MANGINI

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DATE:	May 19, 2026
MAI NO.:	25041
OPSC APPL. NO.:	n/a
DSA APPL. NO.:	n/a
DSA FILE NO.:	n/a
PTN:	n/a

PROJECT MANUAL FOR:

ADMINISTRATION SERVICES REMODEL AT BUSINESS PARK 2

Sanger Unified School District
Sanger, Fresno County, California

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SET NUMBER _____

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NOTICE TO BIDDERS

Notice is hereby given that the Sanger Unified School District (hereinafter referred to as "Owner") will receive sealed bids prior to the date and time stated for the bid opening for the award of a contract to construct the

PROJECT #1000-26-008
REMODEL AND SITE IMPROVEMENTS TO
BUSINESS PARK TWO
1254 COMMERCE AVE
SANGER, CA 93657
(the "Contract"),

as per the Contract Documents, including the drawings and specifications, which may now be obtained electronically from the Architect, who is

MANGINI ASSOCIATES, INC.
4320 WEST MINERAL KING AVENUE
VISALIA, CA 93291
(559) 627-0530

Or the Districts website at:
https://www.sanger.k12.ca.us/departments/business-services/purchasing/

The lowest bid shall be determined on the amount of the base bid.

This Contract IS subject to prequalification pursuant to Public Contract Code section 20111.6.

Public works projects shall be subject to compliance monitoring and enforcement by the Department of Industrial Relations. For all projects over Twenty-Five Thousand Dollars ($25,000), a contractor or subcontractor shall not be qualified to submit a bid or to be listed in a bid proposal subject to the requirements of Public Contract Code section 4104 unless currently registered and qualified under Labor Code section 1725.5 to perform public work as defined by Division 2, Part 7, Chapter 1 (§§1720 et seq.) of the Labor Code. For all projects over Twenty-Five Thousand Dollars ($25,000), a contractor or subcontractor shall not be qualified to enter into, or engage in the performance of, any contract of public work (as defined by Division 2, Part 7, Chapter 1 (§§1720 et seq.) of the Labor Code) unless currently registered and qualified under Labor Code section 1725.5 to perform public work and proof of registration is provided.

The Contract Time shall be One-Hundred and Eighty (180) calendar days, and liquidated damages for delay shall accrue. See Article III of the Agreement for details.

Bids must be sealed and filed in the following building:

SANGER UNIFIED SCHOOL DISTRICT
ATTN: PURCHASING
1905 7TH STREET
SANGER, CA 93657

on **December 22, 2026, before 3:00 p.m.** on the clock designated by the Owner or its representative as the bid clock. No bid will be accepted by the Owner after this time. Facsimile (FAX) copies of the bid will not be accepted. Bids may be opened immediately after the above deadline for submittal, or at a later time, within the Owner's discretion.

Mandatory pre-bid conference will be held on November 16, 2026, at 10:00 a.m., at 1254 Commerce Avenue, Sanger CA 93657 Bidders not attending the conference will be disqualified.

Bids must be accompanied by a bidder's bond, cashier's check, or certified check for at least ten percent (10%) of the amount of the base bid and made payable to the Owner, as detailed in the Contract Documents.

Pursuant to the Contract Documents, the successful bidder will be required to furnish a Payment (Labor and Material) Bond in the amount of one hundred percent (100%) of the Contract Sum, and a Faithful Performance Bond in the amount of one hundred percent (100%) of the Contract Sum.

The successful bidder will be allowed to substitute securities or establish an escrow in lieu of retainage, pursuant to Public Contract Code Section 22300, and as described in the Agreement Between Owner and Contractor and General Conditions.

The Owner will not consider or accept any bids from contractors who are not licensed to do business in the State of California, in accordance with the California Public Contract Code, providing for the licensing of contractors. In accordance with Section 3300 of said Code, the bidder shall have a Class "B" license at the time of award and shall maintain that license in good standing through Completion of the Contract and all applicable warranty periods. For all projects over Twenty-Five Thousand Dollars ($25,000), the bidder shall state the public works contractor registration number on the Designation of Subcontractors form for each subcontractor performing more than one-half of one percent (0.5%) of the bidder's total bid.

The Director of Industrial Relations of the State of California, in the manner provided by law, has ascertained the general prevailing rate of per diem wages and rate for legal holidays and overtime work. The Contractor must pay for any labor therein described or classified in an amount not less than the rates specified. Copies of the required rates are on file at the Owner's business office and are available on request.

Advertisement (Public Contract Code §20112):	
1st Publication Date	November 8, 2026
2nd Publication Date	November 15, 2026
Date of Mail and E-Mail/Fax to Trade Journals	November 8, 2026

By: Jimmy Robles
Its: Chief Operations Officer

INSTRUCTIONS TO BIDDERS

The Contract for the
Sanger Unified School District

PROJECT #1000-26-008
REMODEL AND SITE IMPROVEMENTS TO
BUSINESS PARK TWO
1254 COMMERCE AVE
SANGER, CA 93657

SECURING DOCUMENTS:

The Contract Documents, including the Drawings and Specifications, are available on the owners website at: https://www.sanger.k12.ca.us/departments/businessservices/purchasing

PREQUALIFICATION:

This Contract is subject to prequalification, which applies to contractors with the following licenses: Prime contractors with either an A or B license; and Contractors with a C-4, C-7, C-10, C- 16, C-20, C-34, C-36, C-38, C-42, C-43, or C-46 license, regardless of whether they are a prime contractor or subcontractor. If a bidder is not prequalified to bid on the Contract at least five (5) business days before the bid deadline and at the bid deadline, Owner will not accept the bid. Any subcontractors listed by a bidder for Work requiring one of the above "C" licenses must be prequalified at least five (5) business days before the bid deadline and at the bid deadline, or Owner will not accept the bid.

Project Prequalification: All contractors prequalified via this prequalification application, will be prequalified to submit proposals for (or, in the case of MEP subcontractors, be included in a prime contractor's bid) the District's Business Park Two contract only, and not for any other District project for which prequalification is required. **The application for prequalification must be submitted to the Owner by December 01, 2026 before 3:00 p.m.** The prequalification application may be obtained from the Owner.

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RETENTION:

The Owner will withhold retention of 5% from all progress payments.

REGISTRATION:

For all projects over Twenty-Five Thousand Dollars ($25,000), the Owner shall not accept any bid or enter into any contract without proof of the bidder's current registration to perform public work under Labor Code section 1725.5.

For all projects over Twenty-Five Thousand Dollars ($25,000), the bidder shall not accept any subbid or enter into any subcontract without proof of the subcontractor's current registration to perform public work under Labor Code section 1725.5.

PRE-BID CONFERENCES, SITE VISITS, OR MEETINGS:

Mandatory pre-bid conferences, site visits, or meetings will be held as described in the Notice to Bidders.

BUILDERS RISK COVERAGE:

For the purpose of builders risk coverage (see General Conditions Article 11), the project is not being solely funded by revenue bonds.

PROJECT LABOR AGREEMENT:

No project labor agreement applies to this contract.

USE OF FEDERAL FUNDS:

No federal funds are being used by Owner for the Contract.

BIDS:

Bids to receive consideration shall be made in accordance with the following instructions:

1. Facsimile, e-mail, or other electronic copies of the Bid Form and other bid documents will not be accepted; only hard copies will be accepted. Bids shall be made on the Bid Form obtained from the Architect or Owner. Bids not made on the proper Bid Form shall be disregarded. Numbers must be stated in words and figures.

2. No bid will be considered which makes exceptions, changes, or in any manner makes reservations to the terms of the drawings or specifications. If prequalification is required for this Contract, no bid will be accepted from a contractor that has not been prequalified.

3. Questions regarding documents, discrepancies, omissions, or doubt as to meanings shall be referred immediately to the Architect who will send written instructions clarifying such questions to each bidder. Oral responses will not be binding on the Owner or Architect or any Construction Manager.

4. Signatures:

    A. Each bid must give the full business address of the bidder and be signed by bidder. Bids by partnerships must furnish the full name of all partners

and must be signed in the partnership name by a general partner with authority to bind the partnership in such matters, followed by the signature and designation of the person signing. The name of the person signing shall also be typed or printed below the signature. Bids by corporations must 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 chairman of the board, president or any vice president, and then followed by a second signature by the secretary, assistant secretary, the chief financial officer or assistant treasurer. All persons signing must be authorized to bind the corporation in the matter. The name of each person signing shall also be typed or printed below the signature. Satisfactory evidence of the authority of the officers signing on behalf of a corporation shall be furnished with the bid.

B. The signatures on the Bid Form and other bid documents must be original longhand signatures in permanent blue ink. Any other type of signature, including an electronic signature, will not be accepted.

5. Pursuant to the provisions of Sections 4100 to 4114, inclusive, of the Public Contract Code of the State of California, which are hereby incorporated and made a part hereof and these Instructions to Bidders, every bidder shall set forth in its bid (using the Owner's form for Designation of Subcontractors):

A. The name and location of the place of business, the California contractor license number, and (for all projects over Twenty-Five Thousand Dollars ($25,000)) the public works contractor registration number, of each subcontractor who will perform work or labor or render service to the bidder in or about the construction of the work or improvement, or a subcontractor licensed by the State of California who, under subcontract to the bidder, specially fabricates and installs a portion of the Work or improvement according to detailed drawings contained in the plans and specifications, in an amount in excess of one-half (½) of one percent (1%) of the bidder's total bid. An inadvertent error in listing a California contractor's license number shall not be grounds for filing a bid protest or for considering the bid nonresponsive if the bidder submits the corrected contractor's license number to the Owner within 24 hours after the bid opening, or any continuation thereof, so long as the corrected contractor's license number corresponds to the submitted name and location for that subcontractor.

B. The portion of the Work which will be done by each such subcontractor. If the bidder fails to specify a subcontractor for any portion of the Work to be performed under the Contract in excess of one-half (½) of one percent (1%) of the bidder's total bid, the bidder agrees to perform that portion itself. The successful bidder shall not, without the consent of the Owner:

1) Substitute any person as subcontractor in place of the subcontractor designated in the original bid.

2) Permit any subcontract to be assigned or transferred or allow it to be performed by anyone other than the original subcontractor listed in the bid.

3) Sublet or subcontract any portion of the Work in excess of one-half (½) of one percent (1%) of the total bid as to which the original bid did not designate a subcontractor.

6. The Director of Industrial Relations of the State of California, in the manner provided by law, has ascertained the general prevailing rate of per diem wages and the rate for legal holidays and overtime work. The Contractor must pay for any labor therein described or classified in an amount not less than the rates specified. Copies of the required rates are on file at the Owner's business office and are available to any interested party on request.

7. All Bid Forms must be accompanied by a completed Noncollusion Declaration and Sufficient Funds Declaration (Labor Code § 2810). All bids must be accompanied by an executed Fingerprinting Notice and Acknowledgment, Iran Contracting Act certification (if required by law; see the form), Workers' Compensation certification, responses to the Contractor Questionnaire (if required; see Paragraph 13, below), and the DVBE Certification of Participation and the DVBE Good Faith Worksheet (if DVBE is required; see Paragraph 10, below).

8. Bids must be accompanied by a certified check, cashier's check, cash, or bidder's bond, for an amount not less than ten percent (10%) of the amount of the base bid, made payable to the order of the Owner. If a bidder's bond accompanies the bid, said bond shall be secured by an Admitted Surety (an insurance organization authorized by the Insurance Commissioner to transact business of insurance in the State of California during this calendar year). The surety insurer must, unless otherwise agreed to by Owner in writing, at the time of issuance of the bond, have a rating not lower than "A-" as rated by A.M. Best Company, Inc. or other independent rating companies. Owner reserves the right to approve or reject the surety insurer selected by Contractor and to require Contractor to obtain a bond from a surety insurer satisfactory to the Owner. Said check or bond shall be given as a guarantee that the bidder will enter into the Contract if awarded the Work, and in case of refusal or failure to enter into said Contract, the check or bond, as the case may be, shall be payable to the Owner and retained as liquidated damages.

9. Bids shall be sealed and filed as indicated in the Notice to Bidders. Irrespective of how a bidder chooses to deliver the bid and other documents to the Owner, the bidder is responsible for ensuring that the bid and other documents are actually received at the location designated in the Contract Documents for receipt of the

bid and other documents prior to the time for the bid opening. Bids and other documents for any reason not actually received at the designated location prior to the time for the bid opening shall not be opened or considered.

10. **THIS CONTRACT ☒ IS ☐ IS NOT SUBJECT TO THE DVBE REQUIREMENTS OF EDUCATION CODE SECTION 17076.11.** If this contract is subject to these requirements, then (a) the DVBE Certification must be submitted with the bid, and (b) the DVBE Worksheet must be submitted with the bid if Box D is checked on the first page of the DVBE Certification.

11. Contractors shall maintain their licenses in good standing through Completion of the Work and all applicable warranty periods. Owner shall reject any bid as nonresponsive if bidder or any subcontractor is not licensed in good standing from the time the bid is submitted to Owner up to award of the Contract, whether or not the bidder listed the subcontractor inadvertently, or if a listed subcontractor's license is suspended or expires prior to award of the Contract. Owner also reserves the right to reject any bid as nonresponsive if a listed subcontractor's license is not in good standing to perform the work for which it is listed from the time of submission of the bidder's bid to award of the Contract.

12. The Owner reserves the right to waive any irregularity or failure to comply with the Contract Documents, and to reject any or all bids.

13. No responses to a Contractor Questionnaire are required to be submitted with a bid on this Contract.

14. To summarize, each bid for the Contract must include the following documents:
    - A. Bid form, including proof of signers' authority.
    - B. Bid security.
    - C. Designation of Subcontractors.
    - D. Noncollusion Declaration.
    - E. Sufficient Funds Declaration.
    - F. Fingerprinting Notice and Acknowledgement.
    - G. Workers' Compensation Certification.
    - H. Iran Contracting Act Certification (if required by law; see the form).
    - J. DVBE Certification (if required; see above).
    - K. DVBE Worksheet (if required; see above).
    - L. Proof of registration per Labor Code §1725.5.

WITHDRAWAL OF BIDS:

Bids may be withdrawn by bidders prior to the time fixed for the submittal of bids or any authorized postponement thereof.

A successful bidder shall not be relieved of the bid unless by consent of the Owner or bidder's recourse to Public Contract Code §5100 et seq.

Unless otherwise required by law, no bidder may withdraw its bid for a period of ninety (90) days after the date set for the opening thereof or any extension thereof. The Owner reserves the right to take more than ninety (90) days to make a decision regarding the rejection of the bid or the award of the Contract.

OPENING OF BIDS:

Opening of bids in public shall be at Owner's discretion, as set forth in the Notice to Bidders.

EXAMINATION OF CONTRACT DOCUMENTS AND SITE:

Before submitting a bid, bidders shall examine the drawings, read the specifications, the form of Agreement between Contractor and Owner, and the other Contract Documents. Bidders shall visit the site of the proposed Work, examine the building, or buildings, if any, and any work that may have been done thereon. Bidders shall fully inform themselves of all conditions, in, at, and about the site, the building or buildings, if any, and any work that may have been done thereon.

Pursuant to Public Contract Code section 1104, (1) bidders shall not be required to assume responsibility for the completeness and accuracy of architectural or engineering plans and specifications, except on clearly designated design build projects; (2) however, bidders shall be required to review architectural or engineering plans and specifications prior to submission of their bids and to report any errors and omissions to the Architect and Owner; and (3) the review shall be confined to the bidder's capacity as a bidder and not as a licensed design professional.

BID PROTESTS

All bid protests must comply with the following, or they shall be rejected as invalid:

1. The protest shall be in writing;
2. The protest shall be filed and received no later than 4:00 p.m. on the fourth (4th) business day after the deadline for submittal of the bids;
3. The protest shall set forth in detail all grounds for the protest, including all facts, supporting documentation, legal authorities and arguments in support of the bid protest;
4. Before the bid protest deadline, the protesting party shall transmit the complete bid protest, including all documentation, to all other parties having a potential interest that may be adversely affected by the outcome of the protest, including but not limited to all other bidders who may have a reasonable prospect of losing or obtaining an award of the Contract depending on the outcome of the protest; and
5. All factual contentions must be supported by competent, admissible and credible evidence.

The procedures and time limits set forth in this section for bid protests are strictly construed and are protesting party's sole and exclusive remedy in the event of a bid protest. Protesting party's failure to strictly comply with these procedures and time limits shall constitute a waiver of any right to further pursue the bid protest, including but not limited to the presentation of a Government Code claim or legal proceedings. Any matter not set forth in the protest, including any ground for the protest or any evidence supporting a ground for the protest, shall be deemed waived.

A protesting party may not rely on the bid protest submitted by another protesting party, but must timely pursue its own bid protest.

Owner shall review a bid protest that was not rejected for failing to comply with the above procedures. Any final decision on such a bid protest shall be made by the Governing Board.

FORM OF AGREEMENT BETWEEN OWNER AND CONTRACTOR:

The form of Agreement between Owner and Contractor which the successful bidder will be required to execute, if awarded the Work, is a part of this Bid Package.

ADDENDA OR BULLETINS:

Any addenda or bulletins, issued during the time of bidding, shall form a part of the drawings and specifications loaned to the bidder for the preparation of its bid, shall be covered in the bid, and shall be made a part of the Contract Documents. All addenda or bulletins shall be signed by the Architect and approved by the Division of State Architect.

EVIDENCE OF RESPONSIBILITY:

Upon the request of Owner, a bidder shall submit promptly to the Owner or its designee satisfactory evidence showing the bidder's financial resources, the bidder's experience in the type of work required by the Owner, the bidder's organization available for the performance of the Contract, and any other required evidence of the bidder's or its subcontractor's qualifications to perform the proposed Contract. The Owner may consider such evidence before making its decision awarding the proposed Contract. Failure to submit evidence of the bidder's or its subcontractors' responsibility to perform the proposed Contract may result in rejection of the bid.

AWARD OF CONTRACT:

Rejection of any or all bids, contracting work with whomever and in whatever manner, abandoning work entirely, and/or waiving any informality in receiving of bids are reserved as the rights of the Owner. Before the Contract is awarded, the Owner may, at its sole discretion, require from a potential Contractor on the Contract further evidence of the reasonable qualifications of such contractor to faithfully, capably, and reasonably

perform the Contract and may consider such evidence before making its decision on the award of the Contract.

If awarded, the Contract shall be awarded to the lowest responsible and responsive bidder as indicated in the Notice to Bidders and as interpreted by the Owner under California law and as specified herein. Owner reserves the right, without any liability, to cancel the award of the Contract for any reason at any time before the full execution of the Agreement between Owner and Contractor.

EXECUTION OF AGREEMENT BETWEEN OWNER AND CONTRACTOR:

Contractor shall sign and return the Agreement within ten (10) days after mailing, faxing or delivery of the Notice of Award of Contract, or prior to the commencement of the Work, whichever is earlier. The Contractor shall sign the Agreement in as many originals as the Owner deems necessary. Within ten (10) days after mailing, faxing, or delivery of the Notice of Award of Contract, or prior to the commencement of the Work, whichever is earlier, the Contractor shall also submit to Owner the Contract payment and performance bonds; insurance certificates, additional insured endorsement, and declarations page; a Public Contract Code section 3006(a) Roof Project Certification, if required; the Drug-Free Workplace Certification; the Student Contact Form (see Attachment B to the Fingerprinting Notice and Acknowledgement); a schedule of values (see General Conditions §9.2.1.A); a schedule of cash flow (see General Conditions §9.2.1.B); and subcontractor information (see General Conditions §9.2.1.D). Within two (2) weeks after award the Work, or prior to commencement of the Work, whichever is earlier, the Contractor shall also submit to Owner the certified baseline schedule (see General Conditions §3.9.1). If the Contractor does not comply with this paragraph, Owner may revoke and/or cancel the award to the Contractor, award the Contract to the next lowest bidder, and pursue the low bidder and bid bond for damages, or may otherwise proceed as allowed by law. A Roof Project Certification is not required if (1) the Owner has ADA (average daily attendance) of 2,500 or less, or (2) the Work involves repair of 25% or less of the roof, or costs $21,000 or less.

CONTRACT BONDS:

As required by the Contract Documents, two bonds, as itemized below and in the forms presented in these Contract Documents, shall be furnished by the Contractor. They shall be in the form of surety bonds issued by Admitted Surety insurers (an insurance organization authorized by the Insurance Commissioner to transact business of insurance in the State of California during this calendar year). The surety insurers must, unless otherwise agreed to by Owner in writing, at the time of issuance of the bond, have a rating not lower than "A-" as rated by A.M. Best Company, Inc. or other independent rating companies. Owner reserves the right to approve or reject the surety insurers selected by Contractor and to require Contractor to obtain bonds from surety insurers satisfactory to the Owner.

Performance Bond in the amount of one hundred percent (100%) of the Contract Sum to insure Owner during construction, and for one year after Completion and during any warranty or guaranty period, against faulty or improper materials or workmanship and to assure Owner of full and prompt performance of the Contract.

Payment Bond (Labor and Material) in the amount of one hundred percent (100%) of the Contract Sum in accordance with the laws of the State of California to secure payment of any and all claims for labor and materials used or consumed in performance of this Contract.

REQUESTS FOR SUBSTITUTION OF MATERIALS PRIOR TO BIDDING:

The Contractor must ensure that requested substitutions by the Contractor or its subcontractors are submitted to the Owner and Architect a minimum of fourteen (14) calendar days prior to the bid opening for review and possible approval of any equipment or materials thought to be equal to or better than those specified in the drawings or specifications. An addendum may be issued by Owner prior to bid opening, including all equipment and materials deemed equivalent to those specified and approved by the Architect. Requests for substitution shall include comparative spec-data of the specified equipment or material and the proposed substitution as set forth in the Contract Documents; requests without this information will be automatically rejected. Requests for substitution shall be submitted on the Owner's form, which Owner shall provide upon request. Requests for substitution shall conform to the Contract Documents, including but not limited to General Conditions section 3.11.4.3.

PAYMENTS:

Payments to the Contractor on account of the Contract shall be made in accordance with the terms of the Contract Documents.

TAXES:

The Owner is generally exempt from payment of Federal Excise Tax on materials. The Owner will furnish exemption certificates to the Contractor to be used to obtain materials ordinarily subject to Federal Excise Tax without payment of the tax. Bidder shall deduct Federal Excise Taxes from their bid prices before submitting bids, so that such taxes will not be included in the Contract Sum.

EARLY TERMINATION:

Notwithstanding any provision herein to the contrary, if for any fiscal year of this Contract the governing body of the Owner fails to appropriate or allocate funds for future periodic payments under the Contract after exercising reasonable efforts to do so, the Owner may upon thirty (30) days' notice, order Work on the Contract to cease. The Owner will remain obligated to pay for the Work already performed but shall not be

obligated to pay the balance remaining unpaid beyond the fiscal period for which funds have been appropriated or allocated and for which the Work has not been done.

TIME OF COMPLETION AND LIQUIDATED DAMAGES:

The Contract Time shall be On-Hundred and Eighty (180) calendar days. See Article III of the Agreement for details.

Liquidated damages for delay in Completion of the Work within the Contract Time, or for delay in completion of a specified portion of the Work by a milestone deadline, will accrue and may be assessed as provided in the Contract Documents, including Article III of the Agreement and Article 8 of the General Conditions.

COVID-19

During the Work, the Contractor shall ensure that all Work, including but not limited to Work performed by Subcontractors, is performed in compliance with all applicable legal, contractual, and local government requirements related to the novel coronavirus and COVID-19, including "social distancing," masks, and hygiene as may be ordered by the State or local authorities and as may be directed in the Contract Documents. Each bidder must include in its bid all costs related to these requirements in effect at the time of bidding. If additional COVID-19 requirements are imposed after the bid and the Contractor believes that it is entitled to additional time or money, it must timely submit proper requests pursuant to the Contract Documents.

SANCTIONS IN RESPONSE TO RUSSIAN AGGRESSION

The Owner requires Contractor to comply with the Governor's March 4, 2022, Executive Order N-6-22 ("Order") relating to any existing sanctions imposed by the United States government and the State of California in response to Russia's actions in Ukraine, including additional requirements for contracts of $5 million or more. Failure to comply may result in the termination of the Contract.

BID FORM

SANGER UNIFIED SCHOOL DISTRICT
1905 7th STREET
SANGER, CA 93657

Dear Board Members:

The undersigned, doing business under the firm name of _____, hereby proposes and agrees to enter into a contract, with the Sanger Unified School District ("Owner"), to furnish any and all labor, materials, applicable taxes, equipment and services for the completion of Work as described hereinafter and in the Contract Documents **(the "Contract").**

PROJECT #1000-26-008
REMODEL AND SITE IMPROVEMENTS TO
BUSINESS PARK TWO
1254 COMMERCE AVE
SANGER, CA 93657

The Contract Documents were prepared by:

MANGINI ASSOCIATES, INC.
4320 WEST MINERAL KING AVENUE
VISALIA, CA 93291
(559) 627-0530

Bid Amount (Base Bid):

The undersigned proposes to furnish such labor, materials, applicable taxes, equipment and services for the amount of _____ Dollars ($_____).

This amount includes all allowances identified in the Agreement form, including but not limited to $33,500 for Moisture Control Treatment for Flooring, and $25,000.00 for repair of Sprinkler Irrigation System and Landscaping in Section IV of the Agreement form. The above contract price includes a general contingency allowance of $200,000 to pay any additional amounts to which the Contractor may be entitled under the Contract Documents other than special allowances.

Miscellaneous:

The low bid shall be determined as described in the Notice to Bidders.

The undersigned shall, within ten (10) days after the date of such mailing, faxing, or delivering of a Notice of Award or prior to the commencement of the Work, whichever is earlier, execute and deliver an agreement in the form of agreement present in these

Contract Documents and give Performance and Payment Bonds in accordance with the Instructions to Bidders.

The undersigned declares that it has read and understands the Contract Documents, including but not limited to the Notice to Bidders, the Instructions to Bidders, the Agreement, the General Conditions, the Drawings, the Specifications, and any Special Conditions.

The undersigned hereby designates as the office to which such Notice of Award of Contract may be mailed, faxed, or delivered:

_____

_____

Our Public Liability and Property Damage Insurance is placed with:

_____

_____

Our Workers' Compensation Insurance is placed with:

_____

_____

Circular letters, bulletins, addenda, etc., bound with the specifications or issued during the time of bidding are included in the bid, and, in Completing the Contract, they are to become a part thereof.

The receipt of the following addenda to the specifications is acknowledged:

Addendum No. _____ Date _____
Addendum No. _____ Date _____
Addendum No. _____ Date _____

Addendum No. _____ Date _____
Addendum No. _____ Date _____
Addendum No. _____ Date _____

This bid may be withdrawn in writing at any time prior to the scheduled time for the opening of bids, including any authorized postponement thereof.

A bidder shall not submit this bid form unless the bidder's California contractor's license number appears clearly on it, the license expiration date and class are stated, and the bid form contains a statement that the representations made therein are made under penalty of perjury. Any bid submitted by a contractor who is not licensed pursuant to Business and Professions Code section 7028.15 shall be considered nonresponsive and shall be rejected. Any bid not containing the above information may be considered nonresponsive and may be rejected.

Proof of Bidder's registration per Labor Code §1725.5 must be submitted with this bid form.

NOTE: This bid form must give the full business address of the bidder and be signed by bidder with bidder's usual signature. Partnerships must furnish the full name of all partners and must be signed in the partnership name by a general partner with authority to bind the partnership in such matters, followed by the signature and designation of the person signing. The name of the person signing shall also be typed or printed below the signature. Corporations must sign with the legal name of the corporation, followed by the name of the state of incorporation and by the signature and designation of the chairman of the board, president or any vice president, and then followed by a second signature by the secretary, assistant secretary, the chief financial officer or assistant treasurer. All persons signing must be authorized to bind the corporation in the matter. The name of each person signing shall also be typed or printed below the signature. Satisfactory evidence of the authority of the officers signing on behalf of a corporation shall be furnished with the bid.

The undersigned declares under penalty of perjury under the laws of the State of California that the representations made in this bid are true and correct.

Name of Company as Licensed in California: _____

Business Address: _____

Telephone Number: _____

California Contractor License No.: _____

Class and Expiration Date: _____

Public Works Contractor Registration No.: _____

State of Incorporation, if Applicable: _____

INDIVIDUAL:

Dated: _____, 20__

_____

_____ (*Name*)

PARTNERSHIP:

Evidence of authority to bind partnership is attached.

Dated: _____, 20__

_____

_____ (*Name*)

General Partner

CORPORATION:

Evidence of authority to bind corporation is attached.

Dated: _____, 20__

_____
_____ (*Name*)
_____ (Chairman, Pres., or Vice-Pres.)

_____
_____ (*Name*)
_____ (Secretary, Asst. Secretary, CFO, or Asst. Treasurer)

BID BOND

Bond Number: _____

KNOW ALL MEN BY THESE PRESENTS that we the undersigned _____ as Principal and _____ as Surety, are hereby held and firmly bound unto the Sanger Unified School District ("Owner") in the sum of _____ Dollars ($_____) for payment of which sum, well and truly to be made, we hereby jointly and severally bind ourselves, our heirs, executors, administrators, successors and assigns.

The condition of the above obligation is such that whereas the Principal has submitted to the Owner a certain bid, attached hereto and hereby made a part hereof, to enter into a Contract in writing for the construction of the below project in strict accordance with Contract Documents.

PROJECT #1000-26-008
REMODEL AND SITE IMPROVEMENTS TO
BUSINESS PARK TWO
1254 COMMERCE AVE
SANGER, CA 93657

NOW, THEREFORE,

a. If said bid shall be rejected, or, in the alternative;

b. If said bid shall be accepted and the Principal shall execute and deliver a contract in the form of agreement attached hereto and shall execute and deliver Performance and Payment Bonds in the forms attached hereto (all properly completed in accordance with said bid), and shall in all other respects perform the agreement created by the acceptance of said bid;

Then this obligation shall be void, otherwise the same shall remain in full force and effect, it being expressly understood and agreed that the liability of the Surety for any and all default of the Principal hereunder shall be the amount of this obligation as herein stated.

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

IN WITNESS WHEREOF, the above-bounden parties have executed this instrument under several seals this ____ day of _____, _____, the name and corporate party being hereto affixed and these presents duly signed by its undersigned representative, pursuant to authority of its governing body. In the presence of:

(Notary Seal)

_____
(Principal)

_____
(Business Address)

_____

_____
(Corporate Surety)

_____
Business Address)

By:_____

_____

The rate or premium of this bond is _____ per thousand, the total amount of premium charged, $_____.

(The above must be filled in by Corporate Surety).

DESIGNATION OF SUBCONTRACTORS

Each bidder shall set forth below the name and the location of the place of business of each subcontractor, and the California contractor license number and (for all projects over Twenty-Five Thousand Dollars ($25,000)) public works contractor registration number of each subcontractor who will perform work or labor or render service to the Contractor in or about the construction of the Work or improvement, or to a subcontractor licensed by the State of California who, under subcontract to the Contractor, specially fabricates and installs a portion of the Work or improvement according to detailed drawings contained in the plans and specifications, in an amount in excess of one-half of 1 percent (0.5%) of the bidder's total bid, and the portion of the Work which will be done by each subcontractor. An inadvertent error in listing a California contractor's license number shall not be grounds for filing a bid protest or for considering the bid nonresponsive if the bidder submits the corrected contractor's license number to the Owner within 24 hours after the bid opening, or any continuation thereof, so long as the corrected contractor's license number corresponds to the submitted name and location for that subcontractor.

If the Contractor fails to specify a subcontractor for any portion of the Work to be performed under the Contract in excess of one-half of 1 percent (0.5%) of the Contractor's total bid, the Contractor shall be deemed to have agreed to perform such portion itself, and shall not be permitted to subcontract that portion of the Work except under the conditions hereinafter set forth.

Subletting or subcontracting of any portion of the Work as to which no subcontractor was designated in the original bid shall only be permitted in cases of public emergency or necessity, and then only after a finding reduced to writing as a public record of the legislative body of the Owner.

For all projects over Twenty-Five Thousand Dollars ($25,000): For any bid proposal submitted, and for any contract for public work entered into, an inadvertent error in listing a subcontractor who is not registered under Labor Code section 1725.5 shall not be grounds for filing a bid protest or grounds for considering the bid nonresponsive, provided that either: the subcontractor is registered prior to the bid opening; or the subcontractor is registered and has paid the penalty registration fee specified in Labor Code section 1725.5(a)(2)(E), if applicable, within 24 hours after the bid opening; or the subcontractor is replaced by another registered subcontractor under Public Contract Code section 4107. Failure of a listed subcontractor to be registered shall be grounds under Public Contract Code section 4107 for the Contractor, with the Owner's consent, to substitute a registered subcontractor for the unregistered subcontractor.

Failure to provide this information in a legible manner may result in the rejection of an otherwise acceptable bid.

NOTE: *Reproduce page two of this section for additional listings needed beyond the length of this form.*

Contractor Name: _____

Portion of Work (description)	Name of Subcontractor & Phone No.	Location of Subcontractor	California Contractor License Number	Public Works Contractor Registration Number

I am the authorized representative of the Bidder submitting this Designation of Subcontractors and I declare that each subcontractor listed holds a valid and current contractor license in good standing in California to perform the portion of work for which the subcontractor is listed.

I declare under penalty of perjury under the laws of the State of California that the foregoing is true and correct and that this declaration is executed on _____, 20___, at _____ [*city*],_____[*state*].

Signature: _____

Print Name: _____

Title: _____

NONCOLLUSION DECLARATION

Owner: Sanger Unified School District
Contract: Business Park Two
Site: 1254 Commerce Ave, Sanger CA 93657

The undersigned declares:

I am the _____ of _____, the party making the foregoing bid or proposal ("Bid").

The Bid is not made in the interest of, or on behalf of, any undisclosed person, partnership, company, association, organization, or corporation. The Bid is genuine and not collusive or sham. The bidder or proposer ("Bidder") has not directly or indirectly induced or solicited any other Bidder to put in a false or sham bid. The Bidder has not directly or indirectly colluded, conspired, connived, or agreed with any Bidder or anyone else to put in a sham Bid, or to refrain from bidding or proposing ("Bidding"). The Bidder has not in any manner, directly or indirectly, sought by agreement, communication, or conference with anyone to fix the Bid price of the Bidder or any other Bidder, or to fix any overhead, profit, or cost element of the Bid price, or of that of any other Bidder. All statements contained in the Bid are true. The Bidder has not, directly or indirectly, submitted his or her Bid price or any breakdown thereof, or the contents thereof, or divulged information or data relative thereto, to any corporation, partnership, company, association, organization, Bid depository, or to any member or agent thereof to effectuate a collusive or sham Bid, and has not paid, and will not pay, any person or entity for such purpose.

Any person executing this declaration on behalf of a Bidder that is a corporation, partnership, joint venture, limited liability company, limited liability partnership, or any other entity, hereby represents that he or she has full power to execute, and does execute, this declaration on behalf of the Bidder.

I declare under penalty of perjury under the laws of the State of California that the foregoing is true and correct and that this declaration is executed on _____, 20__, at _____ [*city*], _____ [*state*].

