount backboxes for initiation and notification appliances as recommended by the manufacturer. Standard electrical boxes will be rejected. Surface backboxes shall be red in color, and match the outside dimensions of the devices to reduce the potential for the devices being pulled away from the wall, or the device edges causing
incidental damage or injury. Backboxes in exterior, wet or damage-prone locations shall be metallic and weathertight; interior backboxes shall be impact-resistant plastic.

B. Provide CSFM-listed fire alarm system batteries for control and extender panels as recommended by the manufacturer and as specified on the Drawings. Batteries shall be installed inside panel enclosures in battery compartments and securely connected with soldered or crimped spade connectors onto the battery terminals. Indicate battery installation date on battery cases with permanent marker.

PART 3 – EXECUTION

3.01 GENERAL

A. The existing fire alarm system is currently maintained and monitored by Siemens Building Technology. The fire alarm equipment must be installed and programmed by a factory-trained and authorized Siemens Distributor, who shall provide a written report indicating the proper operation of the entire fire alarm system.

3.02 INSTALLATION

A. System installation shall be in accordance with NFPA, CFC, CEC, DSA, local fire authority requirements and manufacturer recommendations.

B. All THHN/THWN conductors shall be installed with color-coded insulation, with separate colored pairs for each initiation and notification circuit.

C. Terminate conductors directly onto screw-terminals of fire alarm devices; do not use wire-nut connectors.

D. Do not splice fire alarm conductors in exterior or underground pullboxes.

E. Install raceway system to be water-tight. System or portions of system may be rejected should there be evidence that water has entered above-grade system raceways or components.

F. Provide protective covers (“baggies”) over fire alarm devices – especially smoke detectors – that are installed prior to construction being completed in those areas.

G. Provide a typed schedule at each fire alarm control and extender panel indicating the initiation and notification circuits connected to each panel, and the types and locations of devices on each circuit. Mount schedule in a conspicuous location under plastic inside or on each panel.

H. Per the requirements of NFPA 1-5.2.5.2, for each fire alarm control and extender panel:

1. Permanently mark the immediate upstream circuit breaker with a bright red marking (permanent tape or paint).
2. Mark the panel schedule and breaker “Fire Alarm Circuit Control”.
3. Include in the type schedule (section G) the location and circuit breaker number of the power to each unit.

3.03 PROGRAMMING

A. Program fire alarm control equipment for proper operation, and program any included accessories (i.e., dialers). Coordinate programming with Owner and outside monitoring agencies as required.

B. For control equipment with digital displays and/or addressable initiation circuits, programming shall include entering the alphanumeric names of initiation and notification devices and circuits with distinct names approved by the Owner. Confirm actual room names and actual room numbers with District to be programmed into system.

C. Provide Owner with a copy of the completed programming software data file, as well as the entry password into the system.
3.04 TESTING

A. Provide a test of the complete fire alarm system to include all connected devices per NFPA table 7-2.2. Test each initiation device at least twice to confirm proper operation. Test shall be made in the presence of the Owner's Representative, DSA Inspector of Record, and the local fire authority at their discretion.

B. Failed tests in the presence of the local fire authority and/or Owner's Representative may be charged to the Contractor at the standard hourly rates or costs by these parties.

3.05 TRAINING

A. Provide no less than 1-hour training session with the Owner and Owner's representatives prior to the close of construction. Contact the Owner's representative and arrange for the training with at least seven days' notice.

3.06 WARRANTY

A. Provide a one-year warranty that the fire alarm system is free from factory or installation defects. The warranty period shall start from the date of the completed and approved fire alarm system test. Note that on existing fire alarm system, only the modified portions of the system are required to be covered by the warranty.

B. Provide at the Owner’s request, a proposal for a maintenance contract to the Owner to provide a minimum of two inspections and tests within the warranty year per NFPA 72. The Owner shall have the option to accept or decline the proposal.