_____
Signature

_____
Print Name

SUFFICIENT FUNDS DECLARATION

(Labor Code section 2810)

To Be Executed by Bidder and Submitted with Bid

Owner: Sanger Unified School District
Contract: Business Park Two
Site: 1254 Commerce Ave, Sanger CA 93657

I, _____, declare that I am the _____ *[insert title]* of _____, the entity making and submitting the bid for the above Project that accompanies this Declaration, and that such bid includes sufficient funds to permit _____ *[insert name of entity]* to comply with all local, state or federal labor laws or regulations during the Project, including payment of prevailing wage, and that _____ *[insert name of entity]* will comply with the provisions of Labor Code section 2810(d) if awarded the Contract.

I declare under penalty of perjury under the laws of the State of California that the foregoing is true and correct and executed on _____20__, at _____ *[city]*, _____ *[state]*.

Date: _____

_____
Signature

Print Name: _____
Print Title: _____

DRUG-FREE WORKPLACE CERTIFICATION

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

Pursuant to Government Code Section 8355, every person or organization awarded a contract or grant from a State agency shall certify that it will provide a drug-free workplace by doing all of the following:

(a) Publishing a statement notifying employees that the unlawful manufacture, distribution, dispensation, possession or use of a controlled substance is prohibited in the person's or organization's workplace and specifying actions which will be taken against employees for violations of the prohibition;

(b) Establishing a drug-free awareness program to inform employees about all of the following:

(1) The dangers of drug abuse in the workplace;
(2) The person's or organization's policy of maintaining a drug-free workplace;
(3) The availability of drug counseling, rehabilitation and employee-assistance programs;
(4) The penalties that may be imposed upon employees for drug abuse Violations;

(c) Requiring that each employee engaged in the performance of the contract or grant be given a copy of the statement required by subdivision (a) and that, as a condition of employment on the contract or grant, the employee agrees to abide by the terms of the statement.

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

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

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

_____
Name of Contractor

_____
Signature

_____ _____
Print Name Date

FINGERPRINTING NOTICE AND ACKNOWLEDGMENT FOR CONSTRUCTION CONTRACTS
(Education Code Section 45125.2)

Business entities entering into contracts with the Owner for the construction, reconstruction, rehabilitation or repair of a facility may comply with Education Code section 45125.2, in which case it would not have to comply with Section 45125.1. If such an entity is not compliant with Section 45125.2, then it must comply with Section 45125.1. Such entities are responsible for ensuring full compliance with the law and should therefore review all applicable statutes and regulations. Therefore, the following information is provided simply to assist you with compliance with the law:

1. The Owner has determined that your employee(s), or you as a sole proprietor, will have more than limited contact with students, therefore the law requires that you must use one or more of the following methods to ensure the safety of pupils (Education Code §45125.2(a)):

   a. Install a physical barrier at the worksite to limit contact with pupils.

   b. If you are not a sole proprietorship, have one of your employees, whom the Department of Justice has ascertained has not been convicted of a violent or serious felony (see ***Attachment A*** to this Notice and Acknowledgement), continually monitor and supervise all of your employees. For the Department of Justice to so ascertain, your employee may submit fingerprints to the Department of Justice pursuant to Education Code section 45125.1(a).

   c. Arrange, with Owner's approval, for surveillance of your employees by Owner's personnel.

   Prior to commencing the Work, you shall submit the Independent Contractor Student Contact Form (see ***Attachment B*** to this Notice and Acknowledgement) to the Owner, which will indicate which of the above methods you will use.

2. If you are providing services in an emergency or exceptional situation, you are not required to comply with Education Code section 45125.2, above. An "emergency or exceptional" situation is one in which pupil health or safety is endangered or when repairs are needed to make a facility safe and habitable. Owner shall determine whether an emergency or exceptional situation exists. (Education Code §45125.2(d).)

3. If you use one or more of the three methods in Section 1 (above), you are not required to comply with Education Code section 45125.1. (Education Code §45125.2(b).)

I have read the foregoing and agree to comply with the requirements of this notice and Education Code sections 45125.1 and 45125.2 as applicable.

Dated: _____

_____
Signature

Name: _____

Title: _____

ATTACHMENT A

Violent and Serious Felonies

Under Education Code section 45125.2, no employee of a contractor or subcontractor who has been convicted of or has criminal proceedings pending for a violent or serious felony may come into contact with any student. A violent felony is any felony listed in subdivision (c) of Section 667.5 of the Penal Code. Those felonies are presently defined as:

(1) Murder or voluntary manslaughter.

(2) Mayhem.

(3) Rape as defined in paragraph (2) or (6) of subdivision (a) of Section 261 or paragraph (1) or (4) of subdivision (a) of Section 262.

(4) Sodomy as defined in subdivision (c) or (d) of Section 286.

(5) Oral copulation as defined in subdivision (c) or (d) of Section 288a.

(6) Lewd or lascivious act as defined in subdivision (a) or (b) of Section 288.

(7) Any felony punishable by death or imprisonment in the state prison for life.

(8) Any felony in which the defendant inflicts great bodily injury on any person other than an accomplice which has been charged and proved as provided for in Section 12022.7, 12022.8, or 12022.9 on or after July 1, 1977, or as specified prior to July 1, 1977, in Sections 213, 264, and 461, or any felony in which the defendant uses a firearm which use has been charged and proved as provided in subdivision (a) of Section 12022.3, or Section 12022.5 or 12022.55.

(9) Any robbery.

(10) Arson, in violation of subdivision (a) or (b) of Section 451.

(11) Sexual penetration as defined in subdivision (a) or (j) of Section 289.

(12) Attempted murder.

(13) A violation of Section 18745, 18750, or 18755.

(14) Kidnapping.

(15) Assault with the intent to commit a specified felony, in violation of Section 220.

(16) Continuous sexual abuse of a child, in violation of Section 288.5.

(17) Carjacking, as defined in subdivision (a) of Section 215.

(18) Rape, spousal rape, or sexual penetration, in concert, in violation of Section 264.1.

(19) Extortion, as defined in Section 518, which would constitute a felony violation of Section 186.22 of the Penal Code.

(20) Threats to victims or witnesses, as defined in Section 136.1, which would constitute a felony violation of Section 186.22 of the Penal Code.

(21) Any burglary of the first degree, as defined in subdivision (a) of Section 460, wherein it is charged and proved that another person, other than an accomplice, was present in the residence during the commission of the burglary.

(22) Any violation of Section 12022.53.

(23) A violation of subdivision (b) or (c) of Section 11418.

A serious felony is any felony listed in subdivision (c) Section 1192.7 of the Penal Code. Those felonies are presently defined as:

> (1) Murder or voluntary manslaughter; (2) Mayhem; (3) Rape; (4) Sodomy by force, violence, duress, menace, threat of great bodily injury, or fear of immediate and unlawful bodily injury on the victim or another person; (5) Oral copulation by force, violence, duress, menace, threat of great bodily injury, or fear of immediate and unlawful bodily injury on the victim or another person; (6) Lewd or lascivious act on a child under the age of 14 years; (7) Any felony punishable by death or imprisonment in the state prison for life; (8) Any felony in which the defendant personally inflicts great bodily injury on any person, other than an accomplice, or any felony in which the defendant personally uses a firearm; (9) Attempted murder; (10) Assault with intent to commit rape, or robbery; (11) Assault with a deadly weapon or instrument on a peace officer; (12) Assault by a life prisoner on a non-inmate; (13) Assault with a deadly weapon by an inmate; (14) Arson; (15) Exploding a destructive device or any explosive with intent to injure; (16) Exploding a destructive device or any explosive causing bodily injury, great bodily injury, or mayhem; (17) Exploding a destructive device or any explosive with intent to murder; (18) Any burglary of the first degree; (19) Robbery or bank robbery; (20) Kidnapping; (21) Holding of a hostage by a person confined in a state prison; (22) Attempt to commit a felony punishable by death or imprisonment in the state prison for life; (23) Any felony in which the defendant

personally used a dangerous or deadly weapon; (24) Selling, furnishing, administering, giving, or offering to sell, furnish, administer, or give to a minor any heroin, cocaine, phencyclidine (PCP), or any methamphetamine-related drug, as described in paragraph (2) of subdivision (d) of Section 11055 of the Health and Safety Code, or any of the precursors of methamphetamines, as described in subparagraph (A) of paragraph (1) of subdivision (f) of Section 11055 or subdivision (a) of Section 11100 of the Health and Safety Code; (25) Any violation of subdivision (a) of Section 289 where the act is accomplished against the victim's will by force, violence, duress, menace, or fear of immediate and unlawful bodily injury on the victim or another person; (26) Grand theft involving a firearm; (27)carjacking; (28) any felony offense, which would also constitute a felony violation of Section 186.22; (29) assault with the intent to commit mayhem, rape, sodomy, or oral copulation, in violation of Section 220; (30) throwing acid or flammable substances, in violation of Section 244; (31) assault with a deadly weapon, firearm, machine gun, assault weapon, or semiautomatic firearm or assault on a peace officer or firefighter, in violation of Section 245; (32) assault with a deadly weapon against a public transit employee, custodial officer, or school employee, in violation of Sections 245.2, 245.3, or 245.5; (33) discharge of a firearm at an inhabited dwelling, vehicle, or aircraft, in violation of Section 246; (34) commission of rape or sexual penetration in concert with another person, in violation of Section 264.1; (35) continuous sexual abuse of a child, in violation of Section 288.5; (36) shooting from a vehicle, in violation of subdivision (c) or (d) of Section 26100; (37) intimidation of victims or witnesses, in violation of Section 136.1; (38) criminal threats, in violation of Section 422; (39) any attempt to commit a crime listed in this subdivision other than an assault; (40) any violation of Section 12022.53; (41) a violation of subdivision (b) or (c) of Section 11418; and (42) any conspiracy to commit an offense described in this subdivision.

ATTACHMENT B

STUDENT CONTACT FORM
FOR CONSTRUCTION CONTRACTS

Note: This form must be submitted by Contractor before it may commence any work.

Contractor Firm Name: _____
Supervisor/Foreman Name: _____
Start Date: _____
Completion Date: _____
Location of Work: _____
Hours of Work: _____
Length of Time on Grounds: _____
Number of Employees on the Job: _____

I am an owner or officer of Contractor authorized to sign this document on behalf of Contractor. Contractor acknowledges that the Owner has determined that Contractor's employees, or that Contractor as a sole proprietor, will have more than limited contact with students. Therefore, in order to comply with Education Code section 45125.2, Contractor will use the following methods to ensure student safety (check at least one):

[ ] A physical barrier will be installed at the worksite to limit contact with pupils.

[ ] Contractor is not a sole proprietorship, and its employees will be continually monitored and supervised by one of its employees who has not been convicted of a violent or serious felony.

Name of Supervising Employee:

_____

Date of Department of Justice verification that supervising employee has not been convicted of a violent or serious felony:

_____

Name of employee who is the custodian of the Department of Justice verification information:

_____

[ ] The Owner has agreed that Contractor's employees, or Contractor as sole proprietor, will be surveilled by Owner's personnel.

If Contractor does not comply with the requirements of Education Code section 45125.2, then Contractor will comply with the requirements of Education Code section 45125.1.

I declare under penalty of perjury that the foregoing is true and correct to the best of my knowledge.

Dated: _____

Signature: _____
Typed Name: _____
Title: _____
Contractor: _____

4859-0431-8121, v. 1

IRAN CONTRACTING ACT CERTIFICATION
(Public Contract Code sections 2202-2208)
(To be Executed by Bidder and Submitted With Bid)

As required by Public Contract Code ("PCC") section 2204 for contracts of $1,000,000 or more, please insert bidder's or financial institution's name and Federal ID Number (if available) and complete **one** of the options below. Please note that California law establishes penalties for providing false certifications, including civil penalties equal to the greater of $250,000 or twice the amount of the contract for which the false certification was made; contract termination; and three-year ineligibility to bid on contracts. (PCC §2205.)

OPTION #1 - CERTIFICATION

I, the official named below, certify I am duly authorized to execute this certification on behalf of the bidder/financial institution identified below, and the bidder/financial institution identified below is **not** on the current list of persons engaged in investment activities in Iran created by California Department of General Services ("DGS") and is not a financial institution extending twenty million dollars ($20,000,000) or more in credit to another person/bidder, for 45 days or more, if that other person/bidder will use the credit to provide goods or services in the energy sector in Iran and is identified on the current list of persons engaged in investment activities in Iran created by DGS. (PCC §2204(a).)

Bidder Name/Financial Institution (Printed)	*Federal ID Number (or n/a)*
By (Authorized Signature)	
Printed Name and Title of Person Signing	
Date Executed	*Executed in*

OPTION #2 – EXEMPTION

Pursuant to Public Contract Code sections 2203(c) and (d), a public entity may permit a bidder/financial institution engaged in investment activities in Iran, on a case-by-case basis, to be eligible for, or to bid on, submit a proposal for, or enters into or renews, a contract for goods and services. If you have obtained an exemption from the certification requirement under the Iran Contracting Act, please fill out the information below, and attach documentation demonstrating the exemption approval.

Bidder Name/Financial Institution (Printed)	*Federal ID Number (or n/a)*
By (Authorized Signature)	
Printed Name and Title of Person Signing	*Date Executed*

WORKERS' COMPENSATION CERTIFICATE

Labor Code Section 3700, in relevant part, provides:

> "Every employer except the state shall secure the payment of compensation in one or more of the following ways:
>
> (a) By being insured against liability to pay compensation in one or more insurers duly authorized to write compensation insurance in this state.
>
> (b) By securing from the Director of Industrial Relations a certificate of consent to self-insure either as an individual employer or as one employer in a group of employers. Said certificate may be given upon furnishing proof satisfactory to the Director of Industrial Relations of ability to self-insure and to pay any compensation that may become due to his or her employees, … "

I am aware of the provisions of the Labor Code Section 3700 which require every employer to be insured against liability for workers' compensation or to undertake self-insurance in accordance with the provisions of that code, and I will comply with such provisions before commencing the performance of the work of this contract. I shall supply the Owner with certificates of insurance evidencing that Workers' Compensation Insurance is in effect and providing that the Owner will receive thirty (30) days' notice of cancellation.

_____
Name of Contractor

_____
Signature

_____ _____
Print Name Date

(In accordance with Article 5 (commencing at Section 1860], Chapter 1, Part 7, Division 2 of the Labor Code, the above certificate must be signed and filed with the awarding body prior to performing any work under the contract.)

PRIME BIDDER CERTIFICATION OF DISABLED VETERAN BUSINESS ENTERPRISE PARTICIPATION

To be completed by the Prime Bidder

PART I – IDENTIFICATION INFORMATION

BIDDER'S NAME	BUSINESS ADDRESS	TELEPHONE NUMBER
SCHOOL DISTRICT	COUNTY	APPLICATION NO.

PART II – METHOD OF COMPLIANCE WITH DVBE PARTICIPATION GOALS – Include this form and any other applicable documents listed in this table with your bid/proposal. Read the three columns in the table below as sentences from left to right. Check the appropriate box to indicate your method of committing the contract dollar amount.

NOTE: *Architectural, engineering, environmental, land surveying or construction management firms must indicate their method of compliance by marking the appropriate box A, B, C, or D after selection by the District and before the contract is signed.*

YOUR BUSINESS ENTERPRISE	AND YOU	AND YOU
A. ☐ *is Disabled Veteran owned and your forces, will perform at least 3 percent of this contract*	*will include a copy of your DVBE letter from the Office of Small Business and Disabled Veteran Business Enterprise Services (OSDS).*	
B. ☐ *is Disabled Veteran owned* ***but is unable*** *to perform the 3 percent of this contract with your forces*	*will use DVBE subcontractors/ suppliers to bring the contract participation to at least 3 percent*	*will include a copy of each DVBE's letter from OSDS (including yours, if applicable).*
C. ☐ *is* ***not*** *Disabled Veteran owned*	*will use DVBE subcontractors/ suppliers for at least 3 percent of this contract*	
D. ☐ *is unable to meet the required participation goals*	*will complete a Good Faith Effort to obtain DVBE participation*	*will include the Prime Bidder's Good Faith Effort Worksheet.*

Note: An Office of Small Business and Disabled Veteran Business Enterprise Services (OSDS) letter must be attached for each DVBE participating in the contract. The DVBE letter is obtained by application through the OSDS and must be provided at the time of bid opening. If the letter is not provided, the bid may be deemed nonresponsive and may be ineligible for award of the contract.

Continued on reverse side

PART III – DVBE DOLLAR PARTICIPATION OF BID/PROPOSAL – *Architectural, engineering, environmental, land surveying or construction management firms complete this part* ***after*** *selection by the district and before the contract is signed.*

Show deductive alternate(s) in parenthesis. For more alternates/base bids, use a separate page to show items.

A. If your business enterprise is a DVBE, list in the appropriate column the total dollar amount of your bid to be performed by your own participation.

B. List all your DVBE subcontractors/suppliers. Enter in the appropriate column the dollar amount for each of your subcontractors/suppliers.

C. Enter the total of Lines A and B for each column.

D. Enter the dollar amount of the bid/proposal to be performed by **non**-DVBE firms. Note: This line is the sum of the prime and subcontractor(s) **non**-DVBE dollar participation.

E. Enter the sum of the column totals from Line C and Line D. Note: Please be aware that the final determination of DVBE compliance is made based on the contract amount resulting from the district's acceptance or rejection of alternates.

	BASE BID/PROPOSAL	**ALTERNATE #1**	**ALTERNATE #2**	**ALTERNATE #3 OR BASE BID B**	**ALTERNATE #4 OR BASE BID C**	**ALTERNATE #5** (Modernization or Reconstruction Only)
A. Prime Bidder, *if DVBE (own participation)*	$	$	$	$	$	$
B. DVBE Subcontractor or Supplier						
1.						
2.						
3.						
4.						
C. Subtotal (A & B)						
D. Non-DVBE						
E. Total Bid						

PRIME BIDDER GOOD FAITH EFFORT WORKSHEET

This worksheet is to be used to assist the Prime Bidder in meeting the 3% DVBE participation goal

BIDDER'S NAME	BUSINESS ADDRESS	CONTACT PERSON
TELEPHONE NUMBER	OWNER	COUNTY

GENERAL INSTRUCTIONS:

This worksheet is to be used to assist you in meeting the 3 percent DVBE participation goal. If specific information is not provided for Parts I through III, you do not meet the test of the "Good Faith Effort" and cannot so certify. If you are qualifying based on a "Good Faith Effort" you must include this form with your bid/proposal to the Owner.

PART I – CONTACTS

To identify DVBE subcontractors/suppliers for participation in your bid/proposal, contact must be made with each of the following categories. It is recommended that you contact several DVBE organizations.

CATEGORY	TELEPHONE NUMBER	DATE CONTACTED	PERSON CONTACTED
1. Owner			
2. Office of Small Business and Disabled Veteran Business Enterprise Services (OSDS). OSDS provides assistance locating DVBE's at https://caleprocure.ca.gov/pages/PublicSearch/suppliersearch.aspx	(916) 375-4940		
3. DVBE Organizations (*List*):			
4. Write "recorded message" in this column, if applicable.			

PART II – ADVERTISEMENTS *You must make at least two (2) advertisements, one (1) in a paper that focuses on DVBE and one (1) in a trade paper. Advertisements should be published at least 14 days prior to bid/proposal opening; if you cannot advertise 14 days prior, advertise as soon as possible and provide an explanation. (Advertisements must be published in time to allow for a reasonable response). Advertisements must include that your firm is seeking DVBE participation, the project name and location, your firm's name, your firm's contact person, and phone number.*

Attach copies of advertisements to this form.

FOCUS/TRADE PAPER NAME	CHECK ONE		DATE OF ADVERTISEMENT
	TRADE	FOCUS	

PART III – DVBE SOLICITATIONS *List DVBE subcontractors/suppliers that were invited to bid. Use the following instructions to complete the remainder of this section (read the three columns as a sentence from left to right). If you need additional space to list DVBE solicitations, please use a separate page and attach to this form.*

IF THE DVBE.....	THEN.....	AND.....
Was selected to participate	Check "yes" in the "SELECTED" column, include the applicable dollar amount in Part III of the Prime Bidder Certification	Include a copy of their DVBE letter from OSDS.
Was **not** selected to participate	Check "no" in the "SELECTED" column	State why in the "REASON NOT SELECTED" column.
Did not respond to your solicitation	Check the "NO RESPONSE" column	

DISABLED VETERANS BUSINESS ENTERPRISES CONTACTED	SELECTED		REASON NOT SELECTED *This section must be completed*	NO RESPONSE
	YES	NO		

IMPORTANT NOTE:

Please be aware that certification of the "Good Faith Effort" may only be made if you fully complete Parts I, II, and III on both sides of this form. A copy of this form must be retained by you and may be subject to a future audit.

CERTIFICATION

I, _____ certify that I am the bidder's Chief Executive Officer and that I have made a diligent effort to ascertain the facts with regard to the representations made herein. In making this certification, I am aware of Section 12650 et seq. of the Government Code providing for the imposition of treble damages for making false claims.

SIGNATURE OF CHIEF EXECUTIVE OFFICER	DATE

PAYMENT BOND
(Labor and Material)

Bond Number: _____

KNOW ALL MEN BY THESE PRESENTS:

That WHEREAS, the Sanger Unified School District (the "Owner" of the public works contract described below) and _____, hereinafter designated as the "Principal," have entered into a Contract for the furnishing of all materials and labor, services and transportation, necessary, convenient, and proper to construct

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SANGER, CA 93657

which said agreement dated _____, 20__, and all of the Contract Documents are hereby referred to and made a part hereof;

and

WHEREAS, the Principal is required, before entering upon the performance of the work, to file a good and sufficient bond with the body by whom the Contract is awarded to secure the claims arising under said agreement.

NOW, THEREFORE, THESE PRESENTS WITNESSETH:

That the said Principal and the undersigned _____ ("Surety") are held and firmly bound unto all laborers, material men, and other persons, and bound for all amounts due, referred to in Civil Code section 9554, subdivision (b), in the sum of _____ Dollars ($_____) which sum well and truly be made, we bind ourselves, our heirs, executors, administrators, successors, or assigns, jointly and severally, by these presents.

The condition of this obligation is that if the said Principal or any of its subcontractors, or the heirs, executors, administrators, successors, or assigns of any, all, or either of them, shall fail to pay any of the persons named in Civil Code section 9100, or any of the amounts due, as specified in Civil Code section 9554, subdivision (b), that said Surety will pay the same in an amount not exceeding the amount hereinabove set forth, and also in case suit is brought upon this bond, will pay costs and reasonable attorney's fees to be awarded and fixed by the Court, and to be taxed as costs and to be included in the judgment therein rendered.

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

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

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

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

(To be signed by)
(Principal and Surety,)
(and acknowledged and)
(Notarial Seal attached)

_____
Principal

_____

_____
Surety

_____

By: _____
Attorney-in-Fact

_____

The above bond is accepted and approved this ____ day of _____.

PERFORMANCE BOND

Bond Number: _____

KNOW ALL MEN BY THESE PRESENTS that we, _____, as Principal, and _____, as Surety, are held and firmly bound unto the Sanger Unified School District, in the County of Fresno, State of California, hereinafter called the "Owner," in the sum of _____ Dollars ($_____) for the payment of which sum well and truly made, we bind ourselves, our heirs, executors, administrators, and successors, jointly and severally, to the Owner for the full performance of a certain contract with the Owner, the terms of which are incorporated herein by reference, dated _____, 20___, for construction of

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(the "Contract").

The condition of this obligation is such that, if the Principal shall well and truly perform and fulfill all the undertakings, covenants, terms, conditions, and agreements of said Contract during the original term of said Contract and any extensions thereof that may be granted by the Owner, with or without notice to the Surety, and for the period of time specified in the Contract after completion for correction of faulty or improper materials and workmanship and during the life of any guaranty or warranty required under the Contract, and shall also well and truly perform and fulfill all the undertakings, covenants, terms, conditions and agreement of any and all duly authorized modifications of said Contract that may hereafter be made, then this obligation is to be void, otherwise to remain in full force and virtue.

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

No further agreement between Surety and Owner shall be required as a prerequisite to the Surety performing its obligations under this bond. In the event that the Surety elects to complete the Work of the Contract after termination of the Contract by Owner, the Surety may not hire Principal, or any of Principal's owners, employees, or subcontractors, to perform the Work without the written consent of Owner, and the Owner may grant or withhold such consent within its sole discretion.

IN WITNESS WHEREOF, the above-bounden parties have executed this instrument under their several seals this _____ day of _____, 20__, hereto affixed and these presents duly signed by its undersigned representative, pursuant to authority of its governing body.

(To be signed by)
(Principal and Surety,)
(and acknowledged and)
(Notarial Seal attached)

(Affix Corporate Seal)

_____
(Individual Principal)

_____
(Business Address)

(Affix Corporate Seal)

_____
(Corporate Principal)

_____
(Business Address)

(Affix Corporate Seal)

_____
(Corporate Surety)

_____
(Business Address)

_____

By:_____

_____

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

The total amount of premium charged is _____.

The above must be filled in by Corporate Surety.

This is a fiduciary account created by statute, Public Contract Code section 22300. The funds deposited in this account shall not be released to Contractor or any other person or entity, other than Owner, including pursuant to any purported lien or writ of attachment or execution, without the prior written, express approval of Owner.

ESCROW AGREEMENT FOR SECURITY DEPOSITS IN LIEU OF RETENTION

This Escrow Agreement is made and entered into by and between the Sanger Unified School District, whose address is 1254 Commerce Ave, Sanger CA 93657 (hereinafter called "Owner"); _____, whose address is _____ (hereinafter called "Contractor"); and _____, a state or federally chartered bank in California whose address is _____ (hereinafter called "Escrow Agent").

For the consideration hereinafter set forth, the Owner, Contractor, and Escrow Agent agree as follows:

1. Pursuant to section 22300 of the Public Contract Code of the State of California, Contractor has the option to deposit securities with Escrow Agent as a substitute for retention earnings required to be withheld by the Owner pursuant to the contract between the Owner and Contractor in the amount of _____ Dollars ($_____), and dated _____, 20____, for the Business Park Two scope of work (the "Contract"). Alternatively, on written request of the Contractor, the Owner shall make payments of the retention earnings directly to the Escrow Agent. When Contractor deposits the securities as a substitute for retention earnings, the Escrow Agent shall notify the Owner within ten (10) calendar days of the deposit. The market value of the securities at the time of the substitution, as valued by the Owner, shall be at least equal to the cash amount then required to be withheld as retention under the terms of the Contract between the Owner and Contractor. If the Owner determines that the securities are not adequate it will notify Contractor and Escrow Agent, and Contractor shall deposit additional security as further determined by the Owner. Securities shall be held in the name of the Owner and shall designate the Contractor as the beneficial owner.

2. Thereafter, Owner shall make progress payments to the Contractor for such funds which otherwise would be withheld from progress payments pursuant to the Contract provisions, provided that the Escrow Agent holds securities in the form and amount specified above.

3. Pursuant to Public Contract Code section 22300, as an alternative to the procedures set forth above, Contractor may request in writing that the Owner pay retention amounts directly to Escrow Agent. When the Owner makes payment of retentions earned directly to the Escrow Agent, the Escrow Agent shall hold them

for benefit of the Contractor until such time as the escrow created under this Escrow Agreement is terminated. The Contractor may direct the investment of the payments into securities. All terms and conditions of this Escrow Agreement and the rights and responsibilities of the parties shall be equally applicable and binding when the Owner pays the Escrow Agent directly.

4. The Contractor shall be responsible for paying all fees for the expenses incurred by Escrow Agent in administering the Escrow Account and all expenses of the Owner. These expenses and payment terms shall be determined by the Owner, Contractor and Escrow Agent.

5. The interest earned on the securities or the money market accounts held in escrow and all interest earned on that interest shall be for the sole account of Contractor and shall be subject to withdrawal by Contractor at any time and from time to time without notice to the Owner.

6. Contractor shall have the right to withdraw all or any part of the principal in the Escrow Account only by written notice to Escrow Agent accompanied by written authorization from Owner to the Escrow Agent that Owner consents to the withdrawal of the amount sought to be withdrawn by Contractor.

7. The Owner shall have the right to draw upon the securities or any amount paid directly to Escrow Agent in the event of default by the Contractor. Upon seven (7) days written notice to the Escrow Agent from the Owner of the default, the Escrow Agent shall immediately convert the securities to cash and shall distribute the cash, including any amounts paid directly to Escrow Agent pursuant to Section 3 above, as instructed by Owner. Escrow Agent shall not be concerned with the validity of any notice of default given by Owner pursuant to this paragraph, and shall promptly comply with Owner's instructions to pay over said escrowed assets. Escrow Agent further agrees to not interplead the escrowed assets in response to a conflicting demand and hereby waives any present or future opportunity of interpleader.

8. Upon receipt of written notification from the Owner certifying that the Contract is final and complete, and that the Contractor has complied with all requirements and procedures applicable to the Contract, Escrow Agent shall release to Contractor all securities and interest on deposit less escrow fees and charges of the Escrow Account. The escrow shall be closed immediately upon disbursement of all moneys and securities on deposit and payment of fees and charges.

9. Escrow Agent shall rely on the written notifications from the Owner and Contractor pursuant to Sections (4), (5), (6), (7) and (8) of this Agreement and the Owner and Contractor shall hold Escrow Agent harmless from Escrow Agent's release and disbursement of the securities and interest as set forth above.

10. The names of the persons who are authorized to give written notice or to receive written notice on behalf of the Owner, the Contractor and the Escrow Agent in connection with the foregoing, and exemplars of their respective signatures are as follows:

ON BEHALF OF OWNER:

_____
Signature

_____
Typewritten Name

_____
Title

ON BEHALF OF CONTRACTOR:

_____
Signature

_____
Typewritten Name

_____
Title

ON BEHALF OF ESCROW AGENT:

_____
Signature

_____
Typewritten Name

_____
Title

IN WITNESS WHEREOF, the parties have executed this Agreement by their proper officers on the date first set forth above.

OWNER:

_____
Signature

_____
Typewritten Name

_____
Title

CONTRACTOR:

_____
Signature

_____
Typewritten Name

_____
Title

ESCROW AGENT:

_____
Signature

_____
Typewritten Name

_____
Title

At the time the Escrow Account is opened, the Owner and Contractor shall deliver to the Escrow Agent a fully executed counterpart of this Agreement.

AGREEMENT BETWEEN OWNER AND CONTRACTOR

This Agreement, effective _____, 20__, is by and between the Sanger Unified School District, in Fresno County, California, hereinafter called the "Owner," and _____ hereinafter called the "Contractor."

WITNESSETH: That the Contractor and the Owner for the consideration hereinafter named agree as follows:

ARTICLE I. SCOPE OF WORK.

The Contractor agrees to furnish all labor, equipment and materials, including tools, implements, and appliances required, and to perform all the work required, by the Contract (the "Work") in a good and workmanlike manner, free from any and all liens and claims from mechanics, material suppliers, subcontractors, artisans, machinists, teamsters, freight carriers, and laborers, and as specified in

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all in strict compliance with the plans, drawings and specifications therefore prepared by

MANGINI ASSOCIATES, INC.
4320 WEST MINERAL KING AVENUE
VISALIA, CA 93291
(559) 627-0530

and other Contract Documents relating thereto.

During the Work, the Contractor shall ensure that all Work, including but not limited to Work performed by Subcontractors, is performed in compliance with all applicable legal, contractual, and local government requirements related to COVID-19 and other public health emergencies, including "social distancing," masks, and hygiene as may be ordered by the State or local authorities and as may be directed in the Contract Documents

ARTICLE II. CONTRACT DOCUMENTS.

The Contractor and the Owner agree that all of the documents listed in Article 1.1.1 of the General Conditions are incorporated into this Agreement and form the "Contract Documents" which form the "Contract."

ARTICLE III. TIME TO COMPLETE AND LIQUIDATED DAMAGES.

Time is of the essence in this Contract, and the time of Completion for the Work ("the Contract Time") shall be One-Hundred and Eighty calendar days which shall start to run on (a) the date of commencement of the Work as established in the Owner's Notice to Proceed, or (b) if no date of commencement is established in a Notice to Proceed from Owner, the date of Contractor's actual commencement of the Work (including mobilization).

Failure to Complete the Work within the Contract Time and in the manner provided for by the Contract Documents, or failure to complete any specified portion of the Work by a milestone deadline, shall subject the Contractor to liquidated damages. The actual occurrence of damages and the actual amount of the damages which the Owner would suffer if the Work were not Completed within the Contract Time, or if any specified portion of the Work were not completed by a milestone deadline, are dependent upon many circumstances and conditions which could prevail in various combinations and, from the nature of the case, it is impracticable and extremely difficult to fix the actual damages. Damages which the Owner would suffer in the event of such delay include, but are not limited to, loss of the use of the Work, disruption of activities, costs of administration and supervision, third party claims, and the incalculable inconvenience and loss suffered by the public.

Accordingly, the parties agree that $1,000 per calendar day of delay shall be the damages which the Owner shall directly incur upon failure of the Contractor to Complete the Work within the Contract Time or Complete any specified portion of the Work by a milestone deadline, as described above.

Liquidated damages will accrue for failure to meet milestone deadlines even if the Contractor Completes the Work within the Contract Time.

In addition, Contractor shall be subject to liquidated damages, or actual damages if liquidated damages are not recoverable under law, for causing another contractor on the Project to fail to timely complete its work under its contract or for causing delayed *completion* of the Project. The actual occurrence of damages and the actual amount of the damages which the Owner would suffer if another contractor on the Project were to fail to timely complete its work under its contract or delay *completion* of the Project are dependent upon many circumstances and conditions which could prevail in various combinations and, from the nature of the case, it is impracticable and extremely difficult to fix the actual damages. Damages which the Owner would suffer in the event of such delay include, but are not limited to, loss of the use of the Work, loss of use of the other contractor's work, loss of use of the Project, disruption of activities, costs of administration and supervision, third party claims, the incalculable inconvenience and loss suffered by the public, and an Owner's inability to recover its delay damages from the contractors whose work was delayed by Contractor.

Accordingly, the parties agree that $1,000 for each calendar day of delay shall be the amount of damages which the Owner shall directly incur upon Contractor causing another contractor on the Project to fail to timely complete its work under its contract or causing delayed *completion* of the Project.

For Contractor's obligations regarding claims against Owner from other contractors on the Project alleging that Contractor caused delays to their work, see General Conditions sections 3.7.4, 3.16 and 6.2.3.

If liquidated damages accrue as described above, the Owner, in addition to all other remedies provided by law, shall have the right to assess the liquidated damages at any time, and to withhold liquidated damages (and any interest thereon) at any time from any and all retention or progress payments, which would otherwise be or become due the Contractor. In addition, if it is reasonably apparent to the Owner before liquidated damages begin to accrue that they will accrue, Owner may assess and withhold, from retention or progress payments, the estimated amount of liquidated damages that will accrue in the future. If the retained percentage or withheld progress payments are not sufficient to discharge all liabilities of the Contractor incurred under this Article, the Contractor and its sureties shall continue to remain liable to the Owner until all such liabilities are satisfied in full.

If Owner accepts any work or makes any payment under the Contract Documents after a default by reason of delays, the payment or payments shall in no respect constitute a waiver or modification of any provision in the Contract Documents regarding time of Completion, milestone deadlines, or liquidated damages.

ARTICLE IV. PAYMENT AND RETENTION.

The Owner agrees to pay the Contractor in current funds _____ Dollars ($_____) for work satisfactorily performed after receipt of properly documented and submitted Applications for Payment and to make payments on account thereof, as provided in the General Conditions.

This amount includes all allowances identified in the Agreement form, including but not limited to $33,500 for Moisture Control Treatment for Flooring, and $25,000.00 for repair of Sprinkler Irrigation System and Landscaping in Section IV of the Agreement form. The above contract price includes a general contingency allowance of $200,000 to pay any additional amounts to which the Contractor may be entitled under the Contract Documents other than special allowances.

Any payment from a special allowance or general contingency allowance ("Allowance") is entirely at the discretion, and only with the advanced written approval, of the Owner. To request payment from an Allowance, the Contractor must fully comply with the Contract Documents' requirements related to Notice to Potential Changes, Change Order Requests, and Claims, including but not limited to Articles 4 and 7 of the General Conditions and its provisions regarding waiver of rights for failure to comply. If

the Owner approves in writing a payment from an Allowance, no change order approved by Owner's governing body shall be required, but Contractor must sign an Allowance expenditure form, after which the Contractor may include a request for such payment in its next progress payment application. Contractor's inclusion of a request for such payment in a progress payment application, or Contractor's acceptance of a progress payment that includes such payment, shall act as a full and complete waiver by Contractor of all rights to recover additional money related to the underlying basis of such payment; and such waiver shall be in addition to any other waiver that applies under the Contract Documents (including Article 4 of the General Conditions). If Contractor requests a time extension or other consideration in connection with or related to a requested payment from an Allowance, Contractor must comply with the Contract Documents' requirements related to Notice to Potential Changes, Change Order Requests, and Claims, including but not limited to Articles 4, 7, and 8 of the General Conditions and their provisions regarding waiver of rights for failure to comply, and no such time extension or other consideration may be issued until a change order is approved by the Owner's governing body pursuant to the Contract Documents. The amount of an Allowance may only be increased by a change order approved by Owner's governing body. Once an Allowance is fully spent, the Contractor must request any additional compensation pursuant to the procedures in the Contract Documents for Notices of Potential Claim, Change Order Requests, and Claims, and payment must be made by a change order approved by the Owner's governing body pursuant to the General Conditions. Upon Completion of the Work, all amounts in an Allowance that remain unspent and unencumbered shall remain the property of the Owner, Contractor shall have no claim to such funds, the Owner shall be entitled to a credit for such unused amounts against the above contract price, and the Owner may withhold such credit from any progress payment or release of retention.

ARTICLE V. CHANGES.

Changes in this Agreement or in the Work to be done under this Agreement shall be made as provided in the General Conditions.

ARTICLE VI. TERMINATION.

The Owner or Contractor may terminate the Contract as provided in the General Conditions.

ARTICLE VII. PREVAILING WAGES.

The Project is a public work, the Work shall be performed as a public work and pursuant to the provisions of Section 1770 et seq. of the Labor Code of the State of California, which are hereby incorporated by reference and made a part hereof, the Director of Industrial Relations has determined the general prevailing rate of per diem wages and the general prevailing rate for holiday and overtime work in the locality in which the Work is to be performed, for each craft, classification or type of worker needed to execute this Contract. Per diem wages shall be deemed to include employer payments

for health and welfare, pension, vacation, apprenticeship or other training programs, and similar purposes. Copies of the rates are on file at the Owner's principal office, or are available at https://www.dir.ca.gov/oprl/dprewagedetermination.htm. The rate of prevailing wage for any craft, classification or type of workmanship to be employed on this Project is the rate established by the applicable collective bargaining agreement which rate so provided is hereby adopted by reference and shall be effective for the life of this Agreement or until the Director of the Department of Industrial Relations determines that another rate be adopted. It shall be mandatory upon the Contractor and on any subcontractor to pay not less than the said specified rates to all workers employed in the execution of this Agreement.

The Contractor and any subcontractor under the Contractor as a penalty to the Owner shall forfeit not more than Two Hundred Dollars ($200.00) for each calendar day or portion thereof for each worker paid less than the stipulated prevailing rates for such work or craft in which such worker is employed. The difference between such stipulated prevailing wage rates and the amount paid to each worker for each calendar day or portion thereof for which each worker was paid less than the stipulated prevailing wage rate shall be paid to each worker by the Contractor.

The Contractor and each Subcontractor shall keep or cause to be kept an accurate record for Work on this Contract and Project showing the names, addresses, social security numbers, work classification, straight time and overtime hours worked and occupations of all laborers, workers and mechanics employed by them in connection with the performance of this Contract or any subcontract thereunder, and showing also the actual per diem wage paid to each of such workers, which records shall be open at all reasonable hours to inspection by the Owner, its officers and agents and to the representatives of the Division of Labor Standards Enforcement of the State Department of Industrial Relations. The Contractor and each subcontractor shall furnish a certified copy of all payroll records directly to the Labor Commissioner.

Public works projects shall be subject to compliance monitoring and enforcement by the Department of Industrial Relations. For all projects over Twenty-Five Thousand Dollars ($25,000), a contractor or subcontractor shall not be qualified to submit a bid or to be listed in a bid proposal subject to the requirements of Public Contract Code section 4104 unless currently registered and qualified under Labor Code section 1725.5 to perform public work as defined by Division 2, Part 7, Chapter 1 (§§1720 et seq.) of the Labor Code. For all projects over Twenty-Five Thousand Dollars ($25,000), a contractor or subcontractor shall not be qualified to enter into, or engage in the performance of, any contract of public work (as defined by Division 2, Part 7, Chapter 1 (§§1720 et seq.) of the Labor Code) unless currently registered and qualified under Labor Code section 1725.5 to perform public work.

ARTICLE VIII. WORKING HOURS.

In accordance with the provisions of Sections 1810 to 1815, inclusive, of the Labor Code of the State of California, which are hereby incorporated and made a part

hereof, the time of service of any worker employed by the Contractor or a Subcontractor doing or contracting to do any part of the Work contemplated by this Agreement is limited and restricted to eight hours during any one calendar day and forty hours during any one calendar week, provided, that work may be performed by such employee in excess of said eight hours per day or forty hours per week provided that compensation for all hours worked in excess of eight hours per day, and forty hours per week, is paid at a rate not less than one and one-half (1½) times the basic rate of pay. The Contractor and every Subcontractor shall keep an accurate record showing the name of and the actual hours worked each calendar day and each calendar week by each worker employed by them in connection with the Work. The records shall be kept open at all reasonable hours to inspection by representatives of the Owner and the Division of Labor Law Enforcement. The Contractor shall as a penalty to the Owner forfeit Twenty-five Dollars ($25.00) for each worker employed in the execution of this Agreement by the Contractor or by any subcontractor for each calendar day during which such worker is required or permitted to work more than eight hours in any one calendar day, and forty hours in any one calendar week, except as herein provided.

ARTICLE IX. APPRENTICES.

The Contractor agrees to comply with Chapter 1, Part 7, Division 2, Sections 1777.5 and 1777.6 of the California Labor Code, which are hereby incorporated and made a part hereof. These sections require that contractors and subcontractors employ apprentices in apprenticeable occupations in a ratio of not less than one hour of apprentice's work for each five hours of work performed by a journeyman (unless an exemption is granted in accordance with Section 1777.5) and that contractors and subcontractors shall not discriminate among otherwise qualified employees as indentured apprentices on any public works solely on the ground of sex, race, religious creed, national origin, ancestry or color. Only apprentices as defined in Labor Code Section 3077, who are in training under apprenticeship standards and who have signed written apprentice agreements, will be employed on public works in apprenticeable occupations. The responsibility for compliance with these provisions is fixed with the Contractor for all apprenticeable occupations.

ARTICLE X. DSA OVERSIGHT PROCESS.

The Contractor must comply with the applicable requirements of the Division of State Architect (“DSA”) Construction Oversight Process (“DSA Oversight Process”), including but not limited to (a) notifying the Owner’s Inspector of Record/Project Inspector (“IOR”) upon commencement and completion of each aspect of the Work as required under DSA Form 156; (b) coordinating the Work with the IOR’s inspection duties and requirements; (c) submitting verified reports under DSA Form 6-C; and (d) coordinating with the Owner, Owner’s Architect, any Construction Manager, any laboratories, and the IOR to meet the DSA Oversight Process requirements without delay or added costs to the Work or Project.

Contractor shall be responsible for any additional DSA fees related to review of

proposed changes to the DSA-approved construction documents, to the extent the proposed changes were caused by Contractor's wrongful act or omissions. If inspected Work is found to be in non-compliance with the DSA-approved construction documents or the DSA-approved testing and inspection program, then it must be removed and corrected. Any construction that covers unapproved or uninspected Work is subject to removal and correction, at Contractor's expense, in order to permit inspection and approval of the covered work in accordance with the DSA Oversight Process.

ARTICLE XI. INDEMNIFICATION AND INSURANCE.

The Contractor will defend, indemnify and hold harmless the Owner, its governing board, officers, agents, trustees, employees and others as provided in the General Conditions.

By this statement the Contractor represents that it has secured the payment of Workers' Compensation in compliance with the provisions of the Labor Code of the State of California and during the performance of the work contemplated herein will continue so to comply with said provisions of said Code. The Contractor shall supply the Owner with certificates of insurance evidencing that Workers' Compensation Insurance is in effect and providing that the Owner will receive thirty (30) days' notice of cancellation.

Contractor shall provide the insurance set forth in the General Conditions. Contractor's comprehensive general and automobile liability insurance shall be written for not less than the following limits of liability:

Comprehensive General Liability

Each Occurrence:
$2,000,000 Each Occurrence

Medical Expenses:
$2,000,000 Any One Person

General Aggregate:
$4,000,000 Aggregate

Comprehensive Automobile Liability

Combined Single Limit:
$1,000,000 Each Accident

Property Damage:
$500,000 Each Accident

Workers' Compensation

Worker's compensation insurance as required by Labor Code section 3200, *et seq*.

ARTICLE XII. ENTIRE AGREEMENT.

The Contract constitutes the entire agreement between the parties relating to the Work, and supersedes any prior or contemporaneous agreement between the parties, oral or written, including the Owner's award of the Contract to Contractor, unless such agreement is expressly incorporated herein. The Owner makes no representations or warranties, express or implied, not specified in the Contract. The Contract is intended as the complete and exclusive statement of the parties' agreement pursuant to Code of Civil Procedure section 1856.

ARTICLE XIII. EXECUTION OF OTHER DOCUMENTS.

The parties to this Agreement shall cooperate fully in the execution of any and all other documents and in the completion of any additional actions that may be necessary or appropriate to give full force and effect to the terms and intent of the Contract.

ARTICLE XIV. EXECUTION IN COUNTERPARTS.

This Agreement may be executed in counterparts such that the signatures may appear on separate signature pages. A copy, or an original, with all signatures appended together, shall be deemed a fully executed Agreement.

ARTICLE XV. BINDING EFFECT.

Contractor, by execution of this Agreement, acknowledges that Contractor has read this Agreement and the other Contract Documents, understands them, and agrees to be bound by their terms and conditions. The Contract shall inure to the benefit of and shall be binding upon the Contractor and the Owner and their respective successors and assigns.

ARTICLE XVI. SEVERABILITY; GOVERNING LAW; CHOICE OF FORUM.

If any provision of the Contract shall be held invalid or unenforceable by a court of competent jurisdiction, such holding shall not invalidate or render unenforceable any other provision hereof. The Contract shall be governed by the laws of the State of California. Any action or proceeding seeking any relief under or with respect to this Agreement shall be brought solely in the Superior Court of the State of California for the County of Fresno, subject to transfer of venue under applicable State law, provided that nothing in this Agreement shall constitute a waiver of immunity to suit by Owner.

ARTICLE XVII. AMENDMENTS.

The terms of the Contract shall not be waived, altered, modified, supplemented or amended in any manner whatsoever except by written agreement, including a change order, signed by the parties and approved or ratified by the Governing Board.

ARTICLE XVIII. ASSIGNMENT OF CONTRACT.

The Contractor shall not assign or transfer by operation of law or otherwise any or all of its rights, burdens, duties or obligations without the prior written consent of the surety on the payment bond, the surety on the performance bond and the Owner.

ARTICLE XIX. WRITTEN NOTICE.

Written notice shall be deemed to have been duly served if delivered in person to the individual or member of the firm or to an officer of the corporation for whom it was intended, or if delivered at or sent by registered or certified or overnight mail to the last business address known to the person who gives the notice.

ARTICLE XX. SANCTIONS IN RESPONSE TO RUSSIAN AGGRESSION.

The Owner requires Contractor to comply with the Governor's March 4, 2022, Executive Order N-6-22 ("Order") relating to any existing sanctions imposed by the United States government and the State of California in response to Russia's actions in Ukraine, including additional requirements for contracts of $5 million or more. Failure to comply may result in the termination of the Contract.

_____ **(***CONTRACTOR***)**

_____
_____ (*Name*)
_____ (Chairman, Pres., or Vice-Pres.)

_____
_____ (*Name*)
_____ (Secretary, Asst. Secretary, CFO, or Asst. Treasurer)

_____
CALIFORNIA CONTRACTOR'S
LICENSE NO.

_____
LICENSE EXPIRATION DATE

SANGER UNIFIED SCHOOL DISTRICT

_____
_____ (*Name*)
_____ (*Title*)

NOTE: Contractor must give the full business address of the Contractor and sign with Contractor's usual signature. Partnerships must furnish the full name of all partners and the Agreement must be signed in the partnership name by a general partner with authority to bind the partnership in such matters, followed by the signature and designation of the person signing. The name of the person signing shall also be typed or printed below the signature. Corporations must sign with the legal name of the corporation, followed by the name of the state of incorporation and by the signature and designation of the chairman of the board, president or any vice president, and then followed by a second signature by the secretary, assistant secretary, the chief financial officer or assistant treasurer. All persons signing must be authorized to bind the corporation in the matter. The name of each person signing shall also be typed or printed below the signature. Satisfactory evidence of the authority of the officer signing on behalf of a corporation shall be furnished.

GENERAL CONDITIONS

for

CONTRACT OF CONSTRUCTION

PROJECT #1000-26-008
REMODEL AND SITE IMPROVEMENTS TO BUSINESS PARK TWO
1254 COMMERCE AVE
SANGER, CA 93657

(the "Contract"),

SANGER UNIFIED SCHOOL DISTRICT

DECEMBER 2026

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ARTICLE 1

GENERAL CONDITIONS

1.1 BASIC DEFINITIONS

1.1.1 THE CONTRACT DOCUMENTS

The "Contract Documents" consist of the Agreement between Owner and Contractor (hereinafter the Agreement), Conditions of the Contract (General, Supplementary and other Conditions), Drawings, Specifications, addenda issued prior to bid, Instructions to Bidders, Notice to Bidders, the Bid Form, Payment Bond, Performance Bond, required insurance certificates, additional insured endorsement and declarations page, Designation of Subcontractors, Noncollusion Declaration, Roof Project Certification (where applicable), Sufficient Funds Declaration (Labor Code section 2810), the Fingerprinting Notice and Acknowledgment and Independent Contractor Student Contact Form, other documents referred to in the Agreement, and Modifications issued after execution of the Agreement. A Modification is a written amendment to the Contract signed by both parties, a Change Order, a Construction Change Directive, or a written order for a minor change in the Work issued by the Owner. The Contract Documents are complementary, and each obligation of the Contractor, Subcontractors, material or equipment suppliers in any one shall be binding as if specified in all.

1.1.2 THE CONTRACT

The Contract Documents 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 Owner and any Subcontractor or Sub-subcontractor, or between any persons or entities other than the Owner and the Contractor. The terms of the Contract shall not be waived, altered, modified, supplemented or amended in any manner whatsoever except by written agreement signed by the parties and approved or ratified by the Owner's governing board.

1.1.3 THE WORK

The "Work" shall include all labor, materials, services and equipment necessary for the Contractor to fulfill all of its obligations pursuant to the Contract Documents, including but not limited to punch list items and submission of 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 with Owner's representatives, 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 on 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. The "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.

1.1.4 THE PROJECT

The "Project" is the total construction of the Work performed in accordance with the Contract Documents, but "Project" may also include construction by the Owner or by separate contractors of improvements related to, but not included in, the Work. The Project shall constitute a "work of improvement" under Civil Code section 8050 and Public Contract Code section 7107.

1.1.5 THE DRAWINGS

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.

1.1.6 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.

1.1.7 THE PROJECT MANUAL

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

1.1.8 OR

"Or" shall include "and/or."

1.1.9 COMPLETION

Statutory definitions of "Completion" and "Complete" shall apply for those statutory purposes. For all other purposes, including accrual of liquidated damages, Claims, and warranties, "Completion" and "Complete" mean the point in the Work where (1) Contractor has fully and correctly performed all Work in all parts and requirements, including corrective and punch list work, and (2) Owner's representatives have conducted a final inspection that confirmed this performance. Substantial, or any other form of partial or non-compliant, performance shall not constitute "Completion" or "Complete" under the Contract Documents, except to the extent that substantial completion is required for a milestone deadline.

1.1.10 COMPLETION OF THE PROJECT

For purposes of accrual of liquidated damages for delay to the Project, *completion* shall mean the point in the Project where (1) all contractors and Owner have fully and correctly performed all work of the entire Project in all parts and requirements, including corrective and punch list work, and (2) Owner's representatives have conducted a final inspection of the entire Project that confirmed this performance. Substantial, or any other form of partial or non-compliant, performance shall not constitute *completion* or *complete*.

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 and are intended to include all items required for the proper execution and Completion of the Work. Any item of Work mentioned in the Specifications and not shown on the Drawings or shown on the Drawings and not mentioned in the Specifications, shall be provided by Contractor as if shown or mentioned in both.

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 the Drawings or the Specifications (or is reasonably inferable therefrom as being necessary to Complete the Work), shall be provided by the Contractor whether or not the Work is expressly covered in the Drawings or the Specifications. 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 Contractor.

1.2.1.3 ***Conflicts.*** Without limiting Contractor's obligation to identify conflicts for resolution by the Owner, in the event of a conflict between provisions of the Contract Documents, it is intended that the more stringent, higher quality, and greater quantity of Work shall apply; except that in the event of a conflict between a Division 01 specification and a provision in a Division 00 Contract Document (such as the agreement, general conditions, notice to bidders, instructions to bidders, bid form, etc.), the Division 00 provision shall control.

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, and if through mistake or otherwise any such provision is not inserted, or is not correctly inserted, then upon application of either party the Contract shall be amended in writing to make such insertion or correction.

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 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. In the event Contractor observes any violation of any law, ordinance, code, rule or regulation, or inconsistency with any such restrictions or special requirements of the Contract Documents, Contractor shall promptly notify Architect and Owner 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 Work. Where requirements of the Contract Documents exceed those of the applicable building codes and ordinances, the Contract Documents shall govern. Contractor shall comply with all applicable Federal, State and local laws.

If, as and to the extent that Public Contract Code section 1104 is deemed to apply after the award of the Contract, Contractor shall not be required to assume responsibility for the completeness and accuracy of architectural or engineering plans and specifications, notwithstanding any other provision in the Contract Documents, except to the extent that Contractor discovered or should have discovered and reported any errors and omissions to the Architect and Owner, including but not limited to as the result of any review of the plans and specifications by Contractor required by the Instructions to Bidders or other Contract Documents, whether or not actually performed by Contractor.

1.2.1.5 ***Ambiguity.*** 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 immediately notify Architect and Owner in writing of any perceived or alleged error, inconsistency, 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 Sum 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 Sum or the time for performance. In no case shall any Subcontractor proceed with the Work if uncertain without the Contractor's written direction and/or approval.

1.2.1.6 ***Execution.*** Execution of the Agreement Between Owner and Contractor by the Contractor is a representation that the Contractor has visited the Site, become familiar with the local conditions under which the Work is to be performed and has correlated personal observations with the requirements of the Contract Documents.

1.2.2 ADDENDA AND DEFERRED APPROVALS

1.2.2.1 ***Addenda.*** Subsequent addenda issued shall govern over prior addenda only to the extent specified. In accordance with Title 24, California Code of Regulations, addenda shall be approved by the Division of the State Architect ("DSA").

1.2.2.2 ***Deferred Approvals.*** The requirements approved by the DSA on any item submitted as a deferred approval in accordance with Title 24, California Code of Regulations, shall take precedence over any previously issued addenda, drawing or specification.

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

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 ***Provide.*** "Provide" means "provided complete in place," that is, furnished, installed, tested, and ready for operation and use.

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

1.2.3.5 ***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.

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

1.2.3.7 ***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."

1.2.3.8 ***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 as of the date the Notice to Bidders is first published. If applicable specifications are revised prior to completion of any part of the Work, the Contractor may, if acceptable to Owner and 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.

1.2.3.9 ***Absence of Modifiers.*** 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.

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

The Drawings, Specifications, and other documents prepared on behalf of the Owner are instruments of the services of the Architect and its consultants and are the property of the Owner. The Contractor may retain one contract record set. Neither the Contractor nor any Subcontractor, Sub-subcontractor, or material or equipment supplier shall own or claim a copyright in the Drawings, Specifications, and other documents prepared by the Architect, and unless otherwise indicated the Architect shall be deemed the author of them. All copies of them, except the Contractor's record set, shall be returned or suitably accounted for to the Owner, upon request upon Completion of the Work. The Drawings, Specifications, and other documents prepared by the Architect, and copies thereof furnished to the Contractor, are for use solely with respect to this Contract. They are not to be used by the Contractor or any Subcontractor, Sub-subcontractor, or material or equipment supplier on other contracts or projects or for additions to this Contract or Project outside the scope of the Work without the specific written consent of the Owner and the Architect. The Contractor, Subcontractors, Sub-subcontractors, and material or equipment suppliers are granted a limited license to use and reproduce applicable portions of the Drawings, Specifications, and other documents prepared by the Architect appropriate to and for use 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 Owner's property interest or other reserved right. All copies made under this license shall bear appropriate attribution and the statutory copyright notice, if any, shown on the Drawings, Specifications and other documents prepared by the Architect.

ARTICLE 2

OWNER

2.1 DEFINITION

The term "Owner" means the person or entity identified as such in the Agreement and is referred to throughout the Contract Documents as if singular in number. The term "Owner" means the Owner and/or the Owner's authorized representatives, including but not limited to architects and construction managers. To the extent the Contract Documents indicate that Owner has assigned duties to particular representatives of the Owner (such as the Architect, or any construction manager), Owner reserves the right at all times to reassign such duties to different Owner representatives.

2.2 INFORMATION AND SERVICES REQUIRED OF THE OWNER

2.2.1 INTENTIONALLY LEFT BLANK

2.2.2 SITE SURVEY

When required by the scope of the Work, the Owner will furnish, at its expense, a legal description or a land survey of the Site, giving, as applicable, grades and lines of streets, alleys, pavements, adjoining property, rights-of-way, restrictions, easements, encroachments, zoning, deed restrictions, boundaries, and contours of the Site. Surveys to determine locations of construction, grading, and Site work shall be provided by the Contractor.

2.2.3 SOILS

2.2.3.1 ***Owner Furnished Services.*** When required by the scope of the Project, the Owner will furnish, at its expense, the services of geotechnical engineers or consultants when reasonably required or as required by local or state codes. Such services with reports and appropriate professional recommendations shall 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.

2.2.3.2 ***Contractor Reliance.*** Test borings and soils reports for the Project have been made for the Owner to indicate the subsurface materials that might be encountered at particular locations on the Project. The Owner has made these documents available to the Contractor and the Contractor has studied the results of such test borings and information that it has as to the subsurface conditions and Site geology as set forth in the test borings and soils reports. The Owner does not assume any responsibility whatsoever with respect to the sufficiency or accuracy of the borings made, or of the logs of the test borings, or of other investigations, or of the soils reports furnished pursuant hereto, or of the interpretations to be made beyond the location or depth of the borings. There is no warranty or guarantee, either express or implied that the conditions indicated by such investigations, borings, logs, soil reports or other information are representative of those existing throughout the Site of the Project, or any part thereof, or that

unforeseen developments may not occur. At the Owner's request, the Contractor shall make available to the Owner the results of any Site investigation, test borings, analyses, studies or other tests conducted by or in the possession of the Contractor of any of its agents. Nothing herein contained shall be deemed a waiver by the Contractor to pursue any available legal right or remedy it may have at any time against any third party who may have prepared any report and/or test relied upon by the Contractor.

2.2.4 UTILITY SURVEY

When required by the scope of the Project, the Owner will furnish, at its expense, all information regarding known existing utilities on or adjacent to the Site, including location, size, inverts, and depths.

2.2.5 INFORMATION

Upon the request of the Contractor, Owner will make available such existing information regarding utility services and Site features, including existing construction, related to the Project as is available from Owner's records. The Contractor may not rely upon the accuracy of any such information, other than that provided under Sections 2.2.2 and 2.2.4 (except that the Contractor may not rely upon, and must question in writing to the Owner and the Architect, any information which appears incorrect based upon Contractor's Site inspection, knowledge of the Work and Project, and prior experience with similar projects), unless specifically stated in writing that the Contractor may rely upon the designated information.

2.2.6 EXISTING UTILITY LINES; REMOVAL, RELOCATION

2.2.6.1 ***Removal, Relocation.*** Pursuant to Government Code section 4215, the Owner assumes the responsibility for removal, relocation, and protection of utilities located on the Site at the time of commencement of construction under this Contract with respect to any such utility facilities which are not identified in the drawings and specifications made part of the invitation to bid. The Contractor shall not be assessed for liquidated damages for delay in Completion of the Work caused by failure of the Owner to provide for removal or relocation of such utility facilities. Owner shall compensate the Contractor for the costs of locating, repairing damage not due to the failure of the Contractor to exercise reasonable care, removing or relocating such utility facilities, and for equipment necessarily idle during such work.

2.2.6.2 ***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 Owner 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.

2.2.6.3 ***Notification.*** If the Contractor, while performing work under this Contract, discovers utility facilities not identified by the Owner in the Contract plans or specifications, Contractor shall immediately notify the Owner and the utility in writing.

2.2.6.4 ***Underground Utility Clearance.*** It shall be Contractor's sole responsibility to timely notify all public and private utilities serving the Site prior to commencing work. The Contractor shall notify and receive clearance from any cooperative agency, such as Underground Service Alert, in accordance with Government Code section 4216, et seq. Contractor shall promptly provide a copy of all such notifications to the Owner.

2.2.7 EASEMENTS

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

2.2.8 REASONABLE PROMPTNESS

Information or services under Owner's control will be furnished by the Owner with reasonable promptness. The Owner shall not be liable for any delays caused by factors beyond the Owner's control including but not limited to DSA's, or any other local, State or federal agency's, review of bids, change order requests, RFI's or any other documents.

2.2.9 COPIES FURNISHED

The Contractor will be furnished such copies of Drawings and Project Manuals as are stated in the Contract Documents.

2.2.10 DUTIES CUMULATIVE

The foregoing are in addition to other duties and responsibilities of the Owner enumerated herein, and especially those in Article 6 (Construction by Owner or by Separate Contractors), Article 9 (Payments and Completion), and Article 11 (Insurance and Bonds).

2.3 OWNER'S RIGHT TO STOP THE WORK

If the Contractor fails to correct Work which is not in accordance with the requirements of the Contract Documents or persistently fails to carry out Work in accordance with the Contract Documents, the Owner may order the Contractor to stop the Work or any portion thereof, until the Contractor corrects the deficiencies. Contractor shall not be entitled to a time extension for any delays caused by such order. The right of the Owner to stop the Work shall not give rise to a duty on the part of the Owner to exercise this right for the benefit of the Contractor or any other person or entity, except to the extent required by Article 6.

2.4 OWNER'S RIGHT TO CARRY OUT THE WORK

If the Contractor fails or refuses to carry out the Work in accordance with the Contract Documents, Owner may correct such deficiencies by whatever reasonable method the Owner may deem expedient without prejudice to other remedies the Owner may have, including but not limited to having another contractor perform some or all of the Work without terminating the Contract with Contractor. Owner may exercise this right at any time during the Contractor's Work.

Owner shall first provide written notice to Contractor of Contractor's failure or refusal to perform. The notice will provide the time period within which Contractor must begin correction of the failure or refusal to perform. If the Contractor fails to begin correction within the stated time, or fails to continue correction, the Owner may proceed to correct the deficiencies. In the event the Owner bids the work, Contractor shall not be eligible for the award of the contract. The Contractor may be invoiced the cost to Owner of the work, including compensation for additional professional and internally generated services and expenses made necessary by Contractor's failure or refusal to perform. Owner may withhold that amount from the retention, or progress payments due the Contractor, pursuant to Section 9.5. If retention and payments withheld then or thereafter due the Contractor are not sufficient to cover that amount, the Contractor shall pay the difference to the Owner.

ARTICLE 3

THE CONTRACTOR

3.1 DEFINITION

The Contractor is the person or entity identified as such in the Agreement and is referred to throughout the Contract Documents as if singular in number. The term "Contractor" means the Contractor or the Contractor's authorized representative. To the extent that any portion of the Work is provided with the Contractor's own forces, any reference to Subcontractors shall be equally applicable to the Contractor.

3.2 SUPERVISION AND CONSTRUCTION PROCEDURES

3.2.1 CONTRACTOR

The Contractor shall supervise and direct the Work using the Contractor's best skill and attention, which shall meet or exceed the standards in the industry. The Contractor shall be solely responsible for and have control over construction means, methods, techniques, sequences, procedures, and coordinating all portions of the Work under the Contract, unless Contract Documents give other specific instructions concerning these matters. The Contractor shall perform the Work in a workmanlike manner, in compliance with the Contract Documents, and in compliance with all applicable local, state, and federal codes, regulations, and other law.

If part of the Project is performed by other contractors that Owner directly retains, Owner shall schedule and coordinate the activities of Contractor with the other contractors. Contractor agrees to accept the Owner's construction schedules, schedule updates, overall sequence and coordination of construction for the Project.

Contractor realizes that work by other contractors or Owner may occur simultaneously with Contractor's Work in any given area. Contractor is responsible for its own sequences that may occur within a given activity or set of activities. Contractor shall not commit or permit any act which will adversely affect the work of any other contractor or Owner. Contractor shall provide

layout of its Work at the request of any other contractor or Owner.

Specific duties of the Contractor shall be in accordance with Title 24 of the California Code of Regulations. Contractor shall fully comply with any and all reporting requirements of Education Code sections 17309 and 81141 in the manner prescribed by Title 24.

3.2.2 CONTRACTOR RESPONSIBILITY

The Contractor shall be responsible to the Owner 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.

3.2.3 OBLIGATIONS NOT CHANGED BY OTHERS' ACTIONS

The Contractor shall not be relieved of obligations to perform the Work in accordance with the Contract Documents by the activities or duties of the Owner's representatives, including but not limited to any construction manager and the Architect, or the Inspector of Record; or by tests, inspections, or approvals required or performed by persons other than the Contractor.

3.2.4 CONTRACTOR RESPONSIBILITY FOR READINESS FOR WORK

The Contractor shall be responsible for inspection of Work already performed under the Contract Documents to determine that such portions are in proper condition to receive subsequent work.

3.2.5 PROJECT MEETINGS

During its Work, Contractor shall attend Owner's Project meetings as scheduled by the Contract Documents, or as otherwise instructed by Owner, to discuss the current status of the Work and Project, and the future progress of the Work and the Project. Contractor shall have five (5) days after receipt of Owner's Project meeting minutes to provide written objections and suggested corrections. Either party may audio record any meeting related to the Contract.

3.3 SUPERINTENDENT

3.3.1 FULL TIME SUPERINTENDENT

The Contractor shall provide a competent superintendent and assistants as necessary, all of whom shall be reasonably proficient in speaking, reading and writing English and, who shall be in attendance at the Project Site during performance of the Work. The superintendent shall represent the Contractor, and communications given to the superintendent shall be as binding as if given to the Contractor.

3.3.2 STAFF

The Contractor and each Subcontractor shall: furnish a competent and adequate staff as

necessary for the proper administration, coordination, supervision, and superintendence of its portion of the Work; 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 keep an adequate force of skilled workers on the job to Complete the Work in accordance with all requirements of the Contract Documents.

3.3.3 RIGHT TO REMOVE

Owner 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, etc., for cause.

3.4 LABOR AND MATERIALS

3.4.1 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, utilities, transportation, and other facilities and services necessary for proper execution and Completion of the Work whether temporary or permanent, and such facilities, labor, equipment, material, and services are included in the Work. Owner shall not be liable for, and Contractor shall bear the burden of, any post-bid escalation in the cost of materials; but Contractor will retain the benefit of any post-bid material cost decreases. Owner shall have no responsibility for security of, or repair or replacement costs of, such facilities, labor, equipment, material, and services provided by Contractor pursuant to this subsection.

3.4.2 QUALITY

Unless otherwise specified, all materials and equipment to be permanently installed in the Project shall be new and shall be of such quality as required to satisfy the standards of the Contract Documents. The Contractor shall, if requested, promptly furnish satisfactory evidence as to kind and quality of all materials and equipment. All labor shall be performed by workers skilled in their respective trades, and the quality of their work shall meet whichever is the higher standard for their work: the standard in the industry or the standard in the Contract Documents.

3.4.3 REPLACEMENT

Any work, materials, or equipment, which does not conform to these standards may be disapproved and rejected by the Owner, in which case, they shall be removed and replaced by the Contractor at no cost to the Owner.

3.4.4 DISCIPLINE

The Contractor shall enforce strict discipline and good order among the Contractor's employees and other persons carrying out the Contract in accordance with paragraph 5.5.1 including, but not limited to, Subcontractors, and material or equipment suppliers retained for the Project.

3.5 WARRANTY

For the period of one (1) year after Completion of the Work (see Sections 9.7.1, 12.2.5, and 12.2.6), the Contractor warrants to the Owner that material and equipment furnished under the Contract will be of good 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. The Contractor's warranty does not cover damage or defect caused by abuse, modifications not executed by the Contractor, improper or insufficient maintenance, improper operation, or normal wear and tear under normal usage. If required by the Owner, the Contractor shall furnish satisfactory evidence as to the kind and quality of materials and equipment.

3.6 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. Owner is exempt from Federal Excise Tax, and a Certificate of Exemption shall be provided upon request.

3.7 PERMITS, FEES AND NOTICES

3.7.1 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 customarily secured 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). Owner 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 Contract Documents.

3.7.2 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.

3.7.3 CONTRACT DOCUMENTS

It is not the Contractor's responsibility to ascertain that the Contract Documents are in accordance with any applicable law, statute, ordinance, building codes, rule, or regulation. However, if the Contractor knew, or should have known, or observes that portions of the Contract Document are at variance therewith, the Contractor shall promptly notify the Architect, any construction manager, and Owner in writing, and necessary changes shall be accomplished by appropriate modification.

3.7.4 RESPONSIBILITY

If the Contractor performs any work that it knows, or should have known, is contrary to any 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 and delays to the Work, other contractors' work, and the Project.