3.07 RECORD DRAWINGS AND OPERATION MANUALS

A. Submit record drawings in accordance with Section 16050: Basic Electrical Materials & Methods.

B. Record drawings shall include the following:

1. Complete voltage drop calculations for all notification appliance circuits
2. Complete battery calculations for each control panel and power supply
3. Scaled site and floor plans showing all devices and point-to-point wiring
4. Complete symbols and abbreviations legend
5. Schematic riser diagram showing all devices, including approximate footages between equipment and notification appliances
6. Other items specifically requested by the Electrical Engineer

C. Provide two copies of the system maintenance and operations at the training session.

END OF SECTION
PART 1 GENERAL
1.01 WORK INCLUDED
A. Intermediate Distribution Frame (IDF) racks
B. Main and Intermediate distribution frame active and non-active components
C. Telcom cabling
D. Station outlets and identification
E. Cable terminations, identification and testing
F. Data network hardware configuration. Programming, testing and training

1.02 RELATED WORK
A. Section 16050: Basic Electrical Materials and Methods

1.03 STANDARDS
A. Provide and install a structured telcom cable plant in compliance with the following latest published standards and technical systems bulletin (TSB's) of the Electronic Industry Association and Telecommunication Industry Association (EIA/TIA).
   1. 568-A: Commercial Building Telecommunications Standard
   2. 568-B: Transmission Performance Specifications for 4-pair 100 Ohm Category 6A Cabling
   3. 569-A: Commercial Building Standards for Telecommunications Pathways and Spaces
   4. 606: Administration Standard for the Telecommunications Infrastructure Commercial Building
   5. 607: Commercial Building Telecommunications Grounding and Bonding Requirements
   6. TSB-26: Additional Cable Specifications for Unshielded Twisted-Pair Cables
   7. TSB-40: Additional Transmission Specifications for Unshielded Twisted-Pair Connecting Hardware

1.04 SUBMITTALS
A. Submit in accordance with the provisions of the General Conditions, Article 3.11.
B. Provide submittals for the following materials and equipment in accordance with Section 16050: Basic Electrical Materials and Methods and Section 16130: Raceways and Boxes
   1. Distribution Frame racks and components
   2. Floor Plan Cabling Drawings; 1/8 Scale Plan
   3. Work Station outlets
   4. Termination blocks and accessories

PART 2 PRODUCTS
2.01 RACEWAYS, FITTINGS AND BOXES
A. Refer to Section 16050: Basic Electrical Materials and Methods.

2.02 IDF CROSS-CONNECT COMPONENTS
A. Provide the following distribution components at the existing Main Distribution Frame:
   1. (4) Patch panel, 48-port, Category 6A UTP 568B: Ortronics #OR-PHD66U48
   2. (4) Cable management panels, horizontal: Ortronics #OR-MC605-XX or equivalent
   3. (100) UTP patch cords, 4 feet, RJ45/RJ45, category 6A: Ortronics #OR-MC605-XX or equivalent.
B. Provide the following at the Intermediate Distribution Frame racks and components in locations shown on the Drawings.
   1. Fixed wall mount equipment rack clear: CPI #11961-5-18 (As required).
2. Quantity of one (1) 1U rack-mount fiber cabinet, duplex SC: Ortronics OR-625MMC-12PD1RB; terminate each new twelve-strand fiber to cabinet in each IDF
3. (4) multimode fiber patch cords, 4 feet, Duplex SC/SC: Panduit FPCSC62DZIM or equivalent

2.03 TELCOM CABLING

A. As specified on the drawings.

2.04 STATION OUTLETS

A. 4-Port faceplate with three initial wired connections, 1 voice and 2 data unless otherwise specified.
B. Station outlets in surface-mounted raceways shall consist of the following components:
   1. Black modular furniture bezel: Ortronics #OR-40300633-00
   2. Duplex RJ45 CAT 6A outlets, white: Ortronics #OR-TJ600-88
   3. Blank insert for unused bezel positions: Ortronics #OR-42100002-88

C. Individual station outlets shall consist of the following components:
   1. See Section 16050: Basic Electrical Materials and Methods for surface (Wiremold) and flush (steel) boxes.
   2. Black modular furniture bezel: Ortronics #OR-40300633-00
   3. RJ45 CAT 5e outlets, white: Ortronics #OR-TJ600-88
   4. Blank insert for unused bezel positions: Ortronics #OR-42100002-88

D. Individual telephone and wall outlets shall consist of the following components:
   1. See Section 16050: Basic Electrical Materials and Methods for surface (Wiremold) and flush (steel) boxes.
   2. Stainless steel wallplate with telephone jack and mounting studs: Leviton #40226-S
   3. Provide handsets compatible with existing telephone system. Coordinate with District telecom department prior to procurement.