3.8 ALLOWANCES

3.8.1 CONTRACT

The Contractor shall include in the Contract Sum all allowances, including any general contingency allowance, stated in the Contract Documents. Items covered by specific allowances shall be supplied for such amounts and by such persons or entities as the Owner may direct, but the Contractor shall not be required to employ persons or entities against whom the Contractor makes reasonable and timely objection.

3.8.2 SCOPE

3.8.2.1 ***Prompt Selection.*** Materials and equipment under an allowance shall be selected promptly by the Owner to avoid delay to the Work.

3.8.2.2 ***Cost.*** Allowances shall cover the cost to the Contractor of materials and equipment delivered at the Site and all required taxes, less applicable trade discounts, etc., as delineated in paragraph 7.7.4.

3.8.2.3 ***Cost Included in Contract Sum.*** Contractor's costs for unloading and handling at the Site, labor, installation costs, overhead, profit, and other expenses contemplated for stated allowance amounts shall be included in the Contract Sum and not in the allowances.

3.8.2.4 ***Contract Sum Adjustment.*** Whenever Contractor seeks payment from an allowance and the requested costs are approved by Owner as compliant with the Contract Documents (including Sections 3.8.2.2 and 3.8.2.3, above), Owner may elect to pay the approved costs from the allowance, or pay the costs via Change Order. Any such allowance payment shall conform to the requirements of the Agreement and other Contract Documents.

3.9 CONTRACTOR'S CONSTRUCTION SCHEDULES

3.9.1 REQUIREMENTS

Before the Contractor's commencement of Work or within two (2) weeks of award of the Contract, whichever is earlier, Contractor shall prepare and submit for the Owner's, and any construction manager's, information the baseline construction schedule for the Work, which shall conform to the Contract Documents' requirements.

Contractor shall submit an updated schedule by the first day of every month, and whenever else requested by the Owner. Each schedule update must include an accurate as-built schedule and the current as-planned schedule, both of which shall conform to the Contract Documents' requirements. Contractor shall submit its daily logs for the prior month with the updated schedule.

The original schedule and all updates shall conform, at a minimum, to industry standards for (a) critical path scheduling and (b) facilitation of Owner's Project management and evaluation of Contractor Claims for additional money or time.

The original schedule and all updates shall not exceed time limits (including milestone deadlines) under the Contract Documents and shall comply with the Contract Documents scheduling requirements and with any scheduling requirements the Owner provides to the Contractor at the beginning of the Work. The original schedule and all updates shall accurately reflect Work performed to date; reasonable dates for future Work; all construction activities (including procurement); the critical path schedule for Completion of the remainder of the Work; the logic, sequencing, and relationship between the construction activities, including each activity's predecessor and successor activities; and the percentage of the Work completed. The original schedule and all updates shall include a reasonable number of days for weather that is usual or common for each month, as time extensions are not available for such days (see Sections 4.5.5.3.2 and 8.4.1, below); and any failure by Contractor to include a reasonable number of such days, or by Owner to require Contractor to include a reasonable number of such days, shall not affect the reasonable number of such days to be used when determining time extensions under Sections 4.5.5.3.2 and 8.4.1, below.

The construction schedule shall be in the form of either a tabulation, chart, or graph, unless otherwise stated in Division 1 of the Specifications, and shall be in sufficient detail to show the chronological relationship of all activities of the Work including, but not limited to, estimated starting and completion dates of various activities, (including early and late dates and reasonable float for each activity), procurement of materials, the critical path, and scheduling of equipment. Float suppression techniques such as preferential sequencing, special lead/lag logic restraints, extended activity durations, or imposed dates shall be apportioned for the benefit of the Work. Whenever in the Contract Documents Contractor is required to provide a schedule and/or schedule updates, the Contractor shall provide the schedule and updates in electronic format as well as hard copy. Contractor shall be solely responsible for the accuracy, utility and reasonableness of all of its schedules. Owner's acceptance, approval or non-rejection of Contractor's schedules shall not affect Contractor's responsibility for its schedules.

The Contractor and Owner shall use any float on a "first come, first served" basis. The original schedule and updates shall reflect Contractor's and Owner's use of float. Float is not for the exclusive use or benefit of either Owner or Contractor, but it is a jointly owned expiring Work resource available to both parties as needed to meet schedule milestones. For the original schedule and updates, Contractor shall use a critical path network format with the critical paths clearly indicated. Contractor shall use an MS Project, Primavera, or an equivalent or better program. Contractor shall include reports that sort and list the activities in order of increasing float and by early and late start dates. Contractor shall endeavor to label ten to thirty percent

(10-30%) of the tasks as critical, but shall not label less than five (5%) or more than fifty (50%) as critical. Contractors shall use calendar days.

If any change in Contractor's method of operations will cause a change in the construction schedule, Contractor shall submit to Owner, Architect, and any construction manager, a revised construction schedule within seven (7) days of the change.

If, in the Owner's opinion, the Contractor is not prosecuting the Work at a rate sufficient to meet the Work schedule or a contractual milestone, or to Complete the Work within the Contract Time as adjusted by change orders, or if the Contractor's actual progress falls behind the Work schedule or it is apparent to Owner that Contractor will not meet contractual milestones or Complete the Work within the Contract Time as adjusted by change orders, the Owner may require that the Contractor prepare and submit a recovery plan. Contractor must submit a recovery plan within seven (7) days of a demand for the plan. At a minimum, the recovery plan must include a proposed schedule that shows Completion of the Work by the contractual milestones and within the Contract Time, as adjusted by change orders, or Completion by other dates Owner specifies in the demand for a recovery plan. The recovery plan shall state the corrective actions Contractor will undertake to implement it. The recovery plan shall also list any additional money that Contractor believes it should receive if Owner orders Contractor to fully or partially implement the recovery plan. If the Owner orders Contractor to implement the recovery plan, Contractor shall do so, but the order shall not constitute an admission by Owner that Contractor is entitled to additional money. To recover additional money, Contractor must comply with General Conditions Articles 4.5, 7 and 8.

All schedules Contractor submits shall be certified as true and correct, as follows:

> I, _____ *[name of declarant]*, declare the following:
>
> _____ *[Contractor company name]* has contracted with _____ *[public entity name]* for the _____ Contract ("Contract"). _____ *[Contractor company name]* authorized me to prepare schedules for _____ *[public entity name]* for this Project, and I prepared the attached schedule. I am the most knowledgeable person at _____ *[Contractor company name]* regarding the scheduling of the Work for this Contract.
>
> The attached schedule does not breach the Contract between _____ *[Contractor company name]* and _____ *[public entity name]* for this Project, does not violate any applicable law, satisfies all provisions of the Contract applicable to submission of schedules, only contains truthful and accurate as-built and as-planned dates of the Work (including supporting data), and is not a false claim.
>
> The attached schedule is submitted in compliance with all laws applicable to submission of a Claim, including but not limited to California Penal Code section 72 (Fraudulent Claims), Government Code sections 12650 et seq.

(False Claims Act; for example, Government Code section 12651(a)(7)), and Business and Professions Code sections 17200 et seq. (Unfair Business Practices Act). I am aware that submission or certification of false claims, or other Claims that violate law or the Contract, may lead to fines, imprisonment, and/or other serious legal consequences for myself and/or _____ *[Contractor company name]*.

While preparing this declaration and schedule I consulted with others (including attorneys, consultants, or others who work for _____ *[Contractor company name]*) when necessary to ensure that the statements were true and correct.

I declare under the penalty of perjury under the laws of the State of California that the foregoing is true and correct. Executed _____, 20__, at _____, California.

_____ *[signature]*
_____ *[name of declarant]*

3.9.2 DSA OVERSIGHT PROCESS

In connection with the DSA Construction Oversight Process which includes inspection cards and review of changes to the DSA-approved construction documents, the Contractor must (a) include specific tasks in its baseline schedule to take into account these procedures since they are critical path issues; and (b) include a reasonable amount of float in the baseline schedule to accommodate the additional time required by these DSA procedures.

3.9.3 FAILURE TO MEET REQUIREMENTS

Failure of the Contractor to provide proper schedules may, at the sole discretion of Owner, constitute either grounds to withhold, in whole or in part, progress payments to the Contractor, or a breach of contract allowing Owner to terminate the Contract.

3.10 DOCUMENTS AND SAMPLES AT THE SITE

The Contractor shall maintain at the Site for the Owner one applicable copy of Titles 19 and 24 and 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 Owner and shall be delivered to the Owner, or the Architect for delivery to the Owner, upon Completion of the Work.

3.11 SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES

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 the 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 from selected materials to meet individual design requirements. Shop drawings shall: establish the actual details 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 Owner 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 Responsibility.*** Contractor shall obtain and shall submit to Architect all required shop drawings and samples in accordance with Contractor's "Schedule for Submission of Shop Drawings and Samples" provisions in Division 1 of the Specifications and in accordance with the Contractor's original and updated schedules, and with such promptness as to cause no delay in its own Work or in that of any other contractor, Owner or subcontractor but in no event later than ninety (90) days after the execution of the Agreement. Contractor may be assessed $100 a day for each day it is late in submitting a shop drawing or sample. 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 Owner, the Contractor, and the Architect through the Contractor. By submitting shop drawings, product data, and samples, the Contractor or submitting party (if other than Contractor) represents that it has determined and verified all materials, field measurements,

field conditions, 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. At the time of submission, any deviation in the shop drawings, product data, or samples from the requirements of the Contract Documents shall be narratively described in a transmittal accompanying the submittal. However, submittals shall not be used as a means of requesting a substitution, the procedure for which is defined in paragraph 3.11.4, "Substitutions." Review by Owner 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. Contractor shall stamp, sign, and date each submittal indicating its representation that the submittal meets all of the requirements of the Contract Documents. Any submission, which in Owner's or Architect's opinion is incomplete, contains numerous errors, or has been checked only superficially by Contractor will be returned unreviewed for resubmission by the Contractor.

3.11.1.4 ***Extent of Review.*** In reviewing shop drawings, the Owner will not verify dimensions and field conditions. The Architect will review and approve shop drawings, product data, and samples for aesthetics and for conformance with the design concept of the Work and the information given in the Contract Documents. The Architect's review shall neither be construed as a complete check nor relieve 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 Architect's attention to the deviations at the time of submission and the Architect has given specific written approval. The 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, or from the necessity of furnishing any Work required by the Contract Documents, which may not be indicated on shop drawings when reviewed. Contractor and Subcontractors shall be solely responsible for determining any quantities, whether or not shown on the shop drawings.

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 Contract and Contractor's name and dated, and each lot submitted must be accompanied by a letter of transmittal referring to the name of the Contract and Contractor 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, if any. 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. Only shop drawings required to be submitted by the Contract Documents shall be reviewed.

3.11.2.2 ***Copies Required.*** Each submittal shall include one (1) legible, reproducible sepia and five (5) legible prints of each drawing, 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: manufacturers' descriptive data for materials, equipment, and fixtures, including catalog sheets showing dimensions, performance, characteristics, and capacities; wiring diagrams and controls; schedules; all seismic calculations and other calculations; and other pertinent information as required.

3.11.2.3 ***Corrections.*** The Contractor shall make any corrections required by Architect and shall resubmit as required by Architect the required number of 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 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 shall be commenced until the submission has been reviewed by Owner and approved by Architect unless specifically directed in writing by the Owner. 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 may be 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 full range 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 Contract, 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 for identification of each item. Each tag or sticker shall have clear space for the review stamps of Contractor and Architect.

3.11.3.2 ***Labels and Instructions.*** Samples of materials, which are generally furnished in containers bearing the manufacturers' descriptive labels and printed application instructions, shall, if not submitted in standard containers, be supplied with such 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 appropriate action in compliance with the Architect's standard procedures.

3.11.3.4 ***Record Drawings and Annotated Specifications.*** The Contractor will prepare and maintain on a current basis an accurate and complete set of Record Drawings showing clearly all changes, revisions, and substitutions during construction, including, without limitation, field changes and the final location of all mechanical equipment, utility lines, ducts, outlets, structural members, walls, partitions, and other significant features, and Annotated Specifications showing clearly all changes, revisions, and substitutions during construction. A copy of such Record Drawings and Annotated Specifications will be delivered to Owner in accordance with the schedule prepared by Contractor. In the event of a specification that allows Contractor to elect one of several brands, makes, or types of material or equipment, the annotations shall show which of the allowable items the Contractor has furnished. The Contractor will update the Record Drawings and Annotated Specifications as often as necessary to keep them current but no less often than weekly. The Record Drawings and Annotated Specifications shall be kept at the Site and available for inspection by the Owner, Inspector of Record and the Architect. On Completion of the Contractor's Work and prior to Application for Final Progress Payment, the Contractor will provide one complete set of Record Drawings and Annotated Specifications to the Owner, certifying them to be a complete and accurate reflection of the actual construction conditions of the Work.

3.11.3.5 ***Equipment Manuals.*** Contractor shall obtain and furnish to the Owner three (3) complete sets of manuals containing the manufacturers' instructions for maintenance and operation of each item of equipment and apparatus furnished under the Contract Documents and any additional data specifically requested under the various sections of the Specifications for each division of the Work. The manuals shall be arranged in proper order, indexed, and placed in three-ring binders. At the Completion of its Work, the Contractor shall certify, by endorsement thereon, that each of the manuals is complete, accurate, and covers all of its Work. Prior to submittal of Contractor's Application for Final Progress Payment, and as a further condition to its approval by the Architect, each Subcontractor shall deliver the manuals, arranged in proper order, indexed, endorsed, and placed in three-ring binders, to the Contractor, who shall assemble these manuals for all divisions of the Work, review them for completeness, and submit them to the Owner through the Architect.

3.11.3.6 ***Owner's Property.*** All shop drawings and samples submitted shall become the Owner's property.

3.11.4 **SUBSTITUTIONS**

3.11.4.1 ***One Product Specified.*** Unless the Specifications state that no substitution is permitted, whenever in the Contract Documents any specific article, device, equipment, product, material, fixture, patented process, form, method, or type of construction is indicated or specified by 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 material, process, or article desired and shall be deemed to be followed by the words "or equal." Contractor may, unless otherwise stated, offer any material, process, or article, which shall be substantially equal or better in every respect to that so indicated or specified and will completely accomplish the purpose of the Contract Documents.

3.11.4.2 ***Two or More Products Specified.*** When two or more acceptable products are specified for an item of the Work, the choice will be up to the Contractor. Contractor shall utilize the same product throughout the Project. If a timely substitution request as set forth in Section 3.11.4.3 is not provided and an "or equal" substitution is requested, the Owner may consider the substitution if the product specified is no longer commercially available. If the Owner allows the substitution to be proposed pursuant to such an untimely request, the Contractor will be responsible for the professional fees incurred by the Architect or Architect's consultants in reviewing the proposed substitution which fees may be withheld from progress payments and/or retention.

3.11.4.3 ***Substitution Request Form.*** Requests for substitutions of products, materials, or processes other than those specified must be made on the Substitution Request form available from the Owner. Any Requests submitted after the deadline specified in the Instructions to Bidders will not be considered, except as noted in paragraph 3.11.4.2. A Substitution Request must be accompanied by evidence as to whether or not the proposed substitution: is equal in quality and serviceability to the specified item; will entail no changes in detail and construction of related work; will be acceptable in consideration of the required design and artistic effect; will provide no cost disadvantage to Owner; and will require no excessive or more expensive maintenance, including adequacy and availability of replacement parts. The burden of proof of these facts shall be upon the Contractor. The Contractor shall furnish with its request sufficient information to determine whether the proposed substitution is equivalent including but not limited to all drawings, specifications, samples, performance data, calculations, and other information as may be required to assist the Architect and the Owner in determining whether the proposed substitution is acceptable. The final decision shall be the Owner's. The written approval of the Owner, consistent with the procedure for Change Orders, shall be required for the use of a proposed substitute material. Owner may condition its approval of the substitution upon delivery to Owner of an extended warranty or other assurances of adequate performance of the substitution. All risks of delay due to the Division of the State Architect's approval, or the approval of any other governmental agency having jurisdiction, of a requested substitution shall be on the requesting party.

3.11.4.4 ***List of Manufacturers and Products Required.*** The Subcontractor shall prepare and submit to the Contractor within thirty (30) days of execution of the Subcontract comprehensive lists, in quadruplicate, of the manufacturers and products proposed for the Project, including information on materials, equipment, and fixtures required by the Contract Documents, as may be required for Contractor's or Architect's preliminary approval. Approval of such lists of products shall not be construed as a substitute for the shop drawings, manufacturer's descriptive data, and samples, which are required by the Contract Documents, but rather as a base from which more detailed submittals shall be developed for the final review of the Contractor and the Architect.

3.11.5 DEFERRED APPROVALS

Deferred approvals shall be submitted and processed pursuant to the requirements of Division 1 of the Specifications. All risks of delay due to the Division of the State Architect's, or any other governmental agency having jurisdiction, approval of a deferred approval shall be on the requesting party.

3.12 CUTTING AND PATCHING

3.12.1 SCOPE

The Contractor shall be responsible for cutting, fitting, or patching required to Complete the Work or to make its parts fit together properly.

3.12.2 CONSENT

The Contractor shall not damage or endanger a portion of the Work or fully or partially completed construction of the Owner or a separate contractor by cutting, patching, or otherwise altering such construction, or by excavation. The Contractor shall not cut or otherwise alter such construction by the Owner or a separate contractor except with written consent of the Owner and of such separate contractor; such consent shall not be unreasonably withheld. The Contractor shall not unreasonably withhold from the Owner or a separate contractor the Contractor's consent to cutting or otherwise altering the Work. All cutting shall be done promptly, and all repairs shall be made as necessary.

3.12.3 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, subject to replacement at its own expense and without reimbursement under the Contract. Agency approvals shall be obtained by the Architect, not by the Contractor.

3.12.4 SUBSEQUENT REMOVAL

Permission to patch any areas or items of the Work shall not constitute a waiver of the Owner'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 Owner, the patching does not satisfactorily restore quality and appearance of the Work or does not otherwise conform to the Contract Documents. Any costs caused by defective or ill-timed cutting or patching shall be borne by the person or entity responsible.

3.13 CLEANING UP

3.13.1 CONTRACTOR'S RESPONSIBILITY

The Contractor shall keep the Site and surrounding area free from accumulation of waste material or rubbish caused by operations under the Contract. The Site shall be maintained in a neat and orderly condition. All crates, cartons, paper, and other flammable waste materials shall be removed from Work areas and properly disposed of at the end of each day. The Contractor shall continuously remove from and about the Site the waste materials, rubbish, tools, construction equipment, machinery, and materials no longer required for the Work.

3.13.2 FAILURE TO CLEANUP

If the Contractor fails to clean up as provided in the Contract Documents, the Owner may do so, without prior notice to the Contractor and the cost thereof shall be invoiced to the Contractor and withheld from progress payments and/or retention. Each Subcontractor shall have the responsibility for the cleanup of its own Work. If the Subcontractor fails to clean up, the Contractor must do so.

3.13.3 CONSTRUCTION BUILDINGS

When directed by the Owner or the Architect, Contractor and Subcontractor shall dismantle temporary structures, if any, and remove from the Site all construction and installation equipment, fences, scaffolding, surplus materials, rubbish, and supplies belonging to Contractor or Subcontractor. If the Contractor does not remove the tools, equipment, machinery, and materials within fifteen (15) days after Completion of its Work, then they shall be deemed abandoned, and the Owner can dispose of them for its own benefit in whatever way it deems appropriate. Contractor shall pay for any costs to dispose of the items.

3.14 ACCESS TO WORK

The Contractor shall provide the Owner, the Architect, and the Inspector of Record, access to the Work in preparation and progress wherever located.

3.15 ROYALTIES AND PATENTS

3.15.1 PAYMENT AND INDEMNITY

The Contractor shall pay all royalties and license fees. The Contractor shall defend suits or claims of infringement of patent rights and shall hold the Owner and the Architect harmless and indemnify them, to the extent not caused by the Owner's active negligence, sole negligence or willful misconduct, from loss on account thereof but shall not be responsible for such defense or loss when a particular design, process, or product of a particular manufacturer is required by the Contract Documents. However, if the Contractor has reason to believe the required design, process, or product is an infringement of a patent, the Contractor shall be responsible for such loss unless such information is promptly furnished to the Owner and Architect.

3.15.2 REVIEW

The review by the Owner or 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 SCOPE: CONTRACTOR

To the fullest extent permitted by law, the Contractor shall defend, indemnify, and hold harmless the Owner, any construction manager, Architect, Architect's consultants, the Inspector of Record, the State of California, and their respective agents, employees, officers, volunteers, Boards of Trustees, members of the Boards of Trustees, and directors ("Indemnitees"), from and against claims, actions, damages, liabilities, losses (including but not limited to injury or death of persons, property damage, and compensation owed to other parties), and expenses (including but not limited to attorneys' fees and costs including fees of consultants) alleged by third parties against Indemnitees arising out of or resulting from the following: Contractor's, its Subcontractors', or its suppliers' performance of the Work, including but not limited to the Contractor's or its Subcontractors' use of the Site; the Contractor's or its Subcontractors' construction of the Work, or failure to construct the Work, or any portion thereof; the use, misuse, erection, maintenance, operation, or failure of any machinery or equipment including, but not limited to, scaffolds, derricks, ladders, hoists, and rigging supports, whether or not such machinery or equipment was furnished, rented, or loaned by any of the Indemnitees; or any act, omission, negligence, or willful misconduct of the Contractor or its Subcontractors or their respective agents, employees, material or equipment suppliers, invitees, or licensees but only to the extent caused in whole or in part by the acts or omissions of the Contractor, its Subcontractors, its suppliers, anyone directly or indirectly employed by any of them, or anyone for whose acts they may be liable, regardless of whether or not such claim, damage, loss, or expense is caused in part by a party indemnified hereunder. Such obligation shall not be construed to negate, abridge, or reduce other rights or obligations of indemnity, which would otherwise exist as to a party, person, or entity described in this paragraph. The obligation to defend, indemnify and hold harmless includes any claims or actions by third parties arising out of or resulting from Labor Code section 2810. Contractor shall have no obligation to defend or indemnify the Indemnitees against claims, actions, damages, liabilities, losses, and expenses caused by the active negligence, sole negligence or willful misconduct of Indemnitees. This indemnification shall apply to all liability, as provided for above, regardless of whether any insurance policies are applicable, and insurance policy limits do not act as a limitation upon the amount of the indemnification to be provided by the Contractor.

3.16.2 SCOPE: SUBCONTRACTORS

3.16.2.1 ***Indemnity.*** The Subcontractors shall defend, indemnify, and hold harmless the Indemnitees from and against claims, actions, damages, liabilities, and losses (including but not limited to injury or death of persons, property damage, and compensation owed to other parties), and expenses (including but not limited to attorneys' fees and costs including fees of consultants) alleged by third parties against Indemnitees arising out of or resulting from the following: Subcontractors' performance of the Work, including but not limited to the Subcontractors' use of the Site; the Subcontractors' construction of the Work or failure to construct the Work or any portion thereof; the use, misuse, erection, maintenance, operation, or failure of any machinery or equipment, including, but not limited to, scaffolds, derricks, ladders, hoists, and rigging supports, whether or not such machinery or equipment was furnished, rented, or loaned by any of the Indemnitees; or any act, omission, negligence, or willful misconduct of the Subcontractors or their respective agents, employees, material or equipment suppliers, invitees, or licensees but

only to the extent caused in whole or in part by the acts or omissions of the Subcontractors, anyone directly or indirectly employed by any of them, or anyone for whose acts they may be liable, regardless of whether or not such claim, damage, loss, or expense is caused in part by a party indemnified hereunder. Such obligation shall not be construed to negate, abridge, or reduce other rights or obligations of indemnity, which would otherwise exist as to a party, person, or entity described in this paragraph. This obligation to defend, indemnify and hold harmless includes any claims or actions by third parties arising out of or resulting from Labor Code section 2810. Subcontractors shall have no obligation to defend or indemnify the Indemnitees against claims, actions, damages, liabilities, losses, and expenses caused by the active negligence, sole negligence or willful misconduct of Indemnitees. This indemnification shall apply to all liability, as provided for above, regardless of whether any insurance policies are applicable, and insurance policy limits do not act as a limitation upon the amount of the indemnification to be provided by the Subcontractors.

3.16.2.2 ***Joint and Several Liability.*** In the event more than one Subcontractor is connected with an accident or occurrence covered by this indemnification, then all such Subcontractors shall be jointly and severally responsible to each of the Indemnitees for indemnification, and the ultimate responsibility among such indemnifying Subcontractors for the loss and expense of any such indemnification shall be resolved without jeopardy to any Indemnitee. The provisions of the indemnity provided for herein shall not be construed to indemnify any Indemnitee for its own negligence if not permitted by law or to eliminate or reduce any other indemnification or right which any Indemnitee has by law or equity.

3.16.3 NO LIMITATION

The Contractor's and the Subcontractor's obligation to indemnify and defend the Indemnitees hereunder shall include, without limitation, any and all claims, damages, and costs: for injury to persons and property (including loss of use), and sickness, disease or death of any person; for breach of any warranty, express or implied; for failure of the Contractor or the Subcontractor to comply with any applicable governmental law, rule, regulation, or other requirement; and for products installed in or used in connection with the Work.

3.17 OWNER AS INTENDED BENEFICIARY

The Owner is an intended beneficiary of any architectural or engineering work secured by, or performed by, the Contractor to fulfill its obligations under the Contract. Contractor shall state in its contracts with architectural or engineering consultants that their work is for the intended benefit of the Owner.

3.18 NOTICE OF EXCUSE FOR NONPERFORMANCE

If Contractor believes that acts or omissions of Owner (including but not limited to Owner caused delay) have prevented Contractor from performing the Work as required by the Contract Documents and Contractor intends to rely on Owner's acts or omissions and Civil Code section 1511(1) as reasons to excuse Contractor's nonperformance or to support, among other things, Contractor's requests for time extensions under Section 4.5, below, Contractor shall provide

written notice of the excuse within five (5) days of the Owner's acts or omissions. If Contractor fails to timely submit the written notice, Contractor shall have waived any right to later rely on the acts or omissions as a defense to Contractor's nonperformance or as the basis for a time extension, regardless of the merits of the defense or time extension. Contractor will not have satisfied a condition precedent or exhausted administrative remedies. Contractor acknowledges that these written notices are of critical importance to the Owner's management of the Work and Project and the mitigation of costs and delays to the Work and Project.

3.19 RECOVERY OF COSTS, DAMAGES, OR TIME EXTENSIONS FROM OWNER

Notwithstanding any other provisions of the Contract Documents, Contractor expressly waives its right to recover any special, consequential, or indirect damages from Owner in relation to this Contract or the Project. Contractor may only recover general (also known as direct) damages from Owner to the extent allowed by the Contract Documents.

A Notice of Potential Change, Change Order Request and, if necessary, a Claim (see Sections 4.5, 7.2, and 7.6, below) are the exclusive means for Contractor to preserve its rights to recover any costs, damages, or time extensions related to the Contract or the Project from Owner, including but not limited to alleged breaches of contract based on extra work, delay, wrongful withholding, or wrongful termination. Contractor's failure to comply with the Contract Documents' procedures for a COR, CO, and Claim (including but not limited to Sections 4.5, 7.2, 7.6, and 7.7, below) may completely waive Contractor's rights to recovery any such costs or damages.

3.20 USE OF FEDERAL FUNDS

If federal funds are being used either in whole or in part for this Project (see the Instructions to Bidders), then the Project is subject to, and Contractor must comply with, all applicable federal laws including but not limited to the federal regulations set forth in CFR Title 2, Part 200. Accordingly, Contractor agrees to comply with all such federal requirements, including but not limited to the following:

A. EQUAL EMPLOYMENT OPPORTUNITY. Contractor agrees to comply with and be bound by Title 14, CFR, Section 60-1.4(b), in accordance with Executive Order 11246, "Equal Employment Opportunity" (30 FR 12319, 12935, 3 CFR Part, 1964-1965 Comp., p. 339), as amended by Executive Order 11375, "Amending Executive Order 11246 Relating to Equal Employment Opportunity," and implementing regulations at 41 CFR part 60, "Office of Federal Contract Compliance Programs, Equal Employment Opportunity, Department of Labor," the terms of which are incorporated by reference as though set forth in full herein.

B. DAVIS-BACON ACT. If the Contract Price exceeds $2,000, Contractor agrees to comply with and be bound by, and assist Owner in ensuring compliance with, the Davis-Bacon Act, as applicable and comply with the requirements and wage determinations. (40 U.S.C. §§ 3141-3144; 3146-3148 as supplemented by Department of Labor regulations (29 CFR Part 5, "Labor Standards Provisions Applicable to Contracts Covering Federally Financed and Assisted Construction").) Contractor is required to pay wages to laborers and mechanics at a rate not less than the prevailing

wages specified in a wage determination made by the Secretary of Labor. Additionally, Contractor is required to pay wages not less than once a week. Furthermore, pursuant to the Copeland "Anti-Kickback" Act (40 U.S.C. 3145), as supplemented by Department of Labor regulations (29 CFR Part 3, "Contractors and Subcontractors on Public Building or Public Work Financed in Whole or in Part by Loans or Grants from the United States"), Contractor is prohibited from inducing, by any means, any person employed in the construction, completion, or repair of public work, to give up any part of the compensation to which he or she is otherwise entitled.

Any contract in excess of $2,000 is subject to the following:

(1) *Minimum Wages*

a. ***Wage rates and fringe benefits.*** All laborers and mechanics employed or working upon the site of the work (or otherwise working in construction or development of the project under a development statute), will be paid unconditionally and not less often than once a week, and without subsequent deduction or rebate on any account (except such payroll deductions as are permitted by regulations issued by the Secretary of Labor under the Copeland Act (29 CFR part 3)), the full amount of basic hourly wages and bona fide fringe benefits (or cash equivalents thereof) due at time of payment computed at rates not less than those contained in the wage determination of the Secretary of Labor which is attached hereto and made a part hereof, regardless of any contractual relationship which may be alleged to exist between the contractor and such laborers and mechanics. As provided in paragraphs (d) and (e) of this section, the appropriate wage determinations are effective by operation of law even if they have not been attached to the contract. Contributions made or costs reasonably anticipated for bona fide fringe benefits under the Davis-Bacon Act (40 U.S.C. 3141(2)(B)) on behalf of laborers or mechanics are considered wages paid to such laborers or mechanics, subject to the provisions of paragraph (a)(1)(v) of this section; also, regular contributions made or costs incurred for more than a weekly period (but not less often than quarterly) under plans, funds, or programs which cover the particular weekly period, are deemed to be constructively made or incurred during such weekly period. Such laborers and mechanics must be paid the appropriate wage rate and fringe benefits on the wage determination for the classification(s) of work actually performed, without regard to skill, except as provided in paragraph (a)(4) of this section. Laborers or mechanics performing work in more than one classification may be compensated at the rate specified for each classification for the time actually worked therein: *Provided,* That the employer's payroll records accurately set forth the time spent in each classification in which work is performed. The wage determination (including any additional classifications and wage rates conformed under paragraph (a)(1)(iii) of this section) and the Davis-Bacon poster (WH–1321) must be posted at all times by the contractor and its subcontractors at the site of the work in a prominent and accessible place where it can be easily seen by the workers.

b. ***Frequently reoccurring classifications.***

i. In addition to wage and fringe benefit rates that have been determined to be prevailing under the procedures set forth in 29 CFR part 1, a wage determination may contain, pursuant to § 1.3(f), wage and fringe benefit

rates for classifications of laborers and mechanics for which conformance requests are regularly submitted pursuant to paragraph (a)(1)(iii) of this section, provided that:

1. The work performed by the classification is not performed by a classification in the wage determination for which a prevailing wage rate has been determined;
2. The classification is used in the area by the construction industry; and
3. The wage rate for the classification bears a reasonable relationship to the prevailing wage rates contained in the wage determination.

ii. The Administrator will establish wage rates for such classifications in accordance with paragraph (a)(1)(iii)(A)(*3*) of this section. Work performed in such a classification must be paid at no less than the wage and fringe benefit rate listed on the wage determination for such classification.

c. **Conformance.**

i. The contracting officer must require that any class of laborers or mechanics, including helpers, which is not listed in the wage determination and which is to be employed under the contract be classified in conformance with the wage determination. Conformance of an additional classification and wage rate and fringe benefits is appropriate only when the following criteria have been met:

1. The work to be performed by the classification requested is not performed by a classification in the wage determination; and
2. The classification is used in the area by the construction industry; and
3. The proposed wage rate, including any bona fide fringe benefits, bears a reasonable relationship to the wage rates contained in the wage determination.

ii. The conformance process may not be used to split, subdivide, or otherwise avoid application of classifications listed in the wage determination.

iii. If the contractor and the laborers and mechanics to be employed in the classification (if known), or their representatives, and the contracting officer agree on the classification and wage rate (including the amount designated for fringe benefits where appropriate), a report of the action taken will be sent by the contracting officer by email to *DBAconformance@dol.gov*. The Administrator, or an authorized representative, will approve, modify, or disapprove every additional classification action within 30 days of receipt and so advise the contracting officer or will notify the contracting officer within the 30–day period that additional time is necessary.

iv. In the event the contractor, the laborers or mechanics to be employed in the classification or their representatives, and the contracting officer do not agree on the proposed classification and wage rate (including the amount designated for fringe benefits, where appropriate), the contracting officer will, by email to *DBAconformance@dol.gov*, refer the questions, including the views of all interested parties and the recommendation of the contracting officer, to the Administrator for determination. The Administrator, or an

authorized representative, will issue a determination within 30 days of receipt and so advise the contracting officer or will notify the contracting officer within the 30–day period that additional time is necessary.

v. The contracting officer must promptly notify the contractor of the action taken by the Wage and Hour Division under paragraphs (a)(1)(iii)(C) and (D) of this section. The contractor must furnish a written copy of such determination to each affected worker or it must be posted as a part of the wage determination. The wage rate (including fringe benefits where appropriate) determined pursuant to paragraph (a)(1)(iii)(C) or (D) of this section must be paid to all workers performing work in the classification under this contract from the first day on which work is performed in the classification.

d. **Fringe benefits not expressed as an hourly rate.** Whenever the minimum wage rate prescribed in the contract for a class of laborers or mechanics includes a fringe benefit which is not expressed as an hourly rate, the contractor may either pay the benefit as stated in the wage determination or may pay another bona fide fringe benefit or an hourly cash equivalent thereof.

e. ***Unfunded plans.*** If the contractor does not make payments to a trustee or other third person, the contractor may consider as part of the wages of any laborer or mechanic the amount of any costs reasonably anticipated in providing bona fide fringe benefits under a plan or program, *Provided,* That the Secretary of Labor has found, upon the written request of the contractor, in accordance with the criteria set forth in § 5.28, that the applicable standards of the Davis-Bacon Act have been met. The Secretary of Labor may require the contractor to set aside in a separate account assets for the meeting of obligations under the plan or program.

f. ***Interest.*** In the event of a failure to pay all or part of the wages required by the contract, the contractor will be required to pay interest on any underpayment of wages.

(2) *Withholding*

a. ***Withholding requirements.*** Owner may, upon its own action, or must, upon written request of an authorized representative of the Department of Labor, withhold or cause to be withheld from the contractor so much of the accrued payments or advances as may be considered necessary to satisfy the liabilities of the prime contractor or any subcontractor for the full amount of wages and monetary relief, including interest, required by the clauses set forth in paragraph (a) of this section for violations of this contract, or to satisfy any such liabilities required by any other Federal contract, or federally assisted contract subject to Davis-Bacon labor standards, that is held by the same prime contractor (as defined in § 5.2). The necessary funds may be withheld from the contractor under this contract, any other Federal contract with the same prime contractor, or any other federally assisted contract that is subject to Davis-Bacon labor standards requirements and is held by the same prime contractor, regardless of whether the other contract was awarded or assisted by the same agency, and such funds may be used to satisfy the contractor liability for which the funds were withheld. In the event of a contractor's failure to pay any laborer or mechanic, including any apprentice or helper working on the site of the work (or otherwise working in

construction or development of the project under a development statute) all or part of the wages required by the contract, or upon the contractor's failure to submit the required records as discussed in paragraph (a)(3)(iv) of this section, Owner may on its own initiative and after written notice to the contractor take such action as may be necessary to cause the suspension of any further payment, advance, or guarantee of funds until such violations have ceased.

b. ***Priority to withheld funds.*** The Department has priority to funds withheld or to be withheld in accordance with paragraph (a)(2)(i) or (b)(3)(i) of this section, or both, over claims to those funds by:
   i. A contractor's surety(ies), including without limitation performance bond sureties and payment bond sureties;
   ii. A contracting agency for its reprocurement costs;
   iii. A trustee(s) (either a court-appointed trustee or a U.S. trustee, or both) in bankruptcy of a contractor, or a contractor's bankruptcy estate;
   iv. A contractor's assignee(s);
   v. A contractor's successor(s); or
   vi. A claim asserted under the Prompt Payment Act, 31 U.S.C. 3901–3907.

(3) *Records and certified payrolls*

a. **Basic record requirements**
   i. *Length of record retention.* All regular payrolls and other basic records must be maintained by the contractor and any subcontractor during the course of the work and preserved for all laborers and mechanics working at the site of the work (or otherwise working in construction or development of the project under a development statute) for a period of at least 3 years after all the work on the prime contract is completed.
   ii. *Information required.* Such records must contain the name; Social Security number; last known address, telephone number, and email address of each such worker; each worker's correct classification(s) of work actually performed; hourly rates of wages paid (including rates of contributions or costs anticipated for bona fide fringe benefits or cash equivalents thereof of the types described in 40 U.S.C. 3141(2)(B) of the Davis-Bacon Act); daily and weekly number of hours actually worked in total and on each covered contract; deductions made; and actual wages paid.
   iii. *Additional records relating to fringe benefits.* Whenever the Secretary of Labor has found under paragraph (a)(1)(v) of this section that the wages of any laborer or mechanic include the amount of any costs reasonably anticipated in providing benefits under a plan or program described in 40 U.S.C. 3141(2)(B) of the Davis-Bacon Act, the contractor must maintain records which show that the commitment to provide such benefits is enforceable, that the plan or program is financially responsible, and that the plan or program has been communicated in writing to the laborers or mechanics affected, and records which show the costs anticipated or the actual cost incurred in providing such benefits.
   iv. *Additional records relating to apprenticeship.* Contractors with apprentices working under approved programs must maintain written evidence of the

registration of apprenticeship programs, the registration of the apprentices, and the ratios and wage rates prescribed in the applicable programs.

v. *Additional records relating to apprenticeship.* Contractors with apprentices working under approved programs must maintain written evidence of the registration of apprenticeship programs, the registration of the apprentices, and the ratios and wage rates prescribed in the applicable programs.

b. **Certified payroll requirements**

i. *Frequency and method of submission.* The contractor or subcontractor must submit weekly, for each week in which any DBA- or Related Acts-covered work is performed, certified payrolls to the appropriate Federal agency if the agency is a party to the contract, but if the agency is not such a party, the contractor will submit the certified payrolls to Owner, or other entity, as the case may be, that maintains such records, for transmission to the appropriate agency. The prime contractor is responsible for the submission of all certified payrolls by all subcontractors. A contracting agency or prime contractor may permit or require contractors to submit certified payrolls through an electronic system, as long as the electronic system requires a legally valid electronic signature; the system allows the contractor, the contracting agency, and the Department of Labor to access the certified payrolls upon request for at least 3 years after the work on the prime contract has been completed; and the contracting agency or prime contractor permits other methods of submission in situations where the contractor is unable or limited in its ability to use or access the electronic system.

ii. *Information required.* The certified payrolls submitted must set out accurately and completely all of the information required to be maintained under paragraph (a)(3)(i)(B) of this section, except that full Social Security numbers and last known addresses, telephone numbers, and email addresses must not be included on weekly transmittals. Instead, the certified payrolls need only include an individually identifying number for each worker (*e.g.,* the last four digits of the worker's Social Security number). The required weekly certified payroll information may be submitted using Optional Form WH–347 or in any other format desired. Optional Form WH–347 is available for this purpose from the Wage and Hour Division website at *https://www.dol.gov/sites/dolgov/files/WHD/legacy/files/wh347/.pdf* or its successor website. It is not a violation of this section for a prime contractor to require a subcontractor to provide full Social Security numbers and last known addresses, telephone numbers, and email addresses to the prime contractor for its own records, without weekly submission by the subcontractor to Owner, or other entity, as the case may be, that maintains such records).

iii. *Statement of Compliance.* Each certified payroll submitted must be accompanied by a "Statement of Compliance," signed by the contractor or subcontractor, or the contractor's or subcontractor's agent who pays or supervises the payment of the persons working on the contract, and must certify the following:

1. That the certified payroll for the payroll period contains the information required to be provided under paragraph (a)(3)(ii) of this section, the appropriate information and basic records are being maintained under paragraph (a)(3)(i) of this section, and such information and records are correct and complete;
2. That each laborer or mechanic (including each helper and apprentice) working on the contract during the payroll period has been paid the full weekly wages earned, without rebate, either directly or indirectly, and that no deductions have been made either directly or indirectly from the full wages earned, other than permissible deductions as set forth in 29 CFR part 3; and
3. That each laborer or mechanic has been paid not less than the applicable wage rates and fringe benefits or cash equivalents for the classification(s) of work actually performed, as specified in the applicable wage determination incorporated into the contract.

iv. *Use of Optional Form WH–347.* The weekly submission of a properly executed certification set forth on the reverse side of Optional Form WH–347 will satisfy the requirement for submission of the "Statement of Compliance" required by paragraph (a)(3)(ii)(C) of this section.

v. *Signature.* The signature by the contractor, subcontractor, or the contractor's or subcontractor's agent must be an original handwritten signature or a legally valid electronic signature.

vi. *Falsification.* The falsification of any of the above certifications may subject the contractor or subcontractor to civil or criminal prosecution under 18 U.S.C. 1001 and 31 U.S.C. 3729.

vii. *Length of certified payroll retention. The contractor or subcontractor must preserve all certified payrolls during the course of the work and for a period of 3 years after all the work on the prime contract is completed.*

viii. *Contracts, subcontracts, and related documents.* The contractor or subcontractor must maintain this contract or subcontract and related documents including, without limitation, bids, proposals, amendments, modifications, and extensions. The contractor or subcontractor must preserve these contracts, subcontracts, and related documents during the course of the work and for a period of 3 years after all the work on the prime contract is completed.

c. **Required disclosures and access**

i. *Required record disclosures and access to workers.* The contractor or subcontractor must make the records required under paragraphs (a)(3)(i) through (iii) of this section, and any other documents that the Owner or the Department of Labor deems necessary to determine compliance with the labor standards provisions of any of the applicable statutes referenced by § 5.1, available for inspection, copying, or transcription by Owner's authorized representatives or the Department of Labor, and must permit such representatives to interview workers during working hours on the job.

ii. *Sanctions for non-compliance with records and worker access requirements.* If the contractor or subcontractor fails to submit the required

records or to make them available, or refuses to permit worker interviews during working hours on the job, the Federal agency may, after written notice to the contractor, Owner, or other entity, as the case may be, that maintains such records or that employs such workers, take such action as may be necessary to cause the suspension of any further payment, advance, or guarantee of funds. Furthermore, failure to submit the required records upon request or to make such records available, or to permit worker interviews during working hours on the job, may be grounds for debarment action pursuant to § 5.12. In addition, any contractor or other person that fails to submit the required records or make those records available to WHD within the time WHD requests that the records be produced will be precluded from introducing as evidence in an administrative proceeding under 29 CFR part 6 any of the required records that were not provided or made available to WHD. WHD will take into consideration a reasonable request from the contractor or person for an extension of the time for submission of records. WHD will determine the reasonableness of the request and may consider, among other things, the location of the records and the volume of production.

iii. *Required information disclosures.* Contractors and subcontractors must maintain the full Social Security number and last known address, telephone number, and email address of each covered worker, and must provide them upon request to the appropriate Federal agency if the agency is a party to the contract, or to the Wage and Hour Division of the Department of Labor. If the Federal agency is not such a party to the contract, the contractor, subcontractor, or both, must, upon request, provide the full Social Security number and last known address, telephone number, and email address of each covered worker to Owner, or other entity, as the case may be, that maintains such records, for transmission to the appropriate agency, the contractor, or the Wage and Hour Division of the Department of Labor for purposes of an investigation or other compliance action.

(4) *Apprentices and equal employment opportunity*

a. **Apprentices**

i. *Rate of pay.* Apprentices will be permitted to work at less than the predetermined rate for the work they perform when they are employed pursuant to and individually registered in a bona fide apprenticeship program registered with the U.S. Department of Labor, Employment and Training Administration, Office of Apprenticeship (OA), or with a State Apprenticeship Agency recognized by the OA. A person who is not individually registered in the program, but who has been certified by the OA or a State Apprenticeship Agency (where appropriate) to be eligible for probationary employment as an apprentice, will be permitted to work at less than the predetermined rate for the work they perform in the first 90 days of probationary employment as an apprentice in such a program. In the event the OA or a State Apprenticeship Agency recognized by the OA withdraws approval of an apprenticeship program, the contractor will no longer be

permitted to use apprentices at less than the applicable predetermined rate for the work performed until an acceptable program is approved.

ii. *Fringe benefits.* Apprentices must be paid fringe benefits in accordance with the provisions of the apprenticeship program. If the apprenticeship program does not specify fringe benefits, apprentices must be paid the full amount of fringe benefits listed on the wage determination for the applicable classification. If the Administrator determines that a different practice prevails for the applicable apprentice classification, fringe benefits must be paid in accordance with that determination.

iii. *Apprenticeship ratio.* The allowable ratio of apprentices to journeyworkers on the job site in any craft classification must not be greater than the ratio permitted to the contractor as to the entire work force under the registered program or the ratio applicable to the locality of the project pursuant to paragraph (a)(4)(i)(D) of this section. Any worker listed on a payroll at an apprentice wage rate, who is not registered or otherwise employed as stated in paragraph (a)(4)(i)(A) of this section, must be paid not less than the applicable wage rate on the wage determination for the classification of work actually performed. In addition, any apprentice performing work on the job site in excess of the ratio permitted under this section must be paid not less than the applicable wage rate on the wage determination for the work actually performed.

iv. *Reciprocity of ratios and wage rates.* Where a contractor is performing construction on a project in a locality other than the locality in which its program is registered, the ratios and wage rates (expressed in percentages of the journeyworker's hourly rate) applicable within the locality in which the construction is being performed must be observed. If there is no applicable ratio or wage rate for the locality of the project, the ratio and wage rate specified in the contractor's registered program must be observed.

b. ***Equal employment opportunity.*** The use of apprentices and journeyworkers under this part must be in conformity with the equal employment opportunity requirements of Executive Order 11246, as amended, and 29 CFR part 30.

(5) *Compliance with Copeland Act requirements.* The contractor shall comply with the requirements of 29 CFR part 3, which are incorporated by reference in this contract.

(6) *Subcontracts.* The contractor or subcontractor must insert in any subcontracts the clauses contained in paragraphs (a)(1) through (11) of this section, along with the applicable wage determination(s) and such other clauses or contract modifications as the appropriate agency and/or Owner may by appropriate instructions require, and a clause requiring the subcontractors to include these clauses and wage determination(s) in any lower tier subcontracts. The prime contractor is responsible for the compliance by any subcontractor or lower tier subcontractor with all the contract clauses in this section. In the event of any violations of these clauses, the prime contractor and any subcontractor(s) responsible will be liable for any unpaid wages and monetary relief, including interest from the date of the underpayment or loss, due to any workers of lower-tier subcontractors, and may be subject to debarment, as appropriate.

(7) *Contract termination: debarment.* A breach of the contract clauses in 29 CFR 5.5 may be grounds for termination of the contract, and for debarment as a contractor and a subcontractor as provided in 29 CFR 5.12.

(8) *Compliance with Davis-Bacon and Related Act requirements.* All rulings and interpretations of the Davis-Bacon and Related Acts contained in 29 CFR parts 1, 3, and 5 are herein incorporated by reference in this contract.

(9) *Disputes concerning labor standards.* Disputes arising out of the labor standards provisions of this contract shall not be subject to the general disputes clause of this contract. Such disputes shall be resolved in accordance with the procedures of the Department of Labor set forth in 29 CFR parts 5, 6, and 7. Disputes within the meaning of this clause include disputes between the contractor (or any of its subcontractors) and the contracting agency, the U.S. Department of Labor, or the employees or their representatives.

(10) *Certification of eligibility.*

a. By entering into this contract, the contractor certifies that neither it nor any person or firm who has an interest in the contractor's firm is a person or firm ineligible to be awarded Government contracts by virtue of 40 U.S.C. 3144(b) or § 5.12(a).

b. No part of this contract shall be subcontracted to any person or firm ineligible for award of a Government contract by virtue of 40 U.S.C. 3144(b) or § 5.12(a).

c. The penalty for making false statements is prescribed in the U.S. Code, Title 18 Crimes and Criminal Procedure, 18 U.S.C. 1001.

(11) ***Anti-retaliation.*** It is unlawful for any person to discharge, demote, intimidate, threaten, restrain, coerce, blacklist, harass, or in any other manner discriminate against, or to cause any person to discharge, demote, intimidate, threaten, restrain, coerce, blacklist, harass, or in any other manner discriminate against, any worker or job applicant for:

a. Notifying any contractor of any conduct which the worker reasonably believes constitutes a violation of the DBA, Related Acts, this part, or 29 CFR part 1 or 3;

b. Filing any complaint, initiating or causing to be initiated any proceeding, or otherwise asserting or seeking to assert on behalf of themselves or others any right or protection under the DBA, Related Acts, this part, or 29 CFR part 1 or 3;

c. Cooperating in any investigation or other compliance action, or testifying in any proceeding under the DBA, Related Acts, this part, or 29 CFR part 1 or 3; or

d. Informing any other person about their rights under the DBA, Related Acts, this part, or 29 CFR part 1 or 3.

(12) *Copies of Wage Determinations.* Copies of applicable wage determinations are included in the bid package for this contract, and are incorporated by reference as Contract Documents.

C. CONTRACT WORK HOURS AND SAFETY STANDARDS ACT. If the Contract Price exceeds $100,000 that involve the employment of mechanics or laborers, Contractor agrees to comply with and be bound by, and assist Owner in ensuring compliance with, the Contract Work Hours and Safety Standards Act, as applicable. (40 U.S.C. 3702 and 3704, as supplemented by Department of Labor regulations (29 CFR Part 5).) Under 40 U.S.C. 3702 of the Act, each contractor must be required to compute the wages of every mechanic and laborer on the basis of a standard work week of 40 hours. Work in excess of the standard work week is permissible provided that the worker is compensated at a rate of not less than one and a half times the basic rate of pay for all hours worked in excess of 40 hours in the work week. The requirements of 40

U.S.C. 3704 are applicable to construction work and provide that no laborer or mechanic must be required to work in surroundings or under working conditions which are unsanitary, hazardous or dangerous. These requirements do not apply to the purchases of supplies or materials or articles ordinarily available on the open market, or contracts for transportation or transmission of intelligence.

In addition to the above, any contract in excess of $100,000 is subject to the following:

(1) *Overtime requirements.* No contractor or subcontractor contracting for any part of the conract work which may require or involve the employment of laborers or mechanics shall require or permit any such laborer or mechanic in any workweek in which he or she is employed on such work to work in excess of forty hours in such workweek unless such laborer or mechanic receives compensation at a rate not less than one and one-half times the basic rate of pay for all hours worked in excess of forty hours in such workweek.

(2) *Violation; liability for unpaid wages; liquidated damages.* In the event of any violation of the clause set forth in paragraph (b)(1) of this section the contractor and any subcontractor responsible therefor shall be liable for the unpaid wages and interest from the date of the underpayment. In addition, such contractor and subcontractor shall be liable to the United States (in the case of work done under contract for the District of Columbia or a territory, to such District or to such territory), for liquidated damages. Such liquidated damages shall be computed with respect to each individual laborer or mechanic, including watchpersons and guards, employed in violation of the clause set forth in paragraph (b)(1) of this section, in the sum of $31 for each calendar day on which such individual was required or permitted to work in excess of the standard workweek of forty hours without payment of the overtime wages required by the clause set forth in paragraph (b)(1).

(3) Withholding for unpaid wages and liquidated damages

a. ***Withholding process.*** Owner may, upon its own action, or must, upon written request of an authorized representative of the Department of Labor, withhold or cause to be withheld from the contractor so much of the accrued payments or advances as may be considered necessary to satisfy the liabilities of the prime contractor or any subcontractor for any unpaid wages; monetary relief, including interest; and liquidated damages required by the clauses set forth in this paragraph (b) on this contract, any other Federal contract with the same prime contractor, or any other federally assisted contract subject to the Contract Work Hours and Safety Standards Act that is held by the same prime contractor (as defined in § 5.2). The necessary funds may be withheld from the contractor under this contract, any other Federal contract with the same prime contractor, or any other federally assisted contract that is subject to the Contract Work Hours and Safety Standards Act and is held by the same prime contractor, regardless of whether the other contract was awarded or assisted by the same agency, and such funds may be used to satisfy the contractor liability for which the funds were withheld.

b. ***Priority to withheld funds.*** The Department has priority to funds withheld or to be withheld in accordance with paragraph (a)(2)(i) or (b)(3)(i) of this section, or both, over claims to those funds by:

    i. A contractor's surety(ies), including without limitation performance bond sureties and payment bond sureties;

ii. A contracting agency for its reprocurement costs;
iii. A trustee(s) (either a court-appointed trustee or a U.S. trustee, or both) in bankruptcy of a contractor, or a contractor's bankruptcy estate;
iv. A contractor's assignee(s);
v. A contractor's successor(s); or
vi. A claim asserted under the Prompt Payment Act, 31 U.S.C. 3901–3907.

c. ***Subcontracts.*** The contractor or subcontractor must insert in any subcontracts the clauses set forth in paragraphs (b)(1) through (5) of this section and a clause requiring the subcontractors to include these clauses in any lower tier subcontracts. The prime contractor is responsible for compliance by any subcontractor or lower tier subcontractor with the clauses set forth in paragraphs (b)(1) through (5). In the event of any violations of these clauses, the prime contractor and any subcontractor(s) responsible will be liable for any unpaid wages and monetary relief, including interest from the date of the underpayment or loss, due to any workers of lower-tier subcontractors, and associated liquidated damages and may be subject to debarment, as appropriate.

d. ***Anti-retaliation.*** It is unlawful for any person to discharge, demote, intimidate, threaten, restrain, coerce, blacklist, harass, or in any other manner discriminate against, or to cause any person to discharge, demote, intimidate, threaten, restrain, coerce, blacklist, harass, or in any other manner discriminate against, any worker or job applicant for:
i. Notifying any contractor of any conduct which the worker reasonably believes constitutes a violation of the Contract Work Hours and Safety Standards Act (CWHSSA) or its implementing regulations in this part;
ii. Filing any complaint, initiating or causing to be initiated any proceeding, or otherwise asserting or seeking to assert on behalf of themselves or others any right or protection under CWHSSA or this part;
iii. Cooperating in any investigation or other compliance action, or testifying in any proceeding under CWHSSA or this part; or
iv. Informing any other person about their rights under CWHSSA or this part.

D. RIGHTS TO INVENTIONS MADE UNDER A CONTRACT AGREEMENT. For all contracts that meet the definition of "funding agreement" under 37 CFR § 401.2 (a) and the recipient or subrecipient wishes to enter into a contract with a small business firm or nonprofit organization regarding the substitution of parties, assignment or performance of experimental, developmental, or research work under that "funding agreement," Contractor agrees to comply with and be bound by, and assist Owner in ensuring compliance with, 37 CFR Part 401, "Rights to Inventions Made by Nonprofit Organizations and Small Business Firms Under Government Grants, Contracts and Cooperative Agreements," the provisions of which are incorporated herein by this reference, and any implementing regulations issued by the awarding agency, as applicable.

E. CLEAN AIR AND FEDERAL WATER POLLUTION ACT CONTROL. If the Contract Price exceeds $150,000, Contractor agrees to comply with and be bound by, and assist Owner in ensuring compliance with all applicable standards, orders or regulations issued pursuant to the Clean Air Act (42 U.S.C. 7401-7671q) and the Federal Water Pollution Control Act as amended

(33 U.S.C. 1251-1387). Any violations must be reported to the Federal awarding agency and the Regional Office of the Environmental Protection Agency (EPA).

F. DEBARMENT AND SUSPENSION. Contractor represents and warrants that it is not listed on the government-wide exclusions in the System for Award Management (SAM), and Contractor agrees to comply with and be bound by, and assist Owner in ensuring compliance with, the OMB guidelines at 2 CFR 180 that implement Executive Orders 12549 (3 CFR part 1986 Comp., p. 189) and 12689 (3 CFR part 1989 Comp., p. 235), "Debarment and Suspension." SAM Exclusions contains the names of parties debarred, suspended, or otherwise excluded by agencies, as well as parties declared ineligible under statutory or regulatory authority other than Executive Order 12549.

G. BYRD ANTI-LOBBYING AMENDMENT. If the Contract Price exceeds $100,000, Contractor agrees to comply with and be bound by, and assist Owner in ensuring compliance with, the Byrd Anti-Lobbying Amendment (31 U.S.C. § 1352). Contractor shall file the declaration and certification required by 31 U.S.C. § 1352(b).

H. PROCUREMENT OF RECOVERED MATERIALS. Contractor agrees to comply with, and be bound by, and assist Owner in ensuring compliance with, 2 CFR Section 200.323, as applicable.

I. PROHIBITION ON CERTAIN TELECOMMUNICATIONS AND VIDEO SURVEILLANCE SERVICES OR EQUIPMENT. Contractor agrees to comply with, and be bound by, and assist Owner in ensuring compliance with, 2 CFR Section 200.216, as applicable.

J. DOMESTIC PREFERENCES FOR PROCUREMENT. Contractor agrees to comply with, and be bound by, and assist Owner in ensuring compliance with, 2 CFR Section 200.322, as applicable. 2 CFR Section 200.322 requires Contractor to provide a preference for the purchase, acquisition, or use of goods, products, or materials produced in the United States (including but not limited to iron, aluminum, steel, cement, and other manufactured products), to the greatest extent practicable.

K. CONTRACTING WITH SMALL AND MINORITY BUSINESSES, WOMEN'S BUSINESS ENTERPRISES, AND LABOR SURPLUS AREA FIRMS. Contractor agrees to comply with, and be bound by, and assist Owner in ensuring compliance with, 2 CFR Section 200.321, as applicable. 2 CFR Section 200.321 requires Contractor to take the affirmative steps listed in 2 CFR Section 200.321 paragraphs (b)(1) through (5) to assure that minority businesses, women's business enterprises, and labor surplus area firms are used when possible.

L. SAFETY AND HEALTH STANDARDS. As required by 34 CFR 75.609, Contractor agrees to comply with and be bound by, and assist Owner in ensuring compliance with, the standards under the Federal Occupational Safety and Health Act of 1970 (29 U.S.C.A., Section 651 et seq.) and State and local codes to the extent that they are more stringent.

M. ENERGY CONSERVATION. As required by 34 CFR 75.616, Contractor agrees to construct facilities to maximize the efficient use of energy and to comply with and be bound by,

and assist OWNER in ensuring compliance with, the following standards of the American Society of Heating, Refrigerating, and Air Conditioning Engineers (ASHRAE) set forth in 34 CFR 75.616. Contractor shall also comply with and be bound by, and assist Owner in ensuring compliance with, the mandatory standards and policies relating to energy efficiency which are contained in the state energy conservation plans issued in compliance with the Energy Policy and Conservation Act (Pub. L 94-163, 89 Stat. 871).

N. If any provision is required by federal law, or by the federal grant program funding such project, to be included in the Contract Documents, such provisions shall be deemed by the parties to have been included.

ARTICLE 4

ADMINISTRATION OF THE CONTRACT

4.1 ARCHITECT

4.1.1 DEFINITION

The Architect is the person lawfully licensed to practice architecture or an entity lawfully practicing architecture identified as such in the Agreement and is referred to throughout the Contract Documents as if singular in number. The term "Architect" means the Architect or the Architect's authorized representative, and shall also refer to all consultants under the Architect's direction and control.

4.1.2 MODIFICATION

To the extent the Contract Documents indicate that Owner has assigned duties or responsibilities to the Architect, Owner reserves the right at all times to reassign such duties or responsibilities to different Owner representatives.

4.1.3 TERMINATION

In the case of the termination of the Architect, the Owner 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 that of the former architect.

4.2 ARCHITECT'S ADMINISTRATION OF THE CONTRACT

4.2.1 STATUS

The Architect will provide administration of the Contract and may be one of several Owner's representatives during construction, through release of all retention, and during the one (1) year period following the commencement of any warranties. The Architect will advise and consult with the Owner. The Architect will have authority to act on behalf of the Owner only to the

extent set forth in the Owner/Architect agreement. The Architect will have all responsibilities and power established by law, including California Code of Regulations, Title 24, to the extent set forth in the Owner/Architect agreement.

4.2.2 SITE VISITS

The Architect will visit the Site at intervals necessary in the judgment of the Architect or as otherwise agreed by the Owner and the Architect in writing to become generally familiar with the progress and quality of the completed Work and to determine in general if the Work is being performed in a manner indicating that the Work, when Completed, will be in accordance with the Contract Documents.

4.2.3 LIMITATIONS OF CONSTRUCTION RESPONSIBILITY

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

The Owner and the Contractor shall communicate through the Architect, unless there is a construction manager for the Project or the Owner directs otherwise. Communications between Owner and Subcontractors or material or equipment suppliers shall be through the Contractor.

4.2.5 PAYMENT APPLICATIONS

The Contractor shall submit payment applications to the Architect, unless there is a construction manager for the Project or the Owner directs otherwise.

4.2.6 REJECTION OF WORK

The Architect, Inspector of Record, any construction manager and others may recommend to the Owner that the Owner reject Work which does not conform to the Contract Documents or that the Owner require additional inspection or testing of the Work in accordance with paragraph 13.5.5, whether or not the Work is fabricated, installed, or completed. However, no recommendation shall create a duty or responsibility to the Contractor, Subcontractors, material and equipment suppliers, their agents or employees, or other persons performing portions of the Work.

4.2.7 CHANGE ORDERS

The Architect may prepare change orders and construction change directives and may authorize minor changes in the Work.

4.2.8 WARRANTIES UPON COMPLETION

The Architect in conjunction with the Inspector of Record, or as otherwise directed by Owner, will conduct field reviews of the Work to determine the date of Completion, shall receive and forward to the Owner for the Owner's review and records, written warranties and related documents required by the Contract and assembled by the Contractor. The handling by the Architect of such warranties, 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.

Except as may be otherwise directed by Owner, the Architect will conduct a field review of the Contractor's work pursuant to Section 9.7.1, below, for development of a punch list and one (1) follow-up field review if required. The cost incurred by the Owner for further field reviews or the preparation of further punch lists by the Architect shall be invoiced to the Contractor and withheld from payment and/or retention.

4.2.9 INTERPRETATION

The Architect, Inspector of Record, any construction manager, the Owner or any independent consultant of Owner, as Owner deems appropriate, will interpret and decide matters concerning performance under and requirements of the Contract Documents on written request of the Contractor. The Owner's response to such requests will be made with reasonable promptness, while allowing sufficient time to permit adequate review and evaluation of the request.

4.2.10 ADDITIONAL INSTRUCTIONS

4.2.10.1 ***Architect's Interpretations and Decisions.*** Interpretations and decisions of the Architect will be consistent with the intent of and reasonably inferable from the Contract Documents and will be in writing or in the form of drawings. When making such interpretations of and decisions regarding the Contract Documents, the Architect will endeavor to secure faithful performance under the Contract Documents by both the Owner and the Contractor and will not show partiality to either. The Work shall be executed in conformity with, and the Contractor shall do no work without, approved drawings, Architect's clarifying instructions, and/or submittals.

4.2.10.2 ***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.

4.2.10.3 ***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 Owner's decisions on matters relating to aesthetic effect will be final if consistent with the Contract Documents.

4.3 INSPECTOR OF RECORD

4.3.1 GENERAL

One or more Project inspectors ("Inspector of Record") employed by the Owner 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 of Record's duties will be as specifically defined in Title 24.

4.3.2 INSPECTOR OF RECORD'S DUTIES

All Work shall be under the observation of or with the knowledge of the Inspector of Record. The Inspector of Record shall have free access to any or all parts of the Work at any time. The Contractor shall furnish the Inspector of Record such information as may be necessary to keep the Inspector of Record 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 of Record is not authorized to make changes in the drawings or specifications nor shall the Inspector of Record'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 OF RECORD'S AUTHORITY TO REJECT OR STOP WORK

The Inspector of Record shall have the authority to reject work that does not comply with the provisions of the Contract Documents. In addition, the Inspector of Record may stop any work which 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 OF RECORD'S FACILITIES

Within seven (7) days after notice to proceed, the Contractor shall provide the Inspector of Record with temporary facilities.

4.4 RESPONSIBILITY FOR ADDITIONAL CHARGES INCURRED BY THE OWNER FOR PROFESSIONAL SERVICES

If at any time prior to the Completion of the requirements under the Contract Documents, through no fault of its own, the Owner is required to provide or secure additional professional services for any reason by any act or omission of the Contractor, the Contractor shall be invoiced by the Owner for any actual costs incurred for any such additional services, which costs may, among other remedies, be withheld from the progress payments and/or retention. Such invoicing shall be independent from any other Owner remedies, including but not limited to liquidated

damages; ***except that*** to the extent that such additional services constitute Owner's delay damages under Public Contract Code section 7203, Owner may not recover them or invoice Contractor for them. If payments then or thereafter due to the Contractor are not sufficient to cover such amounts, the Contractor shall pay the difference to the Owner. 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 for 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 required submittals of shop drawings, product data, and samples.

4.5 NOTICES OF POTENTIAL CHANGE, CHANGE ORDER REQUESTS, AND CLAIMS

If the Contractor identifies the potential for extra work, delay in the critical path schedule, or the need for additional money or time, or if the Contractor requests additional money or time on any grounds (including but not limited to an alleged breach of an implied warranty of the correctness of the plans and specifications [*Souza & McCue Construction Co. v. Superior Court* (1962) 57 Cal.2d 508]), or if the Contractor believes that Owner has failed to pay amounts due or otherwise breached the Contract, or otherwise believes that it is entitled to a modification of the Contract terms and conditions, then Contractor shall follow the procedures in this Section 4.5 and Article 7, otherwise Contractor shall have waived its rights to pursue those issues and any later attempts to recover money or obtain a modification shall be barred. Contractor specifically acknowledges the Owner's and public's interest in, and need to know of, potential changes and disputes as early

as possible so Owner can investigate, mitigate and resolve adverse cost and time impacts, if any. It is Contractor's obligation to know and comply with the requirements of the Contract Documents, including but not limited to Section 4.5 and Articles 7 and 8, and Owner has no obligation to notify Contractor of any failure to comply with those requirements.

4.5.1 NOTICE OF POTENTIAL CHANGE

Contractor shall submit a written Notice of Potential Change for extra work, critical path delay, or additional money or time. Contractor shall submit written Notices of Potential Change to Owner within five (5) days of the earlier of (a) Contractor becoming aware of the issue creating a potential change, or (ii) the date by which Contractor should have become aware of the issue creating a potential change; unless the issues are, or may soon be, adversely affecting the costs or critical path of the Work, in which case the Contractor must submit the written notice without delay so the Owner may take immediate action to mitigate cost and schedule impacts of the change, if any. The written notice shall explain the nature of the potential change so the Owner may take action to mitigate costs and schedule impacts, if necessary.

When submitting a written Notice of Potential Change based on extra work, Contractor shall not perform the extra work until directed in writing to do so by Owner. When submitting a written Notice of Potential Change for an issue of critical path delay, Contractor shall proactively mitigate the effects of the alleged delay as much as reasonably possible so as to minimize any impact to the schedule, until otherwise directed by Owner. If Contractor intends to rely on Owner's acts or omissions in support of a request for a time extension, then Contractor must also provide the notice set forth in section 3.18, above.

Failure to timely submit a written Notice of Potential Change shall constitute a complete waiver by Contractor of any right to later submit a change order request or pursue a Claim on that issue, or to later pursue any additional money or time extensions in any manner related to that issue, regardless of the merits. Contractor will not have satisfied a condition precedent or exhausted administrative remedies. Contractor acknowledges that these written notices are of critical importance to the Owner's Work and Project management and the mitigation of Work and Project costs and delays.

4.5.2 CHANGE ORDERS REQUESTS

If, after submitting a written Notice of Potential Change pursuant to Section 4.5.1, Contractor continues to believe that it is entitled to additional money or time (including but not limited to grant of a time extension) based on an issue, then Contractor shall submit a Change Order Request ("COR"; see Section 7.6.1) to Owner within twenty (20) days of the earlier of (i) Contractor becoming aware of the issue creating a potential change, or (ii) the date by which Contractor should have become aware of the issue creating a potential change. A rejection at any time, or a lack of a rejection, by Owner of a Notice of Potential Change does not affect the timeline for submitting a COR.

Failure to timely submit a COR related to an issue, or failure to include any information in a timely COR for that issue as specifically required by the Contract, shall constitute a complete

waiver by Contractor of any right to later submit a COR or Claim on that issue, or to later pursue any additional money or time in any manner related to that issue, regardless of the merits. Contractor will not have satisfied a condition precedent or exhausted administrative remedies.

The COR shall state the grounds for the additional money or time requested and the amount of money or time requested, and Contractor shall include all information and documentation supporting the COR, including but not limited to calculations and analysis that demonstrate that the requested money or time is allowed by the applicable contract provisions and law. For any money or time other than the money and time specifically requested in the COR, Contractor will have completely waived its rights to recover such additional money or time (Contractor will not have satisfied a condition precedent or exhausted administrative remedies). If the COR requests money, then the COR must explain how the requested amounts were calculated. If the COR requests time, then the COR must identify the number of days of time being requested, establish that the days of delay are excusable (see Section 8.4.1), and include some critical path schedule analysis to support the number of days requested. Contractor may not reserve its rights, whether in a COR or other document, to submit a COR at a later time or in a manner other than as required by the Contract Documents. Any inclusion of a reservation of rights in a COR shall be grounds for rejection of the COR.