PART 3 EXECUTION

3.01 DATA CABLING

A. Install data cables – including horizontal data UTP cabling – from the station outlet termination unbroken and unspliced to the main or intermediate distribution frames as noted on the drawings. All cables shall be installed in raceways as shown on the drawings and as specified in Section 16050: Basic Electrical Materials and Methods.
B. Install wet-location horizontal cabling (WUTP) in all wet damp locations. Thoroughly clean cable ends of excess liquid-blocking gel.
C. Neatly install and terminate cabling; provide cable managements ties where wiring is exposed for more than 12".

3.02 COPPER CABLE TESTING

A. Maximum Attenuation: The attenuation is derived from swept frequency signal level measurements at the output of cable lengths greater than or equal to 100m (328 ft) using the formula:

\[
\text{Attenuation} (f) = \begin{cases} 
1.99 \times \sqrt{f} + 0.0085f + 0.050/\sqrt{f} & \text{where } 0.772 \leq f < 10 \\
2.011 \times \sqrt{f} + 0.0087f + 0.050/\sqrt{f} & \text{where } 10 \leq f 
\end{cases}
\]

B. The maximum attenuation of any pair, in dB per 100 m, measured at or corrected to a temperature of 20 deg C shall be less than or equal to the values listed in Table 3.03-1 below.
C. Structural Return Loss (SRL): The SRL shall be greater than or equal to the following values for a length of 100 m (328 ft): (See Table 3.03-1)

<table>
<thead>
<tr>
<th>Frequency (MHz)</th>
<th>Minimum Structural Return Loss (SRL)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 MHz=&lt; freq =&lt; 20 MHz</td>
<td>&gt;= 23 dB</td>
</tr>
<tr>
<td>21 MHz =&lt; freq =&lt; 100 MHz</td>
<td>&gt;= 22 dB</td>
</tr>
<tr>
<td>101 MHz =&lt; freq =&lt; 200 MHz</td>
<td>&gt;= 20 dB</td>
</tr>
</tbody>
</table>
D. Near End Crosstalk (NEXT) is derived from swept frequency measurements using a network analyzer and an S-parameter set. The minimum NEXT for any pair combination at room temperature shall be greater than or equal to the value determined using the following formula:

\[ \text{NEXT}(f) \geq 71 \text{ dB} - 15 \log_{10}(f/0.772) \]

where 0.772 \( \leq f \leq 100 \)

E. Attenuation to Crosstalk: The minimum ACR (difference between the NEXT and the attenuation for the pair in the link being tested) for any pair combination at room temperature shall be greater than or equal to the values in Table 3.03-1

F. Power Sum Near End Crosstalk: Power Sum NEXT loss is derived from swept frequency measurements using a network analyzer and an S-parameter test set. The minimum Power Sum NEXT loss for any pair combination at room temperature shall be greater than or equal to the value determined using the following formula:

\[ \text{Power Sum NEXT}(f) \geq 68 \text{ dB} - 15 \log_{10}(f/0.772) \]

where 0.772 \( \leq f \leq 100 \)

G. Equal Level Far End Crosstalk (ELFEXT): ELFEXT is derived from frequency measurements using a network analyzer and an S-parameter test set. The minimum ELFEXT for any pair combination at room temperature shall be greater than or equal to the value determined using the following formula:

\[ \text{ELFEXT}(f) \geq 67 \text{ dB} - 20 \log_{10}(f/0.772) \]

where 0.772 \( \leq f \leq 100 \)

H. Power Sum ELFEXT: The power sum ELFEXT shall meet the values list in Table 3.03-1 for all frequencies between 1 MHz and 100 MHz. The following formula is used to derive the values. All values are dB per 100 m (dB per 328 ft.)

\[ \text{PS ELFEXT}(f) \geq 63 \text{ dB} - 20 \log_{10}(f/0.772) \]

where 0.772 \( \leq f \leq 100 \)

I. Propagation Delay: The propagation delay of any pair at 10 MHz shall not exceed 4.9 ns/m.

J. Propagation Delay Skew: The propagation delay skew between any two pairs shall not exceed 13 ns/100m at 10 MHz.

K. Test Reports: A test report shall be attached to each reel of cable indicating the Master reel number, the date of the test, and test results for each pair. At a minimum, test results will be shown for the parameters listed in for SRL, Attenuation, and Crosstalk (NEXT). Power Sum may be listed as Pass/Fail. Characteristic impedance shall be shown for each pair.