In the event that costs or delay are continuing to accrue at the time that a COR is required to be submitted, Contractor must still timely submit the COR with all available information and documentation supporting the COR as described above, and Contractor shall identify the costs or delay that are continuing. For continuing costs, the COR must include an estimate of when the extra work is expected to conclude and the total costs that will be incurred by the time that the extra work is expected to conclude. For continuing delay, the COR must include a schedule and delay analysis of when Contractor estimates that the delay will cease, what the final time extension request is estimated to be, and an estimate of the total of delay damages, if any, that will be requested. When the continuing cost or delay ends, within ten (10) days Contractor shall submit an updated COR that states the final dollar amount and/or time extension requested and that includes all required information and documentation. Failure to submit such final COR shall act as a waiver as described above.

Contractor shall certify each COR that it submits, including the initial COR and final COR for a continuing cost or delay, using the form set forth in Section 4.5.5.1, except that every reference to "Claim" shall be changed to "COR." If a COR is submitted without certification, a certification can still be submitted within the timelines set forth in the first paragraph of Section 4.5.2. If the COR is not timely certified, Contractor will have completely waived its rights to any money or time for that issue. Contractor will not have satisfied a condition precedent or exhausted administrative remedies. A certification of an initial COR for a continuing cost or delay shall include a statement that "Any estimates in the attached initial COR for a continuing cost or delay are based on true and correct facts and reasonable assumptions, as explained in the initial COR."

The Owner may accept the entire COR, accept part of the COR and reject the remainder, reject the entire COR, or request additional information. If the Owner does not respond within thirty (30) days of submission of the COR by accepting the entire COR, accepting part of the COR and

rejecting the remainder, or requesting additional information, the entire COR shall be deemed rejected as of the thirtieth (30th) day. In the case of continuing costs or delay, the 30-day deadline in the previous sentence shall not apply to the initial COR; it will only apply to the final COR (see above). If the Owner requests additional information within thirty (30) days of submission, then the Contractor shall submit the information within fifteen (15) days of the date of the request and the Owner shall have fifteen (15) days after the receipt of the additional information to accept or reject (in whole or in part) the COR. If the Contractor fails to submit the information within fifteen (15) days, then the COR shall be deemed rejected. If the Owner fails to respond within fifteen (15) days after the submission of additional information, the entire COR shall be deemed rejected as of the fifteenth (15th) day.

4.5.3 DEFINITION OF CLAIM

A "Claim" is a separate demand by the Contractor sent by registered or certified mail, return receipt requested, for (a) a time extension, including, without limitation, a request for relief from damages or penalties for delay assessed by Owner under the Contract Documents; (b) payment by Owner of money or damages arising from work done by, or on behalf of, the Contractor pursuant to the Contract Documents, and payment of which is not otherwise expressly provided for or the claimant is not otherwise entitled to (including but not limited to a claim for damages based on misleading or incomplete plans or specifications); or (c) an amount the payment of which is disputed by the Owner. A Claim includes any claim within the scope of Public Contract Code sections 9204 or 20104 et seq., and any alleged violation of a prompt payment statute. Resubmittal in any manner of a COR which was previously rejected under Section 4.5.2 constitutes a Claim, whether the COR was rejected in whole or in part, and whether the COR was rejected expressly or deemed rejected by Owner inaction. A Claim includes any dispute Contractor may have with the Owner, including one which does not require a Notice of Potential Change or COR under Sections 4.5.1 and 4.5.2, and including any alleged breach of contract or violation of law by the Owner (such as wrongful withholding of a payment by the Owner or wrongful termination by the Owner). A Claim under this Article 4.5 shall also constitute a claim for purposes of the California False Claims Act. In the event of a conflict between a Claims provision in Division 1 of the Specifications and Section 4.5, Section 4.5 shall take precedence.

The Notice of Potential Change and COR procedures above are less formal procedures which precede the more formal Claim. A Notice of Potential Change does not constitute a Claim. A COR does not constitute a Claim; **except that** if insufficient time remains before the Claim deadline (see Article 4.5.4) for Contractor to submit a COR and for Owner to process and reject the COR under Article 4.5.2, then either (1) Contractor may submit a COR which Owner shall treat as a Claim, but only if the COR complies with all requirements in this Article 4.5 and Article 7 for COR's and Claims, or (2) a COR is not required so long as a Claim complying with this Article 4.5 is timely submitted.

A Claim does not include vouchers, invoices, progress payment applications, or other routine or authorized forms of requests for progress payments on the Contract; however, those documents remain "claims" for purposes of the California False Claims Act. A Claim does not include a Government Code Claim. ("Government Code Claim" means a claim under Government Code sections 900 et seq. and 910 et seq.)

4.5.4 TIME FOR SUBMITTING CLAIM; WAIVER

Contractor shall submit a Claim to the Owner's construction manager (or in the absence of a construction manager, to Architect) and Owner within the earlier of (a) fifteen (15) days after Owner's rejection of a COR in whole or in part, or (b) fifteen (15) days after a COR being deemed rejected, pursuant to Section 4.5.2 above. If the Claim is not based on an issue for which a COR would be required (such as wrongful withholding by the Owner), then Contractor shall submit the Claim within fifteen (15) days after the date on which Contractor knew, or should have known, about the issue on which the Claim is based. If a Claim has not been submitted as of the date that the Contractor Completes the Work and submittal of the Claim was not yet required under the Contract Documents, then the Claim shall be submitted within seven (7) days of Completion of the Work; and such Claim shall not be barred due to lack of a Notice of Potential Change or COR if the deadline for the Notice of Potential Change or COR was after Completion of the Work.

In addition, within seven (7) days of Completion of the Work, Contractor shall submit to Owner, in writing, a list and summary of all Claims for money or time extensions under or arising out of this Contract which were timely filed, which were fully compliant with the Contract's requirements for Claims, and which the Contractor wishes to pursue in whole or in part. This Claim summary requirement shall not extend the time for submitting a Claim.

Failure to timely submit a Claim or Claim summary, failure to specifically identify a Claim in the Claim summary, or failure to include any information in a timely Claim as specifically required by the Contract, including but not limited to this Article 4, will act as a complete waiver of Contractor's rights to (a) recover money or time on the issues for which a Claim was required, (b) submit a Government Code Claim for the money or time (see Section 4.5.6), and (c) initiate any action, proceeding or litigation for the money or time, regardless of the merits; Contractor will not have satisfied a condition precedent or exhausted administrative remedies. Owner does not have an obligation to reject the Claim for a failure to comply with any of the Claim requirements in the Contract, including the lack of certification, and any failure by Owner to reject, or any delay in rejecting, a Claim on that basis does not waive the Owner's right to reject the Claim on that basis at a later time. In no event may the Contractor reserve its rights to assert a Claim for a time extension or additional money beyond the timelines set forth in this provision unless the Owner agrees in writing to allow the reservation.

4.5.5 CONTENT OF CLAIM

4.5.5.1 *Claim Format; Waiver*

Every Claim shall be in writing. All money or time extensions sought must be stated and itemized in the Claim at the time submitted. The responsibility to substantiate Claims shall rest with the Contractor, and the Contractor shall furnish reasonable documentation to support each Claim, including as applicable, that documentation set forth in sections 4.5.5.2 through 4.5.5.4. In addition, the Contractor shall include a certification with each and every Claim at the time of submission, as follows:

I, _____ *[name of declarant]*, declare the following:

_____ *[Contractor company name]* has contracted with ____ *[public entity name]* for the _____ Contract ("Contract"). _____ *[Contractor company name]* authorized me to prepare the attached Claim for money and/or time extension for _____ *[public entity name]* regarding this Contract (such Claim being dated _____, 20__, and entitled _____, and requesting $_____ and/or ___ additional days), and I prepared the attached Claim. I am the most knowledgeable person at _____ *[Contractor company name]* regarding this Claim.

The attached Claim complies with all laws applicable to submission of a Claim, including but not limited to California Penal Code section 72, Government Code sections 12650 et seq. (False Claims Act), and Business and Professions Code sections 17200 et seq. (Unfair Business Practices Act). I am aware that submission or certification of false claims, or other claims that violate law or the Contract, may lead to fines, imprisonment, and/or other serious legal consequences for myself or _____ *[Contractor company name]*.

The attached Claim does not breach the Contract, is not a false claim, does not violate any applicable law, satisfies all provisions of the Contract applicable to submission of the Claim, only contains truthful and accurate supporting data, and only requests money and/or time extensions that accurately reflect the adjustments to money and time for which I believe that _____ *[public entity name]* is responsible under its Contract with _____ *[Contractor company name]*.

While preparing this declaration and Claim I consulted with others (including attorneys, consultants, or others who work for _____ *[Contractor company name]*) when necessary to ensure that the statements were true and correct.

Contractor understands and agrees that any Claim submitted without this certification does not meet the terms of the Contract Documents; that Owner, or Owner's representatives, may reject the Claim on that basis; and that unless Contractor properly and timely files the Claim with the certification, Contractor cannot further pursue the Claim in any forum and all rights to additional money or time for the issues covered by the Claim are waived due to a condition precedent not having been satisfied.

I declare under the penalty of perjury under the laws of the State of California that the foregoing is true and correct. Executed _____, 20__, at _____, California.

_____ *[signature]*
_____ *[name of declarant]*

Contractor's failure to timely submit a certification will constitute a complete waiver of Contractor's rights to (a) recover money or time on the issues for which a Claim was required, (b) submit a Government Code Claim (see Section 4.5.6.3) for the money or time, and (c) initiate any action, proceeding or litigation for the money or time. Contractor will not have satisfied a condition precedent or exhausted administrative remedies.

4.5.5.2 *Claims for Additional Money*

Each Claim for additional money (including but not limited to those described in (b) and (c) of the first paragraph of Section 4.5.3) must include all facts supporting the Claim, including but not limited to all supporting documentation plus a written analysis as to (a) why the claimed cost was incurred, (b) why Contractor could not mitigate its costs, (c) why the claimed cost is the responsibility of the Owner, and (d) why the claimed cost is a reasonable amount. In no event will the Contractor be allowed to reserve its rights, whether in a Claim or other document, to assert a Claim for money at a later time or in a manner other than as required by the Contract Documents. Any inclusion of a reservation of rights in a Claim shall be grounds for rejection of the Claim. Any costs, direct or indirect, not timely asserted in a certified Claim shall be waived. A Claim may not include any costs incurred in preparation of the Claim or in preparation of any underlying COR, including but not limited to costs of delay analysis.

4.5.5.3 *Claims for Additional Time*

4.5.5.3.1 *Notice of Extent of Claim*

If the Contractor wishes to make a Claim for an increase in the Contract Time (including but not limited to Section 4.5.3(a)), the Claim shall include, but not be limited to, all facts supporting the Claim, all documentation of such facts, all information required by the Contract Documents, all information establishing entitlement to a time extension pursuant to Section 8.4.1 below, a current and certified schedule (see Section 3.9.1, above), and a delay analysis explaining (a) the nature of the delay, (b) the Owner's responsibility for the claimed delay, (c) the claimed delay's impact on the critical path, (d) the claimed delay's impact on the date of Completion (including an analysis of any float still remaining and whether the alleged delay in work exceeds such remaining float), and (e) why Contractor could not mitigate the delay impacts. Failure to include an updated and certified schedule, or a delay analysis, in a Claim seeking a time extension will act as a complete waiver of Contractor's rights to (i) recover money or time based on the issues addressed by the Claim, (ii) submit a Government Code Claim for the requested money or time (see Section 4.5.6.4), and (iii) initiate any action, proceeding or litigation for the requested money or time, regardless of the merits; Contractor will not have satisfied a condition precedent or exhausted administrative remedies.

In no event will the Contractor be allowed to reserve its rights, whether in a Claim or other document, to assert a Claim for a time extension at a later time or in a manner other than as

required by the Contract Documents. Any inclusion of a reservation of rights in a Claim shall be grounds for rejection of the Claim. Any time extension not timely asserted in a certified Claim shall be waived.

4.5.5.3.2 *Unusual and Uncommon Weather Claims*

If unusual and uncommon weather is the basis for a Claim for additional time, Contractor's delay analysis (see Section 4.5.5.3.1, above) must also provide Owner data and facts showing that the weather conditions were unusual and uncommon for the period of time, could not have been reasonably anticipated or mitigated, had an adverse effect on the critical path of the scheduled construction, and meet all other Contract requirements for a time extension (including but not limited to Section 8.4.1, below).

4.5.5.4 *Subcontractor Requests for Money or Time*

A Subcontractor or supplier to Contractor may not submit a request for additional time or money directly to the Owner due to its lack of contractual privity with Owner. If a Subcontractor or supplier submits to Contractor a request for additional money or time based on an alleged breach of the subcontract or supplier contract by Contractor, Contractor may elect to seek money or time from Owner based on that request of the Subcontractor or supplier.

For any such request to Owner by Contractor, Contractor must comply with the requirements and prerequisites in the Contract Documents for requests to the Owner for money or time (including but not limited to Section 4.5 of the General Conditions regarding Notices of Potential Change, Change Order Requests ["CORs"], Claims, and certifications) and with Public Contract Code section 9204(d)(5). Any such COR or Claim by Contractor must include Contractor's certification (see General Conditions §§4.5.2 and 4.5.5.1), a complete copy of the Subcontractor's or supplier's request for money or time (including all documents submitted by the Subcontractor or supplier), and any other necessary supporting documentation. Any such COR or Claim by Contractor must include (a) Contractor's detailed analysis of the merit of Subcontractor's or supplier's request to the Contractor, including (i) analysis of Contractor's alleged breaches of the subcontract or supplier contract that allegedly caused the Subcontractor or supplier to incur damages or delay, and (ii) analysis of all of Contractor's defenses to the request for money or time by the Subcontractor or supplier; and (b) Contractor's detailed analysis of the Owner's liability to Contractor for any money or time that Contractor owes, or may later be determined to owe, to Subcontractor or supplier (including but not limited to how Owner's alleged breaches of the Contract Documents caused Contractor to breach the subcontract or supplier contract). In any such COR or Claim, Contractor may deny that it is liable to the Subcontractor or supplier for some or all of the requested money or time, or it may assert that it is merely submitting the COR or Claim to Owner on behalf of the Subcontractor or supplier; but doing one or the other would not excuse Contractor from complying with the above requirements for its request to the Owner.

Any failure by Contractor to timely comply with this Section 4.5.5.4 (including a failure to timely submit a Notice of Potential Change, COR, Claim, certifications, or detailed analysis) shall act as a complete waiver of Contractor's rights to (a) recover money or time from Owner

based on any money or time that Contractor owes, or may later be determined to owe, to the Subcontractor or supplier, (b) submit a Government Code Claim to Owner for the money or time requested by the Subcontractor or supplier (see Section 4.5.6.3), and (c) initiate any action, proceeding or litigation against Owner for any money or time that Contractor owes, or may later be determined to owe, to the Subcontractor or supplier. Contractor will not have satisfied a condition precedent or exhausted administrative remedies.

4.5.6 PROCEDURES FOR CLAIMS (PUBLIC CONTRACT CODE SECTION 9204)

Claims are subject to this section 4.5.6 and Public Contract Code section 9204, as well as the separate procedures and substantive provisions of Sections 4.5.1 through 4.5.5 and the rest of the Contract Documents. Claims of $375,000 or less are also subject to Public Contract Code sections 20104 et seq., but to the extent that one of the procedures in Sections 20104 et seq. conflicts with the procedures in Section 9204, the requirements of Section 9204 shall control.

4.5.6.1 *Claims*

The Owner shall conduct a reasonable review of the Claim and shall respond in writing to any written Claim within 45 days of receipt of the Claim. During that 45-day period, plus any extension, Owner may request, in writing, additional documentation supporting the Claim or relating to defenses to the Claim the Owner may have against the Contractor. Owner shall review any additional documentation Contractor supplies in response to that request within the 45 day, plus any extension, timeline.

After receipt of a Claim, the 45-day period may be extended by Owner and Contractor. The written response shall identify which portion of the Claim is disputed and what portion is undisputed. If Owner needs approval from its governing board to provide the written response, and the governing board does not meet within the 45 days or any extended period of time, then the Owner shall have up to three days after the next publicly noticed meeting of the governing board to provide the written response. Any payment due on an undisputed portion of the Claim shall be processed and made within sixty (60) days after the Owner issues the written response. Owner's failure to respond to a Claim within the above time periods or to otherwise meet the above time requirements shall result in the Claim being deemed rejected in its entirety.

4.5.6.2 *Meet and Confer*

If the Contractor disputes the Owner's written response, or the Owner fails to respond within the time prescribed, the Contractor may so notify the Owner, in writing, either within 15 days of receipt of the Owner's response or within 15 days of the Owner's failure to respond within the time prescribed, respectively, and demand an informal conference to meet and confer for settlement of the issues in dispute. Upon a written demand sent by registered or certified mail return receipt requested, the Owner shall schedule a meet and confer conference for settlement of the dispute, which shall take place within 30 days of the demand. Upon written agreement of the Owner and Contractor, the conference may take place during regularly scheduled Project meetings. The informal conference is not a mediation since there is no neutral person facilitating communication to assist the parties to reach agreement; therefore, the provisions of Evidence

Code sections 1115-1128 shall not apply to any portion of the informal conference (including but not limited to any documents provided or shown, or statements of fact or opinion made, by a party) unless the parties expressly agree in writing to their application. Any offer of compromise at an informal conference shall not be admissible to prove liability, as provided in Evidence Code section 1152, but this statute's prohibition of admissibility shall not apply to other statements before or at the informal conference, or in any document prepared for or exchanged at the informal conference.

If Contractor fails to timely notify the Owner that it wishes to meet and confer pursuant to the previous paragraph, then Contractor will have waived all rights to (a) recover money or time on the issues for which a Claim was required, (b) submit a Government Code Claim (see Section 4.5.6) for such money or time, and (c) initiate any action, proceeding or litigation for such money or time. Contractor will not have satisfied a condition precedent or exhausted administrative remedies.

Within ten (10) business days after the conclusion of the meet and confer conference, the Owner shall give a written statement to the Contractor identifying the portion of the Claim that remains in dispute and the portion that is undisputed. Any payment due on an undisputed portion of the Claim shall be processed and made within sixty (60) days after the Owner issues the written statement. Within ten (10) business days of issuance of Owner's written statement, Contractor shall identify in writing the disputed portion of the Claim that shall be submitted to non-binding mediation (which may consist of any nonbinding process, including but not limited to neutral evaluation or a dispute review board), with the Owner and Contractor sharing the costs equally. The Owner and Contractor shall mutually agree to a mediator within ten (10) business days after the Contractor has identified in writing the disputed portion of the Claim. If they cannot agree upon a mediator, then each shall select a mediator, and those two mediators shall select a qualified neutral third party to mediate the disputed portion of the Claim. (Each party shall bear the fees and costs its respective mediator charged in connection with the selection of the neutral mediator). The parties may mutually waive in writing the requirement for mediation. If Contractor fails to timely notify the Owner in writing that it wishes to mediate pursuant to this paragraph, Contractor will have waived all right to further pursue the Claim pursuant to section 4.5.4. The parties shall reasonably cooperate to schedule and attend a mediation as soon as reasonably possible. Owner's failure to respond to the Claim within the above time periods or to otherwise meet the above time requirements shall result in the Claim being deemed rejected in its entirety.

4.5.6.3 ***Government Code Claim***

If a Claim or any portion of it remains in dispute after the mediation and Contractor wishes to pursue it, the Contractor **must** file a timely and proper Government Code Claim. The filing of a Government Code Claim is specifically required in addition to all contractual procedures described in Sections 4.5 through 4.5.6.2. The above contractual procedures do not act as a substitute for the Government Code Claim process, and the two sets of procedures shall be sequential with the contractual procedures occurring first.

Failure to timely file a Government Code Claim shall act as complete waiver of Contractor's rights to (a) recover money or time on the issues for which a Government Code Claim was required, and (b) initiate any action, proceeding or litigation for such money or time. Contractor will not have satisfied a condition precedent or exhausted administrative remedies.

Owner and Contractor shall proceed with the Government Code Claim according to Government Code, Section 900 et seq., and as otherwise permitted by law. For purposes of the applicable Government Code provisions, and as provided in Public Contract Code section 20104.2(e), the running of the time period within which a Contractor must file a Government Code Claim shall commence upon accrual of a cause of action, and shall be tolled from the time the Contractor submits a written Claim under Section 4.5 until the time that the Claim is denied, in whole or in part, as a result of the meet and confer process in Section 4.5.6.2, including any period of time utilized by the meet and confer process. For these purposes, a cause of action based on a Contractor request for additional compensation or a time extension shall accrue when the Change Order Request is rejected, or deemed rejected, by the Owner (see Section 4.5.2, above); and all other causes of action shall accrue when the alleged wrongful conduct (e.g., wrongful withholding, or wrongful termination) occurred. Owner's rejection of a Claim under Sections 4.5.3-4.5.6.2, above, would not give rise to a cause of action against Owner since the Claim addressed causes of action that already had accrued before the submission of the Claim.

4.5.7 CONTINUING CONTRACT PERFORMANCE

Despite Contractor's submission of, or Owner's rejection of, a Notice of Potential Change, COR, Claim, or Government Code Claim based on alleged breaches of the Contract by Owner, the Contractor shall proceed diligently with performance of the Contract as directed by Owner, and the Owner shall continue to make any undisputed payments in accordance with the Contract. Contractor acknowledges that Completion of the Work is a high priority for both Owner and Contractor as failure to Complete the Work would most likely cause each of them to incur much greater costs and damages than would be incurred if the Work were Completed. If Contractor believes that Owner has breached the Contract and that such breach is preventing or delaying Contractor's performance as directed by Owner, then Contractor must submit notice as required by Section 3.18, above.

4.5.8 CLAIMS FOR CONCEALED OR UNKNOWN CONDITIONS

4.5.8.1 *Trenches or Excavations Less Than Four Feet Below the Surface*

If Contractor encounters conditions at the Site which are subsurface or otherwise concealed physical conditions, which differ materially from those indicated in the Contract Documents, or unknown physical conditions of an unusual nature, which differ materially from those ordinarily found to exist and generally recognized as inherent in construction activities of the character provided for in the Contract Documents, the Contractor shall give notice to the Owner promptly before conditions are disturbed and in no event later than ten (10) days after first observance of the conditions. If Contractor believes that such conditions differ materially and will cause an increase in the Contractor's cost of, time required for, or performance of any part of the Work, Contractor must comply with the provisions above for Notice of Potential Change, Change Order Request, and Claims (beginning with Section 4.5.1).

4.5.8.2 *Trenches or Excavations Greater Than Four Feet Below the Surface*

Pursuant to Public Contract Code section 7104, when any excavation or trenching extends greater than four feet below the surface:

4.5.8.2.1 The Contractor shall promptly, and before the following conditions are disturbed, notify the public entity, in writing, of any:

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

(2) Subsurface or latent physical conditions at the site differing from those indicated by information about the site made available to bidders prior to the deadline for submitting bids.

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

4.5.8.2.2 The public entity shall promptly investigate the conditions, and if it finds that the conditions do materially so differ, or do involve hazardous waste, and cause a decrease or increase in the Contractor's cost of, or the time required for, performance of any part of the Work shall issue a change order under the procedures described in the Contract.

4.5.8.2.3 In the event that a dispute arises between the public entity and the Contractor whether the conditions materially differ, or involve hazardous waste, or cause a decrease or increase in the Contractor's cost of, or time required for, performance of any part of the Work, the Contractor shall not be excused from any deadline for Completion provided 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.

4.5.9 INJURY OR DAMAGE TO PERSON OR PROPERTY

If either party to the Contract suffers injury or damage to person or property because of an act or omission of the other party, any of the other party's employees or agents, or others for whose acts such party is legally liable, written notice of such injury or damage, whether or not insured, shall be given to the other party within a reasonable time not exceeding ten (10) days after first observance. The notice shall provide sufficient detail to enable the other party to investigate the matter. For a Notice of Potential Change, COR and Claim for additional cost or time related to this injury or damage, Contractor shall follow Section 4.5.

ARTICLE 5

SUBCONTRACTORS

5.1 DEFINITIONS

5.1.1 SUBCONTRACTOR

A Subcontractor is a person or entity, who has a contract with the Contractor to perform a portion of the Work at the Site. The term "Subcontractor" is referred to throughout the Contract Documents as if singular in number and means a Subcontractor or an authorized representative of the Subcontractor. The term "Subcontractor" does not include a separate contractor or subcontractors of a separate contractor. To the extent that the term Trade Contractor is utilized in the Contract Documents, it shall have the same meaning as the term "Subcontractor."

5.1.2 SUB-SUBCONTRACTOR

A Sub-subcontractor is a person or entity who has a direct or indirect contract with a Subcontractor to perform a portion of the Work at the Site. The term "Sub-subcontractor" is referred to throughout the Contract Documents as if singular in number and means a Sub-subcontractor or an authorized representative of the Sub-subcontractor.

5.1.3 SPECIALTY CONTRACTORS

If a Subcontractor is designated as a "Specialty Contractor" as defined in section 7058 of the Business and Professions Code, all of the Work outside of that Subcontractor's specialty shall be performed in compliance with the Subletting and Subcontracting Fair Practices Act, Public Contract Code sections 4100, et seq.

5.2 AWARD OF SUBCONTRACTS AND OTHER CONTRACTS FOR PORTIONS OF THE WORK

5.2.1 ASSIGNMENT OR SUBSTITUTION - CONSENT OF OWNER

In accordance with Public Contract Code sections 4107 and 4107.5, no Contractor whose bid is accepted shall, without the written consent of the Owner: substitute any person or entity as a Subcontractor in place of the Subcontractor designated in the original bid; permit any such Subcontract to be assigned or transferred, or allow it to be performed by any person or entity other than the original Subcontractor listed in the original bid; sublet or subcontract any portion of the Work in excess of one-half of one percent (0.5%) of the Contractor's total bid as to which its original bid did not designate a Subcontractor. Any assignment or substitution made without the prior written consent of the awarding authority shall be void, and the assignees shall acquire no rights in the Contract. Any consent, if given, shall not relieve Contractor or its

Subcontractors from their obligations under the terms of the Contract Documents.

5.2.2 GROUNDS FOR SUBSTITUTION

Pursuant to Public Contract Code section 4107 and the procedure set forth therein, no Contractor whose bid is accepted may request to substitute any person or entity as a Subcontractor in place of a Subcontractor listed in the original bid except in the following instances:

A. When the Subcontractor listed in the bid after having a reasonable opportunity to do so, fails or refuses to execute a written contract for the scope of work specified in the subcontractor's bid and at the price specified in the subcontractor's bid, when that written contract, based upon the general terms, conditions, plans and specifications for the Project involved or the terms of that Subcontractor's written bid, is presented to the Subcontractor by the Contractor;

B. When the listed Subcontractor becomes insolvent or the subject of an order for relief in bankruptcy;

C. When the listed Subcontractor fails or refuses to perform his or her Subcontract;

D. When the listed Subcontractor fails or refuses to meet the bond requirements of the prime contractor set forth in Public Contract Code section 4108.

E. When the Contractor demonstrates to the awarding authority, or its duly authorized officer, subject to the further provisions of Public Contract Code section 4107.5, that the name of the Subcontractor was listed as the result of inadvertent clerical error;

F. When the listed Subcontractor is not licensed pursuant to the Contractors License Law; or

G. When the awarding authority, or its duly authorized officer, determines that the Work being performed by the listed Subcontractor is substantially unsatisfactory and not in substantial accordance with the plans and specifications, or the Subcontractor is substantially delaying or disrupting the progress of the Work.

H. When the listed Subcontractor is ineligible to work on a public works project pursuant to Section 1777.1 of the Labor Code.

I. When the awarding authority determines that a listed Subcontractor is not a responsible contractor.

5.2.2.1 ***No Change in Contract.*** Any substitutions of Subcontractors shall not result in any increase in the Contract Sum or result in the granting of any extension of time for a Milestone Deadline or the Completion of the Work.

5.2.2.2 ***Substitution Due to Clerical Error.*** The Contractor, as a condition of asserting a claim of inadvertent clerical error in the listing of a Subcontractor, shall, pursuant to Public Contract Code section 4107.5, within two (2) working days after the time of the prime bid opening by the awarding authority, give written notice to the awarding authority and copies of such notice to both the Subcontractor it claims to have listed in error, and the intended Subcontractor who had bid to the Contractor prior to bid opening. Any listed Subcontractor who has been notified by the Contractor in accordance with the provisions of this section as to an inadvertent clerical error, shall be allowed six (6) working days from the time of the prime bid opening within which to submit to the awarding authority and to the Contractor written objection to the Contractor's claim of inadvertent clerical error.

In all other cases, the Contractor must make a request in writing to the awarding authority for the substitution of a subcontractor, giving reasons therefore. The awarding authority shall mail a written notice to the listed Subcontractor giving reasons for the proposed substitution. The listed Subcontractor shall have five (5) working days from the date of such notice within which to file with the awarding authority written objections to the substitution.

Failure to file written objections pursuant to the provisions of this section within the times specified herein shall constitute a complete waiver of objection to the substitution by the listed Subcontractor and, where the ground for substitution is an inadvertent clerical error, an agreement by the listed Subcontractor that an inadvertent clerical error was made.

If written objections are filed, the awarding authority shall give five (5) days' notice to the Contractor and to the listed Subcontractor of a hearing by the awarding authority on the Contractor's request for substitution as provided in Public Contract Code section 4107. The determination by the awarding authority shall be final.

5.3 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 obligations and responsibilities, which the Contractor, by the Contract Documents, assumes toward the Owner. Each subcontract agreement shall preserve and protect the rights of the Owner under the Contract Documents with respect to the Work to be performed by the Subcontractor so that subcontracting thereof will not prejudice such rights, and shall allow to the Subcontractor, unless specifically provided otherwise in the subcontract agreement, the benefit of all rights, remedies, and redress against the Contractor that the Contractor, by the Contract Documents, has against the Owner. 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.

5.4 CONTINGENT ASSIGNMENT OF SUBCONTRACTS

Each subcontract agreement for a portion of the Work is assigned by the Contractor to the Owner provided that:

A. Assignment is effective only after termination of the Contract with the Contractor by the Owner for cause pursuant to Article 14 and only for those subcontract agreements which the Owner accepts by notifying the Subcontractor in writing; and

B. Assignment is subject to the prior rights of the surety, if any, obligated under any bond relating to the Contract.

5.5 SUBCONTRACTOR'S RESPONSIBILITIES

Every Subcontractor is bound to the following provisions, unless specifically noted to the contrary in the Subcontractor's contract subject to the limitations of section 5.3.

5.5.1 SUPERVISION BY SUBCONTRACTORS

Subcontractors shall efficiently supervise their Work, using their best skill and attention. Each of them shall carefully study and compare all Drawings, Specifications, and other instructions, shall at once report to Contractor any error or omission which any of them may discover, and shall subsequently proceed with the Work in accordance with instructions from the Contractor concerning such error or omission. Each Subcontractor shall be fully responsible for and shall bear the full risk of loss of all of its property.

5.5.2 DISCIPLINE AND ORDER

Each Subcontractor shall at all times enforce strict discipline and good order among its Subcontractors, material or equipment suppliers, or their agents, employees, and invitees, and shall establish and maintain surveillance over the activities of each of the foregoing to minimize any disturbance, damage, pollution, or unsightly conditions relative to property areas adjacent to or in the vicinity of the Site. The Contractor shall have the right to remove from the Work any employee of a Subcontractor for any reason including, without limitation, incompetence or carelessness.

5.5.3 DEFECTS DISCOVERED

Should the proper and accurate performance of the Work depend upon the proper and accurate performance of other work not included in its Contract, each Subcontractor shall use all necessary means to discover any defect in such other work and shall allow the Contractor, the Owner and Architect, or other Subcontractors as Contractor elects, a reasonable amount of time to remedy such defects. If the Subcontractor should proceed with its Work, it shall be considered to have accepted such other work, unless the Subcontractor shall have proceeded pursuant to

instructions in writing by the Contractor over its written objection.

5.5.4 SUBCONTRACTOR INFORMATION

Each Subcontractor shall submit to the Owner, the Contractor, or the Architect, as the case may be, promptly when requested by any of the foregoing, information with respect to the names, responsibilities, and titles of the principal members of its staff, the adequacy of the Subcontractor's equipment and the availability of necessary materials and supplies. Subcontractor shall fully cooperate with Contractor in its periodic review of the adequacy of Subcontractor's supervision, personnel, and equipment, and the availability of necessary materials and supplies and shall promptly comply with the requirements of the Contractor with respect thereto.

5.5.5 TEMPORARY STRUCTURES

Each Subcontractor shall furnish at its expense its own temporary facilities and storage except those specifically agreed to be furnished to it by the Contractor in the Subcontract Agreement. Subcontractor's material storage rooms and field offices, etc., will be placed in locations designated by the Contractor. When it becomes necessary due to the progress of the Work for the Subcontractor to relocate its field operations, it will do so in an expeditious manner and at no additional cost to Contractor or Owner. The construction of material storage rooms and field offices, etc., will be of fire resistive material only, such as concrete or gypsum block, rated drywall, or sheet metal.

5.5.6 CHARGES TO SUBCONTRACTOR

Each Subcontractor may be subject to the Contractor's reasonable charges for hoisting, repair to other work caused by the fault or negligence of Subcontractor, removal of Subcontractor's rubbish, and clean-up occasioned by Subcontractor.

5.5.7 FINES IMPOSED

Subcontractor shall comply with and pay any fines or penalties imposed for violation of any applicable law, ordinance, rule, regulation, Environmental Impact Report mitigation requirement, and lawful order of any public authority, including, without limitation, all OSHA and California OSHA requirements and those of other authorities having jurisdiction of the safety of persons or property.

5.5.8 PROJECT SIGNS

Each Subcontractor shall not display on or about the Project any sign, trademark, or other advertisement. The Owner will permit a single Project sign, which shall be subject to the Owner's prior and sole discretion and approval, as to all matters including, without limitation, size, location, material, colors, style and size of printing, logos and trademarks (if any), text, and selection of names to be displayed.

5.5.9 REMEDIES FOR FAILURE TO PERFORM

Without limitation of any other right or remedy available to Contractor under the Contract Documents or at law, should: the Subcontractor fail to perform its portion of the Work in a skilled and expeditious manner in accordance with the terms of the Contract Documents with sufficient labor, materials, equipment, and facilities; delays the progress of the job or otherwise fail in any of its obligations; or either a receiver is appointed for the Subcontractor or the Subcontractor is declared to be bankrupt or insolvent, and such appointment, bankruptcy, or insolvency proceedings or declaration is not set aside within thirty (30) days, then the Contractor, upon three (3) days notice to the Subcontractor (subject to the requirements of Pub. Contracts Code, § 4107), may provide such labor, materials, or perform such work and recover the cost plus profit and overhead from monies due or to become due thereafter to the Subcontractor. The Contractor may terminate the employment of the Subcontractor, taking possession of its tools, materials, and equipment related to the Work and cause the entire portion of the Subcontractor's Work to be finished either by another Subcontractor or through the Contractor's own forces.

5.5.10 DISPUTES NOT TO AFFECT WORK

In the event of any dispute as to whether or not any portion of the Work is within the scope of the Work to be performed by a Subcontractor, or any dispute as to whether or not the Subcontractor is entitled to a Change Order for any Work requested of it or entitled to payment, the Subcontractor shall continue to proceed diligently with the performance of the Work. Regardless of the size or nature of the dispute, the Subcontractor shall not under any circumstances cease or delay performance of its portion of the Work during the existence of the dispute. The Contractor shall continue to pay the undisputed amounts called for under the Subcontract Agreement during the existence of the dispute. Any party stopping or delaying the progress of the Work because of a dispute shall be responsible in damages to the Owner, the Architect, and the Contractor for any losses suffered as a result of the delay.

5.5.11 APPLICATION FOR PAYMENT

Contractor agrees to advise the Subcontractor if any documentation in connection with the Subcontractor's application for payment has not been accepted or is in any way unsatisfactory.

5.5.12 COMPLIANCE WITH PROCEDURES

Each Subcontractor shall comply with all procedures established by the Contractor for coordination among the Owner, the Owner's consultants, Architect, Contractor, and the various Subcontractors for coordination of the Work with all local municipal authorities, government agencies, utility companies, and any other agencies with jurisdiction over all or any portion of the Work. The Subcontractor shall cooperate fully with all of the foregoing parties and authorities.

5.5.13 ON-SITE RECORD KEEPING

Subcontractor shall comply with all on-Site record keeping systems established by the Contractor

and shall, upon the request of the Contractor, provide the Contractor with such information and reports as the Contractor may deem appropriate. Without limitation of the foregoing, the Subcontractor shall assemble all required permits and certificates so that they are readily accessible at the Site.

5.5.14 NON-EXCLUSIVE OBLIGATIONS

The specific requirements of Article 5 are not intended to exclude the obligation of the Subcontractor to comply with any of the other provisions of the General Conditions and the other Contract Documents which are relevant to the proper performance of its portion of the Work.

ARTICLE 6

CONSTRUCTION BY OWNER OR BY SEPARATE CONTRACTORS

6.1 OWNER'S RIGHT TO PERFORM CONSTRUCTION AND TO AWARD SEPARATE CONTRACTS

6.1.1 OWNER'S RIGHTS

The Owner reserves the right to perform Project work related to the Contract with the Owner's own forces, or to award separate contracts in connection with such other work or other construction or operations on the Site under conditions of the Contract identical or substantially similar to these including those portions related to insurance. Upon the election to perform such work with its own forces or by separate contracts, the Owner shall notify the Contractor. If the Contractor claims that delay or additional cost is involved because of such action by the Owner, the Contractor shall proceed pursuant to Section 4.5 in the Contract Documents.

6.1.2 DESIGNATION AS CONTRACTOR

When separate contracts are awarded for different portions of the Project or other construction or operations on the Site, the term "Contractor" in the Contract Documents in each of those contracts shall mean the contractor who executes each separate Owner/Contractor agreement.

6.1.3 CONTRACTOR DUTIES

Although the Owner shall have overall responsibility for coordination and scheduling of the activities of the Owner's own forces and of each separate contractor with the Work of the Contractor, Contractor shall cooperate with Owner. The Contractor shall participate with other separate contractors and the Owner in reviewing their construction schedules when directed to do so. The Contractor shall make any revisions to the construction schedule deemed necessary after a joint review and mutual agreement. The construction schedules shall then constitute the schedules to be used by the Contractor until subsequently revised.

6.1.4 OWNER OBLIGATIONS

Unless otherwise provided in the Contract Documents, when the Owner performs work related to the Project with the Owner's own forces, the Owner shall be deemed to be subject to the same obligations, and to have the same rights, which apply to the Contractor under the General Conditions, including, without excluding others, those stated in Article 3, this Article 6 and Articles 10 and 12.

6.2 MUTUAL RESPONSIBILITY

6.2.1 DELIVERY AND STORAGE

The Contractor shall afford the Owner and separate contractors reasonable opportunity for delivery and storage of their materials and equipment and performance of their activities, and shall connect and coordinate the separate contractors' construction and operations with theirs as required by the Contract Documents.

6.2.2 NOTICE BY CONTRACTOR

If part of the Contractor's Work depends upon proper execution or results from work by the Owner or a separate contractor, the Contractor shall, prior to proceeding with that portion of the Work, promptly report to the Owner patent discrepancies or defects in such other construction that would render it unsuitable for such proper execution and results. Failure of the Contractor to so report shall constitute an acknowledgment that the Owner's or separate contractors' completed or partially completed construction is fit and proper to receive the Contractor's Work, except as to defects not then reasonably discoverable.

6.2.3 COSTS INCURRED

Costs, expenses, and damages caused by delays, improperly timed activities, defective construction, or damages to another's work/Work or property shall be borne by the party responsible. Should Contractor cause damage to the work or property of any other contractor on the Project, or to the Project or the property of a third party, or cause any delay to any such contractor or third party, the Contractor shall defend, indemnify and hold Owner harmless for such damage or delay under Section 3.16, above. Owner may withhold from progress payments and/or retention for the cost of such damage or delay.

6.2.4 CORRECTION OF DAMAGE

The Contractor shall promptly remedy damage wrongfully caused by the Contractor to completed or partially completed construction or to property of the Owner or separate contractors.

6.3 OWNER'S RIGHT TO CLEAN UP

If a dispute arises among the Contractor, separate contractors, and the Owner as to the

responsibility under their respective contracts for maintaining the premises and surrounding area free from waste materials and rubbish as described in Section 3.13, the Owner may clean up and allocate the cost among those responsible as the Owner determines to be just.

ARTICLE 7

CHANGES IN THE WORK

7.1 CHANGES

7.1.1 NO CHANGES WITHOUT AUTHORIZATION

The Owner reserves the right to change the Work by making such alterations, deviations, additions to, or deletions from the plans and specifications, as may be deemed by the Owner to be necessary or advisable for the proper Completion or construction of the Work contemplated, and Owner reserves the right to require Contractor to perform such work. No adjustment will be made in the Contract unit price of any Contract item regardless of the quantity ultimately required.

Owner shall compensate Contractor with additional money or additional time, or both, as warranted under the Contract Documents for any extra work ordered by the Owner to be performed by Contractor; but such "extra work" shall not include any work or expense (a) that was known by, should have been known by, or was reasonably foreseeable to Contractor at the time of bidding, or (b) for which Contractor is responsible under the Contract Documents. Contractor shall follow the provisions of the Contract Documents, including General Conditions sections 4.5, 7.6, 7.7, and 8.4, when requesting additional money or additional time for such extra work. Contractor shall expeditiously perform all extra work upon direction, even if no agreement has been reached on extra time or money. For all such changes resulting in a credit to Owner, Contractor shall follow Sections 7.5 and 7.7 in providing the credit to Owner. Contractor shall bring all potential credits to the Owner's attention.

There shall be no change whatsoever in the drawings, specifications, or in the Work or payments under the Contract Documents without an executed Change Order, Construction Change Directive, or order by the Owner pursuant to Section 7.1.2. Owner 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 same shall have been properly requested under Section 4.5 and authorized by, and the cost thereof approved in writing by, Change Order or Construction Change Directive. Owner shall not be liable for, and Contractor shall bear the burden of, any post-bid escalation in the costs of construction, whether or not foreseeable; but Contractor will retain the benefit of any post-bid cost decreases, whether or not foreseeable, and will retain the right to request additional compensation for cost increases incurred due to Owner delay. No extension of time for performance of the Work shall be allowed hereunder unless request for such extension is properly made under Section 4.5 and such time is thereof approved in writing by Change Order or Construction Change Directive. 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.

7.1.2 AUTHORITY TO ORDER MINOR CHANGES

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

7.2 CHANGE ORDERS ("CO")

A CO is a written instrument signed by the Owner and the Contractor, stamped (or sealed) and signed by Architect, and approved by the Owner's Governing Board and DSA, stating the agreement of Owner and Contractor upon all of the following:

A. 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.

Unless expressly stated otherwise in the CO, any CO executed by Owner and Contractor constitutes and includes full and complete money and time (including but not limited to, adjustments to money and time) for all costs and effects caused by any of the changes described within it. Unless expressly stated otherwise in the CO, in consideration for the money received for the changes described in the CO, Contractor waives all Claims for all costs and effects caused by any of the changes, including but not limited to labor, equipment, materials, delay, extra work, overhead (home and field), profit, direct costs, indirect costs, acceleration, disruption, impaired productivity, time extensions, and any the costs and effects on Subcontractors and suppliers of any tier.

7.3 CONSTRUCTION CHANGE DIRECTIVES ("CCD")

7.3.1 DEFINITION

A CCD is a written unilateral order to Contractor signed by the Owner and directing performance of the Work or directing a change in the Work. The CCD may state an adjustment in the Contract Sum, Contract Time, or Milestone Deadline. The Owner may by CCD, without invalidating the Contract, order changes in the Work within the general scope of the Contract consisting of additions, deletions, or other revisions pursuant to Section 7.1.1.

7.3.2 USE TO DIRECT CHANGE

A CCD may be used by Owner in the absence of agreement on the terms of a CO. If Contractor disagrees with the terms of a CCD, it shall nevertheless perform the work directed by the CCD; and if Contractor believes it is entitled to changes in the Contract Sum or Contract Time, it must comply with the Notice of Potential Change, COR and Claim procedures of Section 4.5.

7.4 REQUEST FOR INFORMATION ("RFI")

7.4.1 DEFINITION

An RFI is a written request prepared by the Contractor asking the Owner to provide additional information necessary to clarify an item which the Contractor feels 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/or 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

Unless Owner expressly directs otherwise in writing, Contractor shall submit RFIs directly to the Architect, with copies forwarded to the Owner. Contractor shall submit a revised and updated priority schedule with each RFI. The Architect shall endeavor to follow the Contractor's requested order of priorities. The Owner and Contractor agree that an adequate time period for the Architect (or other designated recipient of the RFI) to respond to an RFI is generally fourteen (14) calendar days after the Architect's receipt of an RFI, unless the Owner and Contractor agree otherwise in writing. However, in all cases, the Architect shall take such time, whether more or less than 14 days, as is necessary in the Architect's professional judgment to permit adequate review and evaluation of the RFI. If Contractor informs the Architect that it needs a response to an RFI expedited to avoid delay to the critical path, the Architect shall provide a response as quickly as reasonably possible. The total time required for the Architect to respond is subject to the complexity of the RFI, the number of RFI's submitted concurrently and the reprioritization of pending RFI's submitted by the Contractor, among other things. If Contractor believes that the Architect's response results in a change in the Work that warrants additional money or time, or that Architect's response was unreasonably delayed and caused delay to the Work's critical path, Contractor shall follow the procedures for additional money or time under Section 4.5. No presumption shall arise as to the timeliness of the response if the response is more than fourteen (14) days after the Architect's receipt of the RFI. Contractor shall review the Contract Documents before submitting an RFI to ensure that the information is not already in the Contract Documents. To compensate the Owner for time and costs incurred for each time the information was already in the Contract Documents, Owner may withhold $100 from progress payments or retention in addition to any other remedies which Owner may have the right to pursue.

7.4.4 COSTS INCURRED

The Contractor shall be invoiced by the Owner for any costs incurred for professional services, which shall be withheld from progress payments or retention, if an RFI requests an interpretation or decision of a matter where the information sought is equally available to the party making

such request.

7.5 REQUEST FOR PROPOSAL ("RFP")

7.5.1 DEFINITION

An RFP is Owner's written request asking the Contractor to submit to the Owner an estimate of the effect, including credits, 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 section 7.7. The Contractor shall not be entitled to any additional money for preparing a response to an RFP, whether ultimately accepted or not.

7.6 CHANGE ORDER REQUEST ("COR")

7.6.1 DEFINITION

A COR (including but not limited to a "proposed change order" or "PCO") is any written request submitted by the Contractor asking the Owner for a change in the Contract Documents, including a request for additional money or time. However, a Claim (see Sections 4.5.3-4.5.6) is not a COR. See Section 4.5.2 for additional COR requirements. The COR shall include all information necessary to establish the Contractor's entitlement to the requested change.

7.6.2 CHANGES IN PRICE

A COR shall include breakdowns per section 7.7 to validate any proposed change in Contract Sum.

7.6.3 CHANGES IN TIME

Where a change in a Milestone Deadline or Contract Time is requested, a COR shall also include delay analysis to validate any proposed change, and shall meet all requirements in these General Conditions, including but not limited to Section 8.4. 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 Work schedule as defined in section 3.9 and Division 1 of the Specifications.

7.7 PRICE OF CHANGE ORDERS

7.7.1 SCOPE

Any COR shall provide in writing to the Owner, the Architect and any construction manager, 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, wage rates, required for the change, and the effect upon the Contract Time of such CO.

7.7.2 DETERMINATION OF COST

The amount of the increase or decrease in the Contract Sum resulting 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;

B. Unit prices stated in the Contractor's original bid, the Contract Documents, or subsequently agreed upon between the Owner and the Contractor;

C. Cost to be determined in a manner agreed upon by the parties and a mutually acceptable fixed or percentage fee; 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. **Daily Reports by Contractor.**

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

b) Labor: Show names of workers, classifications, and hours worked.

c) Materials: Describe and list quantities of materials used.

d) Equipment: Show type of equipment, size, identification number, and hours of operation, including, if applicable, loading and transportation.

e) Other Services and Expenditures: Describe in such detail as the Owner may require.

2. **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 Owner 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 Owner.

c) Tool and Equipment Rental. No payment will be made for the use of tools which have a replacement value of $100 or less.

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 Owner 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 Owner.

All equipment shall be acceptable to the Inspector of Record, 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 Owner 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 Application for Payment.

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

f) Overhead, premiums and profit. For overhead, including direct and indirect costs, submit with the COR and include: home office overhead, off-Site supervision, CO preparation/negotiation/research for Owner initiated changes, 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 Owner and the Contractor to communicate proposed additions and deductions to the Contract.

	EXTRA	CREDIT
A. Material (attach itemized quantity and unit cost plus sales tax, invoices, receipts, truck tags, etc., for force account work)	_____	_____
B. Labor (attach itemized hours and rates, daily logs, certified payroll, etc.)	_____	_____
C. Equipment (attach any invoices)	_____	_____
D. Subtotal	_____	_____
E. If Subcontractor performed Work, then add Subcontractor's overhead and profit to portions performed by Subcontractor, 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 twenty-five percent (25%) of Item B.	_____	_____
G. Subtotal	_____	_____
H. General Contractor's Overhead and Profit for the portion of the Work in Item G performed by subcontractors, not to exceed five percent (5%).	_____	_____
I. General Contractor's Overhead and Profit for the portion of the Work in Item G performed by Contractor, not to exceed fifteen percent (15%).	_____	_____
J. Subtotal	_____	_____
K. Bond not to exceed one percent (1%) of Item I.	_____	_____
L. TOTAL	_____	_____

For any claimed overhead costs (whether field overhead (i.e., general conditions costs) or home office overhead) pursuant to Section 8.4.2 below, Contractor may not recover any mark ups for overhead or profit.

It is expressly understood that the value of such extra work or changes, as determined by any of the aforementioned methods, expressly includes (1) 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, and (2) any costs of preparing a COR, including but not limited to delay analysis. Any costs or expenses not included are deemed waived.

7.7.4 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 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.

7.7.5 ACCOUNTING RECORDS

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

7.7.6 NOTICE REQUIRED

Contractor shall submit a written Notice of Potential Change for additional money or time pursuant to section 4.5.1.

7.7.7 APPLICABILITY TO SUBCONTRACTORS

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

7.8 WAIVER OF RIGHT TO CLAIM MONEY OR TIME

Failure to demand money based on costs, or time extensions, as part of a COR constitutes a complete waiver of Contractor's right to claim the omitted money or time. All money or time for an issue must be included in the COR at the time submitted.

ARTICLE 8

TIME

8.1 DEFINITIONS

8.1.1 CONTRACT TIME

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

8.1.2 NOTICE TO PROCEED

Contractor shall not commence the Work until it receives a Notice to Proceed from Owner. The date of commencement of the Work is the date established in the Notice to Proceed. The date of commencement shall not be postponed by the failure to act of the Contractor or of persons or entities for whom the Contractor is responsible.

8.1.3 DAYS

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

8.2 HOURS OF WORK

8.2.1 SUFFICIENT FORCES

Contractors and Subcontractors shall furnish sufficient forces to ensure the prosecution of the Work, including Work directed pursuant to a CCD (see Section 7.3, above), in accordance with the Construction Schedule.

8.2.2 PERFORMANCE DURING WORKING HOURS

Work shall be performed during regular working hours except that in the event of an emergency or when required to perform the Work in accordance with job progress, Work may be performed outside of regular working hours with the advance written consent of the Owner.

8.2.3 LABOR CODE APPLICATION

As provided in Article 3 (commencing at § 1810), Chapter 1, Part 7, Division 2 of the Labor Code, eight (8) hours of labor shall constitute a legal day's work. The time of service of any worker employed at any time by the Contractor or by any Subcontractor on any subcontract under this Contract, upon the Work or upon any part of the Work contemplated by this Contract, is limited and restricted to eight (8) hours during any one calendar day and forty (40) hours during any one calendar week, except as hereinafter provided. Notwithstanding the provision hereinabove set forth, Work performed by employees of Contractors in excess of eight (8) hours per day and forty (40) hours during any one week shall be permitted upon this public work with compensation provided for all hours worked in excess of eight (8) hours per day at not less than one and one-half (1-1/2) times the basic rate of pay.

Contractor or subcontractor shall pay to the Owner a penalty of Twenty-five Dollars ($25.00) for each worker employed in the execution of this Contract by the Contractor, or by any Subcontractor, for each calendar day during which such worker is required or permitted to work more than eight (8) hours in any calendar day and forty (40) hours in any one (1) calendar week, in violation of the provisions of Article 3 (commencing at § 1810), Chapter 1, Part 7, Division 2 of the Labor Code, unless compensation for the workers so employed by Contractor is not less than one and one-half (1-1/2) times the basic rate of pay for all hours worked in excess of eight (8) hours per day.

8.2.4 COSTS FOR AFTER HOURS INSPECTIONS

If the work done after hours is required by the Contract Documents to be done outside the Contractor's or the Inspector of Record's regular working hours, the costs of any inspections, if required to be done outside normal working hours, shall be borne by the Owner.

If the Owner allows the Contractor to do work outside regular working hours for the Contractor's own convenience, the costs of any inspections required outside regular working hours, among other remedies, shall be invoiced to the Contractor by the Owner and withheld from progress payments and/or retention. Contractor shall give Owner at least 48 hours notice prior to working

outside regular working hours.

If the Contractor elects to perform work outside the Inspector of Record's regular working hours, costs of any inspections required outside regular working hours, among other remedies, may be invoiced to the Contractor by the Owner and withheld from progress payments and/or retention.

8.2.5 TIME FOR COMMENCEMENT BY SUBCONTRACTORS

Unless otherwise provided in the Contract Documents, all Subcontractors shall commence their Work within two (2) consecutive business days after notice to them by the Contractor and shall prosecute their Work in accordance with the progress of the Work.

8.3 PROGRESS AND COMPLETION

8.3.1 TIME OF THE ESSENCE

Time limits stated in the Contract Documents are of the essence of the Contract. By executing the Agreement the Contractor confirms that the Milestone Deadlines and Contract Time are reasonable periods for performing the Work.

8.3.2 NO COMMENCEMENT WITHOUT INSURANCE

The Contractor shall not knowingly, except by agreement or instruction of the Owner, in writing, commence operations on the Site or elsewhere prior to the effective date of insurance required by Article 11 to be furnished by the Contractor. The date of commencement of the Work shall not be changed by the effective date of such insurance.

8.3.3 EXPEDITIOUS COMPLETION

The Contractor shall proceed expeditiously to perform the Work, including Work directed pursuant to a CCD (see Section 7.3, above), with adequate forces, labor, materials, equipment, services and management, shall achieve all Milestone Deadlines, and shall achieve Completion within the Contract Time.

8.4 EXTENSIONS OF TIME - LIQUIDATED DAMAGES

Contractor waives all rights and remedies as to any delay experienced during the Work (including any right to rescind the Contract and any right to refuse to perform the Contract) except for the rights and remedies expressly allowed by the Contract (including but not limited to time extensions and delay damages pursuant to this Section 8.4.1 and Section 8.4.2 below, and termination pursuant to Section 14.1 below).

8.4.1 CONDITIONS ALLOWING FOR EXTENSIONS OF TIME TO COMPLETE THE WORK ONLY (EXCUSABLE DELAY)

The Contractor shall be granted a reasonable time extension under the Contract Documents, including but not limited to Sections 3.18 and 4.5 and Article 7, for excusable delays, which are those delays that meet each and every of the following conditions:

(a) The delay was beyond the control of Contractor and its subcontractors and material suppliers;

(b) The delay was caused by events that were not reasonably foreseeable to Contractor at the time of bidding;

(c) All float in the schedule had been used, and the delay impacted and delayed the controlling items of Work (i.e., the as-built critical path, as determined from the as-planned schedule and the actual progress of the Work), thus delaying the achievement of a Milestone Deadline or the Completion of the whole Work within the Contract Time;

(d) The delay was not caused by Contractor or its subcontractors or suppliers, including but not limited to their breaches of contract or the standard of care;

(e) The delay was not associated with loss of time resulting from the necessity of submittals to Owner for approval, or from necessary Owner surveys, measurements, inspections and testing;

(f) The delay was not caused by usual or common weather for the time of year, including usual or common severe weather; and

(g) The delay could not have been prevented or mitigated by the exercise of care, prudence, foresight, and diligence by Contractor.

Excusable delays may include acts of God, acts of public enemy, acts of the Owner or anyone employed by it, acts of another contractor in performance of a contract (other than this Contract) with the Owner, fires, floods, epidemics, quarantine restrictions, labor disputes, unusual and uncommon weather for the time of year, unforeseen site conditions, or delays of subcontractors due to such causes. Owner shall take into consideration other relevant factors such as concurrent delays. Contractor has the burden of proving that any delay was excusable.

Information or services under Owner's control will be furnished by the Owner with reasonable promptness. The Owner shall not be liable for any time extensions caused by factors beyond the Owner's control including but not limited to DSA's, or any other local, State or federal agency's, review of bids, change order requests, RFI's or any other documents.

8.4.2 COMPENSABLE DELAY (TIME AND MONEY)

Compensable delays are those excusable delays for which Contractor is also entitled to money. To be compensable, an excusable delay must be one for which the Owner is responsible, where the delay was unreasonable under the circumstances involved, and where the delay was not within the contemplation of the parties; ***however***, Contractor shall not be entitled to monetary compensation when (a) Contractor could have reasonably anticipated the delay and avoided or minimized the cost impacts of it, (b) there was a concurrent delay which does not qualify for monetary compensation under this paragraph, (c) the cause of the delay was reasonably unforeseen by the Owner or the delay was caused by factors beyond the control of the Owner,

including but not limited to a delay under Section 2.2.8 above or a delay caused by a utility company's failure to perform despite Owner's reasonable arrangements for such performance; or (d) any other defense available to Owner under law or equity applies. Contractor has the burden of proving that any delay was excusable and compensable, including an analysis that establishes non-concurrency. Compensation shall be limited to field overhead (i.e., general conditions) and home office overhead, as may be allowed by law.

8.4.3 NOTICE BY CONTRACTOR REQUIRED; PROCEDURES FOR DEMANDING ADDITIONAL TIME OR MONEY

For notice and other required procedures related to requests by Contractor for additional time or money related to delay, Contractor shall comply with the Contract Documents, including but not limited to Sections 3.18 and 4.5, and Article 7, above.

8.4.4 EARLY COMPLETION

Regardless of the cause therefore, the Contractor may not maintain any Claim or cause of action against the Owner for damages incurred as a result of its failure or inability to Complete its Work on the Project in a shorter period than established in the Contract Documents, the parties stipulating that the period set forth in the Contract Documents is a reasonable time within which to perform the Work on the Project.

8.4.5 LIQUIDATED DAMAGES

Failure to Complete the Work within the Contract Time and in the manner provided for by the Contract Documents, or failure to complete any specified portion of the Work by a milestone deadline, shall subject the Contractor to liquidated damages as described in Article III of the Agreement and the Contract Documents. Accordingly, the parties agree that the amount set forth in the Agreement shall be presumed to be the amount of damages which the Owner shall directly incur as a result of each calendar day by which Completion of the Work is delayed beyond the Contract Time as adjusted by Change Orders.

In addition, delaying another contractor's work on the Project or causing delay to the *completion* of the Project shall subject the Contractor to liquidated damages as described in Article III of the Agreement and the Contract Documents. Accordingly, the parties agree that the amount set forth in the Agreement shall be presumed to be the amount of damages which the Owner shall directly incur as a result of each calendar day by which Contractor delays the work of others on the Project or *completion* of the Project itself.

If liquidated damages accrue as described above, the Owner, in addition to all other remedies provided by law, shall have the right to assess and withhold as provided in Article III of the Agreement and the Contract Documents.

8.5 GOVERNMENT APPROVALS

Owner shall not be liable for any delays or damages related to the time required to obtain

government approvals.

ARTICLE 9

PAYMENTS AND COMPLETION

9.1 CONTRACT SUM

The Contract Sum is stated in the Agreement, later adjusted by Change Orders and Construction Change Directives, and is the total amount payable by the Owner to the Contractor for performance of the Work under the Contract Documents.

9.2 COST BREAKDOWN

9.2.1 REQUIRED INFORMATION

On forms approved by the Owner, the Contractor shall furnish the following:

A. Within ten (10) days of the mailing, faxing or delivering of the Notice of Award of the Contract, a detailed breakdown of the Contract Sum (Schedule of Values) for the Work. Each item in the schedule of values shall include its proper share of the overhead and profit.

B. Within ten (10) days of the mailing, faxing or delivering of the Notice of Award of the Contract, a schedule of estimated monthly payment requests (cash flow) 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 Owner may require;

C. Five (5) days prior to the submission of a pay request, an itemized breakdown of work done for the purpose of requesting partial payments;

D. Within ten (10) days of the mailing, faxing or delivering of the Notice of Award of the Contract, the name, address, telephone number, fax number, license number and classification, and (for all projects over Twenty-Five Thousand Dollars ($25,000)) the public works contractor registration number of all of its Subcontractors and of all other parties furnishing labor, material, or equipment for its Contract, along with the amount of each such subcontract or the price of such labor, material, and equipment needed for its entire portion of the Work.

9.2.2 OWNER ACCEPTANCE REQUIRED

The Owner shall review all submissions received pursuant to paragraph 9.2.1 in a timely manner. All submissions must be accepted by the Owner before becoming the basis of any payment.

9.3 APPLICATIONS FOR PAYMENT

9.3.1 PROCEDURE

On or before the fifth (5th) day of each calendar month during the progress of the portion of the Work for which payment is being requested, the Contractor shall submit to the Architect, unless there is a construction manager for the Project or the Owner directs otherwise, an itemized Application for Payment for operations completed in accordance with the Schedule of Values through the end of the previous calendar month. Such application shall be notarized, if required, and supported by the following:

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 with 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. The Owner approved additions to and subtractions from the Contract Sum and Time;

F. A summary of the retentions (each Application shall provide for retention, as set out in Article 9.6);

G. Material invoices, evidence of equipment purchases, rentals, and other support and details of cost as the Owner may require from time to time;

H. The percentage of Completion of the Contractor's Work by line item;

I. A statement showing all payments made by the Contractor for labor and materials on account of the Work covered in the preceding Application for Payment. Such applications shall not include requests for payment of amounts the Contractor does not intend to pay to subcontractors or others because of a dispute or other reason;

J. Conditional and unconditional waivers and releases in exchange for progress payments, including final progress payments, in compliance with Civil Code sections 8132-8138; and

K. Contractor's monthly reports, daily reports, and monthly schedule updates for all months of Work prior to the Application for Payment that Contractor has not previously submitted.

9.3.2 PURCHASE OF MATERIALS AND EQUIPMENT

As 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 Owner, to assure that there will be no delays, payment by the Owner for stored material shall be made only in unusual circumstances where the Architect specifically recommends, and Owner specifically approves the payment in writing. If payments are to be made on account of materials and equipment not incorporated in the Work, but delivered and suitably stored at the Site or at some other location agreed upon in writing by the Owner, the payments shall be conditioned upon submission by the Contractor, Subcontractor, or vendor of bills of sale and such other documents satisfactory to the Owner to establish the Owner's title to such materials or equipment free of all liens and encumbrances, and otherwise protect the Owner's interest, including, without limitation, provision of applicable insurance and transportation to the Site. All stored items shall be inventoried, specified by identification numbers (if applicable), released to the Owner by sureties of the Contractor and the Subcontractor and, if stored off-Site, stored only in a bonded warehouse.

9.3.3 WARRANTY OF TITLE

The Contractor warrants that title to all Work covered by an Application for Payment will pass to the Owner no later than the time of payment. The Contractor further warrants that upon submittal of an Application for Payment all Work for which Certificates for Payment have been previously issued and payments received from the Owner shall, to the best of the Contractor's knowledge, information, and belief, be 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. Transfer of title to Work does not constitute a waiver by Owner of any defects in the Work.

9.4 REVIEW OF PROGRESS PAYMENT

9.4.1 OWNER ACCEPTANCE

The Owner will, within seven (7) days after receipt of the Contractor's Application for Payment, either accept such payment or notify the Contractor in writing of the Owner's reasons for withholding acceptance in whole or in part.

9.4.2 OWNER'S REVIEW

The review of the Contractor's Application for Payment by the Owner will be based, at least in part, on the Owner's observations at the Site and the data comprising the Application for Payment that the Work has progressed to the point indicated. The review is also subject to an

evaluation of the Work for conformance with the Contract Documents, to results of subsequent tests and inspections, to minor deviations from the Contract Documents correctable prior to Completion, and to specific qualifications expressed by the Owner. The Owner may reject the Application for Payment if it is not complete under Section 9.3, including all supporting documents required by Section 9.3. The issuance of a Certificate for Payment will constitute a representation that the Contractor is entitled to payment in the amount certified, subject to any withholdings under Section 9.5.1 or any specific qualifications Owner expresses in the Certificate for Payment. However, Contractor's entitlement to payment may be affected by subsequent evaluations of the Work for conformance with the Contract Documents, test and inspections and discovery of minor deviations from the Contract Documents correctable prior to Completion. The issuance of a Certificate for Payment will not be a waiver by the Owner of any defects in the Work covered by the Application for Payment, nor will it be a representation that the Owner has:

A. Made exhaustive or continuous on-Site inspections to check the quality or quantity of the Work;

B. Reviewed construction means, methods, techniques, sequences, or procedures;

C. Reviewed copies of requisitions received from Subcontractors, material and equipment suppliers, and other data requested by the Owner to substantiate the Contractor's right to payment; or

D. Made an examination to ascertain how or for what purpose the Contractor has used money previously paid on account of the Contract Sum.

9.5 DECISIONS TO WITHHOLD PAYMENT

9.5.1 REASONS TO WITHHOLD PAYMENT

The Owner may withhold from a progress payment, in whole or in part, to such extent as may be necessary to protect the Owner due to any of the following:

A. Defective or incomplete Work not remedied;

B. Stop Payment Notices. For any stop payment notice, the Owner shall withhold the amount stated in the stop payment notice, the stop notice claimant's anticipated interest and court costs and an amount to provide for the Owner's reasonable cost of any litigation pursuant to the stop payment notice. For any stop payment notice action the parties resolve before judgment is entered, Owner has the right to permanently withhold for any reasonable cost of litigation for that stop payment notice, even if it exceeds the amount originally withheld by Owner for the estimated reasonable cost of litigation. However, if (1) the Contractor at its sole expense provides a bond or other security satisfactory to the Owner in the amount of at least one hundred twenty-five percent (125%) of the claim, in a form satisfactory to the Owner, which protects the Owner against such claim, and (2)

the Owner chooses to accept the bond, then Owner would release the withheld stop payment notice funds to the Contractor, except that Owner may permanently withhold for any reasonable cost of litigation. Any stop payment notice release bond shall be executed by a California admitted, fiscally solvent surety, completely unaffiliated with and separate from the surety on the payment and performance bonds, that does not have any assets pooled with the payment and performance bond sureties.

C. Liquidated damages against the Contractor, whether already accrued or estimated to accrue in the future;

D. Reasonable doubt that the Work can be Completed for the unpaid balance of any Contract Sum or within the Contract Time;

E. Damage to the property or work of the Owner, another contractor, or subcontractor;

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, monthly progress schedules, shop drawings, submittal schedules, schedule of values, product data and samples, proposed product lists, executed change orders, 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 deadlines;

M. Subsequently discovered evidence or observations nullifying the whole or part of a previously issued Certificate for Payment;

N. Failure by Contractor to pay Subcontractors or material suppliers as required by Contract or law, which includes but is not limited to Contractor's failure to pay prevailing wage and any assessment of statutory penalties;

O. Overpayment to Contractor on a previous payment;

P. Credits owed to Owner for reduced scope of work or work that Contractor will not perform, including credits for any unspent allowance;

Q. The estimated cost of performing work pursuant to Section 2.4;

R. Actual damages related to false claims by Contractor;

S. Breach of any provision of the Contract Documents;

T. Owner's potential or actual loss, liability or damages caused by the Contractor, including defense costs and attorneys' fees incurred due to Contractor's failure to defend an action pursuant to the indemnity provisions in the Contract Documents; and

U. As permitted by other provisions in the Contract or as otherwise allowed by law, including statutory penalties Owner or other entities assessed against Contractor. (See e.g., Labor Code section 1813 (working hours) or Public Contract Code section 4110 (subcontractor listings and substitutions))

Owner may, but is not required to, provide to Contractor written notice of the items for which Owner is withholding amounts from a progress payment.

If Contractor claims a breach of contract or violation of law based on wrongful withholding by the Owner from a progress payment or based on a late progress payment, or if Contractor otherwise disputes any progress payment or lack thereof, then within fifteen (15) days of the alleged breach of contract, violation of law, or late or disputed progress payment Contractor shall submit a Claim pursuant and subject to Sections 4.5.3-4.5.6. The Contractor need not submit a Notice of Potential Change or a Change Order Request.

For any withhold amount based on an estimate where the actual amount later becomes known and certain, no later than the final accounting for the Contract the Owner will release any amount withheld over that certain and known amount. If the certain and known amount exceeds the amount previously withheld, Owner may withhold additional amounts from Contractor to cover the excess amount. If available funds are not sufficient, Contractor shall pay Owner the difference.

Despite any withholding from a progress payment, or any other dispute about a progress payment, Contractor shall continue to expeditiously perform the Work pursuant to the Contract Documents, including but not limited to General Conditions sections 4.5.7, 7.1.1, 8.3.1, and 8.3.3.

9.5.2 PAYMENT AFTER CURE

When Contractor removes or cures the grounds for withholding amounts, 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.

9.5.3 OVERPAYMENT AND/OR FAILURE TO WITHHOLD

Neither Owner's overpayment to Contractor, nor Owner's failure to withhold an amount from payment that Owner had the right to withhold, shall constitute a waiver by Owner of its rights to withhold those amounts from future payments to Contractor or to otherwise pursue recovery of those amounts from Contractor.