**TABLE 3.03-1: UTP TEST CHARACTERISTICS**

<table>
<thead>
<tr>
<th>FREQ MHZ</th>
<th>ATTENUATION (DB/100 M)</th>
<th>SRL DB</th>
<th>NEXT Min/Avg (dB)</th>
<th>ACR Min/Avg (dB)</th>
<th>Power Sum NEXT Min/Avg (dB)</th>
<th>ELFEXT (dB)</th>
<th>PS ELFEXT (dB)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.772</td>
<td>1.8</td>
<td>23</td>
<td>71/81</td>
<td>69/79</td>
<td>67/77</td>
<td>67</td>
<td>63</td>
</tr>
<tr>
<td>1.0</td>
<td>2.0</td>
<td>23</td>
<td>69/79</td>
<td>67/77</td>
<td>66/75</td>
<td>65</td>
<td>61</td>
</tr>
<tr>
<td>4.0</td>
<td>4.0</td>
<td>23</td>
<td>60/72</td>
<td>56/68</td>
<td>57/67</td>
<td>53</td>
<td>49</td>
</tr>
<tr>
<td>8.0</td>
<td>5.7</td>
<td>23</td>
<td>56/66</td>
<td>50/63</td>
<td>53/63</td>
<td>47</td>
<td>43</td>
</tr>
<tr>
<td>10.0</td>
<td>6.5</td>
<td>23</td>
<td>54/67</td>
<td>48/61</td>
<td>51/62</td>
<td>45</td>
<td>41</td>
</tr>
<tr>
<td>16.0</td>
<td>8.2</td>
<td>23</td>
<td>51/64</td>
<td>43/57</td>
<td>48/60</td>
<td>41</td>
<td>37</td>
</tr>
</tbody>
</table>
L. Replace cables that do not meet the minimum test criteria listed above.

M. All cable shall be tested and certified for all EIA/TIA 568A 100 MHz specifications. Test all cabling for the complete channel, as follows unless otherwise noted. The test equipment shall be suitable for certifying Gigabit Ethernet across the channel.
1. Riser cable between closets need only be certified to Category three parameters.
2. Test equipment which certifies the cable in twenty-five pair bundles is to be used on the riser cable only.
3. Test must be witnessed by the Owner or their representative.
4. Any discrepancies noted during the tests shall be corrected and those tests shall be rerun.
5. Test equipment shall be suitable for certifying all EIA/TIA 568A 100 MHz and up to 160MHz specifications including but not limited to: Power sum attenuation across pairs, attenuation, Near end cross talk (NEXT)/(FEXT) including worst-case value and frequency, wire/line mapping, split-pairs, shorts, opens, reversals, length, impedance, loop resistance, capacitance, and ambient noise spread across various frequencies and Level II compliance.
6. Test equipment shall be a device providing for active sweep testing (DSP) of circuits. Contractor shall provide proof of recent factory calibration (within the previous 12 months) of all test equipment.
7. Copper test equipment shall be Level II Compliant.
8. Test equipment shall report ACR on frequencies up to 160 MHz.

3.03 SYSTEM FINAL ACCEPTANCE TESTING
A. Provide two copies of a bound test report showing compliance of the installed system with the criteria specified below. Test report shall include description of test equipment and date of the most recent factory calibration (within 12 months of test).

3.04 IDENTIFICATION
A. Provide permanent identification labels on all telcom cables and station outlets in accordance with EIA/TIA standards, existing District and campus cabling standards and Section 16075: Electrical Identification.
B. Provide two copies of a cable record plan showing all cables, station outlets, junction and pullboxes, and field identification labeling of the cables and outlets.

END OF SECTION