9.6 PROGRESS PAYMENTS

9.6.1 PAYMENTS TO CONTRACTOR

Progress payments shall be made in accordance with Public Contract Code sections 7201, 9203, and 20104.50. Unless otherwise stated in the Contract Documents, within thirty (30) days after receipt of an undisputed and properly submitted Application for Payment ("properly submitted" means in compliance with the law and the Contract Documents, including submittal of all documents required to accompany the Application [see Section 9.3.1, above]), Contractor shall be paid a sum equal to ninety-five percent (95%) of the undisputed value of the Work performed up to the last day of the previous month, less the aggregate of previous payments; and Owner shall withhold the other five percent (5%) of the undisputed value of the Work as retainage (or "retention"). The value of the Work completed shall be an estimate only, no inaccuracy or error in said estimate shall operate to release the Contractor, or any bondsman, from damages arising from such Work or from enforcing each and every provision of this Contract, and the Owner shall have the right subsequently to correct any error made in any estimate for payment. Contractor shall base an Application for Payment only on the original Contract Sum plus any fully executed and Board-approved Change Orders. Contractor shall not include Notices of Potential Claims, CORs, Claims or disputed amounts.

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 Owner concerning the Work, or any portion thereof, remains uncomplied with. Payment shall not be a waiver of any such direction.

9.6.2 PAYMENTS TO SUBCONTRACTORS

No later than ten (10) days after receipt of payment from Owner, pursuant to Business and Professions Code section 7108.5, 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, reflecting percentages actually retained from payments to the Contractor on account of such Subcontractor's portion of the Work. The Contractor shall, by appropriate agreement with each Subcontractor, require each Subcontractor to make payments to Sub-subcontractors in a similar manner.

9.6.3 PERCENTAGE OF COMPLETION OR PAYMENT INFORMATION

The Owner will, on request, furnish to a Subcontractor, if practicable, information regarding percentages of Completion or amounts applied for by the Contractor, and action taken thereon by

the Owner, on account of portions of the Work done by such Subcontractor.

9.6.4 NO OBLIGATION OF OWNER FOR SUBCONTRACTOR PAYMENT

The Owner 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.

9.6.5 PAYMENT TO SUPPLIERS

Payment to material or equipment suppliers shall be treated in a manner similar to that provided in paragraphs 9.6.2, 9.6.3 and 9.6.4.

9.6.6 PAYMENT NOT CONSTITUTING APPROVAL OR ACCEPTANCE

An accepted Application for Payment, issuance of a Certificate for Payment, a progress payment, or partial or entire use or occupancy of the Project by the Owner shall not constitute acceptance or approval of any portion of the Work, especially any Work not in accordance with the Contract Documents.

9.6.7 JOINT CHECKS

Owner shall have the right, if necessary for the protection of the Owner, to issue joint checks made payable to the Contractor and Subcontractors and/or 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. However, Owner has no duty to issue joint checks. In no event shall any joint check payment be construed to create any contract between the Owner and a Subcontractor of any tier, any obligation from the Owner to such Subcontractor, or rights in such Subcontractor against the Owner.

9.7 COMPLETION OF THE WORK

9.7.1 CLOSE-OUT PROCEDURES

When the Contractor considers that the Work is Complete and submits a written notice to Owner requesting an inspection of the Work, the Owner shall review the Work and prepare and submit to the Contractor a comprehensive list of items to be Completed or corrected (the "Punch List"). The Punch List shall include all outstanding obligations of Contractor, including training, start-up, testing, and submission to Owner of all required documentation (e.g., written guarantees, warranties, invoices, as-built drawings, manuals, bonds, and the documents described in Sections 9.3 and 9.9). The Contractor and/or its Subcontractors shall proceed promptly to Complete and correct items on the Punch List. Failure to include an item on the Punch List does not alter the responsibility of the Contractor to Complete all Work (including the omitted item) in accordance with the Contract Documents, and to Complete or correct the Work so long as the statute of limitations (or repose) has not run.

When the Contractor believes the Punch List Work is Complete and in accordance with the

Contract Documents, it shall then submit a request for an additional inspection by the Owner to determine Completion. Owner shall again inspect the Work and inform the Contractor of any items that are not complete or correct. Contractor shall promptly Complete or correct items until no items remain.

After the Work, including all Punch List Work, is inspected and informally deemed by the Owner to be Complete, the Owner's governing body may formally accept the Work as Complete at a meeting of the governing body. Warranties required by the Contract Documents shall commence on the date of Contractor's Completion of the Work (see Sections 3.5, 12.2.5, and 12.2.6).

Owner may record a Notice of Completion as allowed by Civil Code section 9200 *et seq.*

9.7.2 COSTS OF MULTIPLE INSPECTIONS

More than two (2) requests by Contractor to make inspections to confirm Completion as required under paragraph 9.7.1 shall be considered an additional service of Owner, and all subsequent costs will be invoiced to Contractor and withheld from remaining payments.

9.8 PARTIAL OCCUPANCY OR USE

The Owner may occupy or use any completed, or partially completed, portion of the Work at any stage prior to acceptance, or prior to Completion if there is no formal acceptance. Occupancy or use of any portion of the Work, or the whole Work, shall not constitute approval or acceptance of it, nor shall such occupancy or use relieve Contractor of any of its obligations under the Contract Documents regarding that portion of, or the whole, Work.

The Owner 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. When the Contractor considers a portion complete, the Contractor may request an inspection of that portion and preparation of a Punch List by the Owner for that portion, as set forth for the entire Work under paragraph 9.7.1; however, such inspection and Punch List shall not act as any form of approval or acceptance of that portion of the Work, or of any Work not complying with the requirements of the Contract, and that portion shall be subject to subsequent inspections and Punch Lists.

Immediately prior to such partial occupancy or use, the Owner, the Architect and the Contractor 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.

9.9 FINAL PROGRESS PAYMENT AND RELEASE OF RETENTION

9.9.1 FINAL APPLICATION FOR PROGRESS PAYMENT

When, pursuant to Section 9.7.1, the Owner finds all of the Work is Completed in accordance

with the Contract Documents, it shall so notify Contractor, who shall then submit to the Owner its final Application for Payment.

Upon receipt and approval of such final Application for Payment, the Owner shall issue a final Certificate of Payment, based on its knowledge, information, and belief, and on the basis of its observations, inspections, and all other data accumulated or received by the Owner in connection with the Work, that such Work has been Completed in accordance with the Contract Documents. If required to do so under Labor Code section 1773.3(d), Owner shall withhold final payment.

9.9.2 PROCEDURES FOR APPLICATION FOR FINAL PROGRESS PAYMENT

The Application for Final Progress Payment pursuant to Section 9.9.1 shall be accompanied by the same details as set forth in Section 9.3, and in addition, the following conditions must be fulfilled:

A. The Work shall be Complete, and the Contractor shall have made, or caused to have been 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 Owner required under the Contract.

B. 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, and Contractor delivered them to the Owner.

C. The Contractor shall deliver to the Owner (i) reproducible final Record Drawings and Annotated Specifications showing the Contractor's Work "as built," with the Contractor's certification of the accuracy of the Record Drawings and Annotated Specifications, (ii) all warranties and guarantees, (iii) operation and maintenance instructions, manuals and materials for equipment and apparatus, and (iv) all other documents required by the Contract Documents.

D. Contractor shall provide extensive assistance in the utilization of any equipment or system such as initial start-up or testing, adjusting and balancing, preparation of operation and maintenance manuals and training personnel for operation and maintenance.

Acceptance of Final Progress Payment shall constitute a complete waiver of Claims except for those previously identified in writing and identified by that payee as unsettled at the time of Final Progress Payment.

9.9.3 RELEASE OF RETAINAGE

Owner shall withhold not less than 5% of the Contract Sum ("retainage," or "retention") until

Completion and acceptance of the Project, per Public Contract Code section 9203.

Owner may withhold from release or payment of retainage up to 150% of disputed amounts, including but not limited to the issues listed in Section 9.5. If retainage is held in an escrow account pursuant to an escrow agreement under Public Contract Code section 22300 (see Section 9.10) and Owner withholds from release of retainage based on a breach of the Contract, or other default, by Contractor, Owner may withdraw the withheld retainage from the escrow account.

Owner shall release the undisputed retainage within sixty (60) days after Completion of the Project. For this purpose, "Completion" is defined in Public Contract Code section 7107(c). No interest shall be paid on any retainage, or on any amounts withheld, except as provided to the contrary in any Escrow Agreement and General Conditions between the Owner and the Contractor under Public Contract Code section 22300.

To claim a breach of contract or violation of law based on wrongful withholding by the Owner from retention or based on a late payment or late release of retention, or if Contractor otherwise disputes any payment or release of retention or lack thereof, within fifteen (15) days of the alleged breach of contract, violation of law, or late or disputed payment/release of retention Contractor shall submit a Claim pursuant and subject to Sections 4.5.3-4.5.6. The Contractor need not submit a Notice of Potential Change or a Change Order Request.

9.10 SUBSTITUTION OF SECURITIES

In accordance with section 22300 of the Public Contract Code, the Owner will permit the substitution of securities for any retention monies withheld by the Owner to ensure performance under the Contract. At the request and expense of the Contractor, securities equivalent to the amount withheld shall be deposited with the Owner, or with a state or federally chartered bank as the escrow agent, who shall then pay such retention monies to the Contractor. Upon Completion of the Contract, the securities shall be returned to the Contractor if Owner has no basis to withhold under the Contract Documents.

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

The Contractor shall be the beneficial owner of any securities substituted for monies withheld and shall receive any interest thereon.

Any escrow agreement entered by Owner and Contractor pursuant to Public Contract Code section 22300, shall be substantially similar to the form set forth in 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 shall have responsibility for initiating, maintaining, and supervising all safety precautions and programs in connection with the performance of the Contract. Each Contractor 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. Contractor will ensure that his employees and Subcontractors cooperate and coordinate safety matters with any other contractors on the Project to form a joint safety effort.

10.1.2 SUBCONTRACTOR RESPONSIBILITY

Subcontractors have the responsibility for participating in, and enforcing, 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 Owner, and all insurance carriers and loss prevention engineers.

10.1.4 ACCIDENT REPORTS

Subcontractors shall promptly 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 immediately by telephone or messenger. Contractor shall thereafter promptly report the facts in writing to the Owner 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 for minor injuries.

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, equipment, tools, construction equipment, and machinery to be incorporated therein or necessary for the proper execution and Completion of the Work, 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.

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 Owner any time that explosives or hazardous materials are expected to be stored on Site. Location of storage shall be coordinated with the Owner and local fire authorities.

10.2.5 FINGERPRINTING

At its own expense, Contractor shall comply with all fingerprinting requirements under law and Contract, including but not limited to the requirements of Education Code section 45125.2 and the Independent Contractor Student Contact Form which is a part of the Contract. Contractor shall hold harmless, defend and indemnify the Owner under section 3.16, for any costs, including

attorneys' fees, Owner incurs from Contractor's failure to comply.

10.3 PROTECTION OF WORK AND PROPERTY

10.3.1 PROTECTION OF WORK

The Contractor and Subcontractors shall continuously protect the Work, the Owner's property, and the property of others, from damage, injury, or loss until the earlier of formal acceptance of the Work or Completion of the Work. The Contractor and Subcontractors 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 Owner; except that for projects not solely funded through revenue bonds, (a) Contractor shall not be responsible for damages caused by a tidal wave to the extent that the damages exceed 5% of the Contract Sum, and (b) Contractor shall not be responsible for damages caused by an earthquake above 3.5 on the Richter Scale in magnitude to the extent that the damages exceed 5% of the Contract Sum, per Public Contract Code §7105(a).

10.3.2 PROTECTION FOR ELEMENTS

The Contractor will remove all mud, water, or other elements as may be required for the proper protection and prosecution of its Work. The Contractor shall at all times provide heat, coverings, and enclosures necessary to maintain adequate protection against weather so as to preserve the Work, materials, equipment, apparatus, and fixtures free from injury or damage.

10.3.3 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 to 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 or cause damage to 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 Owner.

10.3.4 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 Owner, and shall not unreasonably encumber the premises with construction equipment or materials.

10.3.5 SUBCONTRACTOR ENFORCEMENT OF RULES

Subcontractors shall enforce the Owner'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.

10.3.6 SITE ACCESS

The Contractor and the Subcontractors shall use only those ingress and egress routes designated by the Owner, observe the boundaries of the Site designated by the Owner, park only in those areas designated by the Owner, which areas may be on or off the Site, and comply with any parking control program established by the Owner such as furnishing license plate information and placing identifying stickers on vehicles.

10.3.7 PROTECTION OF MATERIALS

The Contractor and the Subcontractors shall receive, count, inspect for damage, record, store, and protect construction materials for the Work and Subcontractors shall promptly send to the Contractor evidence of receipt of such materials, indicating thereon any shortage, change, or damage (failure to so note shall constitute acceptance by the Subcontractor of financial responsibility for any shortage).

10.4 EMERGENCIES

10.4.1 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 money or extension of time claimed by the Contractor on account of an emergency shall be determined as provided in Section 4.5 and Article 7.

10.4.2 ACCIDENT REPORTS

The Contractor shall promptly report in writing to the Owner 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 addition, if death, serious personal injuries, or serious property damages are caused, the accident shall be reported immediately by telephone or messenger to the Owner.

10.5 HAZARDOUS MATERIALS

10.5.1 DISCOVERY OF HAZARDOUS MATERIALS

In the event the Contractor encounters or suspects the presence on the Site material reasonably believed to be asbestos, polychlorinated biphenyl (PCB), or any other material defined as being hazardous by section 25249.5 of the California Health and Safety Code, which (a) has not been

rendered harmless, and (b) the handling or removal of which is not within the scope of the Work, the Contractor shall immediately stop Work in the area affected and report the condition to the Owner and the Architect in writing, whether such material was generated by the Contractor, another contractor, or the Owner. The Work in the affected area shall not thereafter be resumed, except by written agreement of the Owner 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 Owner and the Contractor.

10.5.2 HAZARDOUS MATERIAL WORK LIMITATIONS

In the event that the presence of hazardous materials is suspected or discovered on the Site, the Owner 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 Owner, as certified by an independent testing laboratory and/or approved by the appropriate government agency.

10.5.3 INDEMNIFICATION BY OWNER FOR HAZARDOUS MATERIAL NOT CAUSED BY CONTRACTOR

In the event the presence of hazardous materials on the Site is not caused by the Contractor, Owner shall pay for all costs of testing and remediation, if any, and shall compensate Contractor for any delay or additional costs incurred in accordance with the applicable provisions of Articles 7 and 8 herein. Owner shall defend, indemnify and hold harmless the Contractor and its agents, officers, directors and employees from and against any and all claims, damages, losses, costs and expenses incurred in connection with or arising out of, or relating to, the performance of the Work in the area affected by the hazardous material, except to the extent the claims, damages, losses, costs, or expenses were caused by Contractor's active negligence, sole negligence or willful misconduct. By providing this indemnification, Owner does not waive any immunities.

10.5.4 NATURALLY OCCURRING ASBESTOS

If the Site is found to contain naturally occurring asbestos (asbestos naturally contained in rocks which can become airborne when released "NOA"), in addition to complying with applicable provisions in sections 10.5.1-10.5.3 above, Contractor shall comply with, and be solely responsible for, all applicable NOA requirements of the California Air Resources Board (CARB), California Department of Industrial Relations, California Division of Occupational Safety and Health (Cal/OSHA), any local air quality management district with jurisdiction over the Site, the County, and all other applicable federal, State and local governmental entities. This compliance and responsibility includes, but is not limited to, dust control mitigation measures

and a monitoring plan.

10.5.5 INDEMNIFICATION BY CONTRACTOR FOR HAZARDOUS MATERIAL CAUSED BY CONTRACTOR

In the event the presence of hazardous materials on the Site is caused by Contractor, Subcontractors, materialmen or suppliers, the Contractor shall pay for all costs of testing and remediation, if any, and shall compensate the Owner for any additional costs incurred as a result of the generation of hazardous material on the Project Site. In addition, the Contractor shall defend, indemnify and hold harmless Owner 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 Site, except to the extent the claims, damages, losses, costs, or expenses were caused by Owner's active negligence, sole negligence or willful misconduct.

10.5.6 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.

10.5.7 ARCHEOLOGICAL MATERIALS

In the event the Contractor encounters or reasonably suspects the presence on the Site of archeological materials, the Contractor shall immediately stop Work in the area affected and report the condition to the Owner and the Architect in writing. The Work in the affected area shall not thereafter be resumed, except after Contractor's receipt of written notice from the Owner.

ARTICLE 11

INSURANCE AND BONDS

11.1. CONTRACTOR'S LIABILITY INSURANCE

11.1.1 LIABILITY INSURANCE REQUIREMENTS

11.1.1 By the earlier of the deadline set forth in the Instructions to Bidders or the commencement of the Work and within limits acceptable to the Owner, 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+, Class XII status as rated in the most recent edition of Best's Insurance Reports such commercial general liability insurance per occurrence for bodily injury, personal injury and property damage as set forth in the Agreement and automobile liability insurance per accident for bodily injury and property damage combined single limit as set forth in the Agreement as will protect the Contractor 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 Sub-subcontractor, by anyone directly or indirectly employed by any of them, or by anyone for whose acts any of them may be liable:

11.1.1.1 claims for damages because of bodily injury (including emotional distress), sickness, disease, or death of any person other than the Contractor's employees. This coverage shall be provided in a form at least as broad as Insurance Services Office (ISO) Form CG 0001 11188;

11.1.1.2 claims for damages arising from personal or advertising injury in a form at least as broad as ISO Form CG 0001 11188;

11.1.1.3 claims for damages because of injury or destruction of tangible property, including loss of use resulting therefrom, arising from operations under the Contract Documents; and

11.1.1.4 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; and

11.1.1.5 claims involving blanket 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

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

If commercial general liability insurance or another insurance form with a general aggregate limit is used, either the general aggregate limit shall apply separately to the project location (with the ISO CG 2501 or insurer's equivalent endorsement provided to the Owner) or the general aggregate limit shall be twice the required occurrence limit.

Any deductible or self-insured retention must be declared to and approved by the Owner. At the option of the Owner, either the insurer shall reduce or eliminate such deductibles or self-insured retentions as respects the Owner, its Board of Trustees, members of its Board of Trustees, officers, employees, agents and volunteers; or the Contractor shall procure a bond guaranteeing payment of losses and related investigations, claim administration and defense expenses.

11.1.2 **SUBCONTRACTOR INSURANCE REQUIREMENTS**

The Contractor shall require its Subcontractors and any Sub-subcontractors to take out and

maintain similar public liability insurance and property damage insurance, in a company or companies lawfully authorized to do business in California as admitted carriers with a financial rating of at least A+, Class XII status as rated in the most recent edition of Best's Insurance Reports, in like amounts and scope of coverage.

11.1.3 OWNER'S INSURANCE

The Owner shall be responsible for purchasing and maintaining the Owner's usual liability insurance. Optionally, the Owner may purchase and maintain other insurance for self protection against claims which may arise from operations under the Contract. The Contractor shall not be responsible for purchasing and maintaining this optional Owner's liability insurance unless specifically required by the Contract Documents.

11.1.4 ADDITIONAL INSURED ENDORSEMENT REQUIREMENTS

The Contractor shall name, on any policy of insurance, the Owner and the Architect as additional insureds. Subcontractors shall name the Contractor, the Owner and the Architect as additional insureds. 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 insureds have other insurance which is applicable to the loss, such other insurance shall be excess to any policy of insurance required herein. The amount of the insurer's liability shall not be reduced by the existence of such other insurance.

11.1.5 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 sublet, 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 on 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 Owner certificates of insurance as required under this Article and in compliance with Labor Code section 3700.

If the contractor fails to maintain such insurance, the Owner may take out compensation insurance which the Owner might be liable to pay under the provisions of the Act by reason of an employee of the Contractor being injured or killed, and withhold from progress payments and/or retention the amount of the premium for such insurance.

11.1.6 BUILDER'S RISK/"ALL RISK" INSURANCE

11.1.6.1 COURSE-OF-CONSTRUCTION INSURANCE REQUIREMENTS

Unless provided by Owner at Owner's sole discretion, Contractor, during the progress of the Work and until final acceptance of the Work by Owner upon Completion of the entire Contract, shall maintain Builder's Risk/Course-of-Construction insurance satisfactory to the Owner, issued on a completed value basis on all insurable Work included under the Contract Documents. This insurance shall insure against all risks, including but not limited to the following perils: Vandalism, theft, malicious mischief, fire, sprinkler leakage, civil authority, sonic boom, explosion, collapse, flood including tidal wave (however, for projects not solely funded through revenue bonds, Contractor is only required to provide insurance for damages caused by a tidal wave up to 5% of the Contract Sum [except as provided in Section 11.1.6.2, below; see Public Contract Code §7105(a)]), earthquake (however, for projects not solely funded through revenue bonds, Contractor is only required to provide insurance for damages caused by a large earthquake [i.e., one above 3.5 magnitude on the Richter Scale] up to 5% of the Contract Sum [except as provided in Section 11.1.6.3, below; see Public Contract Code §7105(a)]), wind, hail, lightning, smoke, riot or civil commotion, debris removal (including demolition) and reasonable compensation for the Architect's services and expenses required as a result of such insured loss. This insurance shall provide coverage in an amount not less than the full cost to repair, replace or reconstruct the Work. Such insurance shall include the Owner, the Architect, and any other person or entity with an insurable interest in the Work as an additional named insured.

The Contractor shall submit to the Owner for its approval all items deemed to be uninsurable under the Builder's Risk/Course-of Construction insurance. The risk of the damage to the Work due to the perils covered by the Builder's Risk/Course-of-Construction 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 Owner, nor will such loss or damage excuse the Complete and satisfactory performance of the Contract by the Contractor.

11.1.6.2 TIDAL WAVE INSURANCE

If the Contract is not solely funded through revenue bonds and Owner accepts and awards an alternate bid by Contractor for insurance coverage for a tidal wave, Contractor shall maintain, in effect during the Work and until final acceptance of the Work by Owner upon Completion of the entire Contract, insurance providing coverage for loss, destruction or damage arising out of or caused by tidal wave and other similar acts of God. This insurance shall provide coverage in an amount not less than the full cost to repair, replace or reconstruct the Work.

11.1.6.3 EARTHQUAKE INSURANCE

If the Contract is not solely funded through revenue bonds and Owner accepts and awards an alternate bid by Contractor for insurance coverage for an earthquake over 3.5 on the Richter Scale, Contractor shall maintain, in effect during the Work and until final acceptance of the Work by Owner upon Completion of the entire Contract, insurance providing coverage for loss, destruction or damage arising out of or caused by earthquake and/or other earth movement,

whether seismic or volcanic in origin, over 3.5 on the Richter Scale in magnitude. This insurance shall provide coverage in an amount not less than the full cost to repair, replace or reconstruct the Work.

11.1.7 CONSENT OF INSURER FOR PARTIAL OCCUPANCY OR USE

Partial occupancy or use in accordance with the Contract Documents shall not commence until the insurance company providing property insurance has consented to such partial occupancy or use by endorsement or otherwise. The Owner and the Contractor shall take reasonable steps to obtain consent of the insurance company and shall, without mutual consent, take no action with respect to partial occupancy or use that would cause cancellation, lapse, or reduction of the insurance.

11.1.8 FIRE INSURANCE

Before the commencement of the Work, the Contractor shall procure, maintain, and cause to be maintained at the Contractor's expense, fire insurance on all Work included under the Contract Documents, insuring the full replacement value of such Work as well as the cost of any removal and demolition necessary to replace or repair all Work damaged by fire. The amount of fire insurance shall be subject to approval by the Owner and shall be sufficient to protect the Work against loss or damage in full until the Work is accepted by the Owner. Should the Work being constructed be damaged by fire or other causes during construction, it shall be replaced in accordance with the requirements of the drawings and specifications without additional expense to the Owner.

11.1.9 OTHER INSURANCE

The Contractor shall provide all other insurance required to be maintained under applicable laws, ordinances, rules, and regulations.

11.1.10 PROOF OF CARRIAGE OF INSURANCE

The Contractor shall not commence Work nor shall it allow any Subcontractor to commence Work under this Contract until all required insurance, certificates, and an Additional Insured Endorsement and Declarations Page have been obtained and delivered in duplicate to the Owner 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 Owner. 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 Owner 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 Owner and any other insurance carried by the Owner with respect to the matters covered by such policy shall be excess and non-contributing.

(d) The Contractor and its Subcontractors shall produce a certified copy of any insurance policy required under this Section upon written request of the Owner.

11.1.11 COMPLIANCE

In the event of the failure of any contractor to furnish and maintain any insurance required by this Article, the Contractor shall be in default under the Contract. Compliance by Contractor with the requirement to carry insurance and furnish certificates, policies, Additional Insured Endorsement and Declarations Page 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 Owner and the Architect.

11.2 PERFORMANCE AND PAYMENT BONDS

11.2.1 BOND REQUIREMENTS

Unless otherwise specified in the Contract Documents, prior to commencing any portion of the Work, the Contractor shall apply for and furnish Owner 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. All bonds shall be submitted on the Owner's approved form.

To the extent, if any, that the Contract Sum is increased in accordance with the Contract Documents, the Contractor shall cause the amount of the bonds to be increased accordingly and shall promptly deliver satisfactory evidence of such increase to the Owner. 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 bond, the Owner may terminate the Contract for cause.

11.2.2 SURETY QUALIFICATION

Only bonds executed by admitted Surety insurers as defined in Code of Civil Procedure

section 995.120 shall be accepted. The surety insurers must, unless otherwise agreed to by Owner in writing, at the time of issuance of the bonds, have a rating not lower than "A-" as rated by A.M. Best Company, Inc. or other independent rating companies. Owner reserves the right to approve or reject the surety insurers selected by Contractor and to require Contractor to obtain bonds from surety insurers satisfactory to the Owner.

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 contrary to the Owner's request or to requirements specifically expressed in the Contract Documents, Contractor must, if required in writing by the Owner, uncover it for the Owner's observation and replace the removed work 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 Owner has not specifically requested to observe prior to its being covered, the Owner 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 paid by the Owner. If such work is not in accordance with Contract Documents, the Contractor shall pay such costs, unless the condition was caused by the Owner or a separate contractor, in which event the Owner shall be responsible for payment of such costs to the Contractor.

12.2 CORRECTION OF WORK; WARRANTY

12.2.1 Correction of Rejected Work

The Contractor shall promptly correct the work rejected by the Owner for failing to conform to the requirements of the Contract Documents, until the statutes of limitation (or repose) and all warranties have run, as applicable, 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 Owner's expenses and costs incurred.

12.2.2 Removal of Nonconforming Work

The Contractor shall remove from the Site portions of the Work which are not in accordance with the requirements of the Contract Documents and are not corrected by the Contractor or accepted or approved by the Owner.

12.2.3 OWNER'S RIGHTS IF CONTRACTOR FAILS TO CORRECT

If the Contractor fails to correct nonconforming work within a reasonable time, the Owner may correct it in accordance with Section 2.4. As part of Owner's correction of the work, the Owner may remove any portion of the nonconforming Work and store any salvageable materials or equipment at the Contractor's expense. If the Contractor does not pay costs of such removal and storage within ten (10) days after written notice, the Owner may upon ten (10) additional days written notice sell such material or equipment at auction or at private sale and shall account for the proceeds thereof, after deducting costs and damages that should have been borne by the Contractor, including compensation for the Architect's and other professionals and representatives' services and expenses, made necessary thereby. If such proceeds of sale do not cover costs which the Contractor should have borne, the Contractor shall be invoiced for the deficiency or Owner may withhold such costs from payment pursuant to Section 9.5. If progress payments or retention then or thereafter due the Contractor are not sufficient to cover such amount, the Contractor shall pay the difference to the Owner.

12.2.4 COST OF CORRECTING THE WORK

The Contractor shall bear the cost of correcting destroyed or damaged construction of the Owner or separate contractors, whether completed or partially completed, caused by the Contractor's correction or removal of the nonconforming work.

12.2.5 WARRANTY CORRECTIONS (INCLUDES REPLACEMENT)

Pursuant to the warranty in Sections 3.5 and 9.7.1, if within one (1) year after the Completion of the Work or within a longer time period for an applicable special warranty or guarantee required by the Contract Documents, any of the Work does not comply with the Contract Documents, the Contractor shall correct it after receipt of Owner's written notice to do so, unless the Owner has previously waived in writing such right to demand correction. Contractor shall correct the Work promptly, and passage of the applicable warranty period shall not release Contractor from its obligation to correct the Work if Owner provided the written notice within the applicable warranty period. Contractor's obligation to correct the warranty item continues until the correction is made. After the correction is made to Owner's satisfaction, a new warranty period of the same length as the original warranty period shall run on the corrected work. The obligations under this paragraph 12.2.5 shall survive acceptance of the Work under the Contract and termination of the Contract.

12.2.6 NO TIME LIMITATION

Nothing contained in this Section 12.2 shall be construed to establish a period of limitation with respect to other obligations which the Contractor might have under the Contract Documents. Establishment of the time period of one (1) year as described in Sections 3.5, 9.7.1, and 12.2.5 relates only to the specific warranty obligation of the Contractor to correct the Work after the date of commencement of warranties, and has, for example, no relationship to the time within which the obligation to comply with the Contract Documents may be sought to be enforced, or to the time within which proceedings may be commenced to establish the Contractor's liability with

respect to the Contractor's obligations under the Contract Documents.

12.3 NONCONFORMING WORK AND WITHHOLDING THE VALUE OF IT

If it is found at any time before Completion of the Work that the Contractor has varied from the Contract Documents in materials, quality, form, finish, or in the amount or value of the materials or labor used, the Owner may, in addition to other remedies in the Contract Documents or under law and as allowed by law, accept the improper Work. The Owner may withhold from any amount due or to become due Contractor that sum of money equivalent to the difference in value between the Work performed and that called for by the Drawings and Specifications. The Owner shall determine such difference in value. No structural-related Work shall be accepted that is not in conformance with the Contract Documents.

ARTICLE 13

MISCELLANEOUS PROVISIONS

13.1 GOVERNING LAW

The Contract shall be governed by the law of the place where the Project is located.

13.2 SUCCESSORS AND ASSIGNS

The Owner 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 or in part 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, any written notice required by the Contract Documents 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 or overnight mail to the last business address known to the party giving notice. Owner shall, at Contractor's cost, timely notify Contractor of Owner's receipt of any third party claims relating to the Contract pursuant to Public Contract Code section 9201.

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 Owner, Inspector of Record, Architect or any construction manager 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 to in a written amendment to the Contract.

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 Owner will select and pay an independent testing laboratory to conduct all tests and inspections, including shipping or transportation costs or expenses (mileage and hours). Selection of the materials required to be tested shall be made by the laboratory and not by the Contractor. However, if Contractor requests that the Owner use a different testing laboratory and Owner chooses to approve such request, Contractor shall reimburse the Owner for any additional shipping or transportation costs or expenses (mileage and hours). Owner may invoice such costs or expenses to the Contractor or withhold such costs or expenses from progress payments and/or retention.

13.5.3 ADVANCE NOTICE TO INSPECTOR OF RECORD

The Contractor shall notify the Inspector of Record a sufficient time in advance of its readiness for required observation or inspection so that the Inspector of Record may arrange for same. The Contractor shall notify the Inspector of Record a sufficient time in advance 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 of Record may arrange for the testing of the material at the source of supply.

13.5.4 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 of Record that such testing and inspection will not be required, shall not be incorporated in the Work.

13.5.5 ADDITIONAL TESTING OR INSPECTION

If the Inspector of Record, the Architect, the Owner, or public authority having jurisdiction determines that portions of the Work require additional testing, inspection, or approval not included under section 13.5.1, the Inspector of Record will, upon written authorization from the Owner, make arrangements for such additional testing, inspection, or approval. The Owner shall bear such costs except as provided in section 13.5.6.

13.5.6 COSTS FOR RETESTING

If such procedures for testing, inspection, or approval under sections 13.5.1, 13.5.2 and 13.5.5 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 Owner, invoiced to the Contractor, and, among other remedies, can be withheld from progress payments and/or retention.

13.5.7 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 Owner for all costs and expenses resulting from that testing or inspection, including, but not limited to, the Architect's fees and expenses, and the amount of the invoice can among other remedies, be withheld from progress payments and/or retention.

13.5.8 TESTS OR INSPECTIONS NOT TO DELAY WORK

Tests or inspections conducted pursuant to the Contract Documents shall be made promptly to avoid unreasonable delay in the Work.

13.6 [INTENTIONALLY LEFT BLANK]

13.7 TRENCH EXCAVATION

13.7.1 TRENCHES GREATER THAN FIVE FEET

Pursuant to Labor Code section 6705, if the Contract Sum 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 Owner or a registered civil or structural engineer employed by the Owner a detailed plan showing the design of shoring for protection from the hazard of caving ground during the excavation of such trench or trenches.

13.7.2 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 by the Owner or by the person to whom authority to accept has been delegated by the Owner.

13.7.3 NO TORT LIABILITY OF OWNER

Pursuant to Labor Code section 6705, nothing in this Article shall impose tort liability upon the Owner or any of its employees.

13.7.4 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.

13.8 WAGE RATES

13.8.1 WAGE RATES

Pursuant to the provisions of Article 2 (commencing at § 1770), Chapter 1, Part 7, Division 2, of the Labor Code, the governing board of the Owner 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 work is to be performed for each craft, classification, or type of worker needed for this Project from the Director of Industrial Relations ("Director"). These rates are on file with the Clerk of the Owner's governing board, and copies will be made available to any interested party on request. The Contractor shall post a copy of such wage rates at the Site.

13.8.2 HOLIDAY AND OVERTIME PAY

Holiday and overtime work, when permitted by law, shall be paid for at a rate of at least one and one-half (1½) times the above specified rate of per diem wages, unless otherwise specified. Holidays shall be defined in the Collective Bargaining Agreement applicable to each particular craft, classification, or type of worker employed.

13.8.3 WAGE RATES NOT AFFECTED BY SUBCONTRACTS

The Contractor shall pay and shall cause to be paid each worker engaged in the Work 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.

13.8.4 CHANGE IN PREVAILING WAGE DURING BID OR CONSTRUCTION

If during the period this bid is required to remain open, the Director of Industrial Relations

determines that there has been a change in any prevailing rate of per diem wages in the locality in which this public work is to be performed, such change shall not alter the wage rates discussed in the Notice to Bidders or the Contract subsequently awarded.

13.8.5 FORFEITURE AND PAYMENTS

Pursuant to Labor Code section 1775, the Contractor and any subcontractor under the Contractor shall as a penalty to the Owner, forfeit not more than Two Hundred Dollars ($200.00) for each calendar day, or portion thereof, for each worker paid less than the prevailing rate of per diem wages, determined by the Director, for such craft or classification in which such worker is employed for any public work done under the Agreement by the Contractor or by any Subcontractor under it. Minimum penalties shall apply, as also provided in Civil Code section 1775. The amount of the penalty shall be determined by the Labor Commissioner and shall be based on both of the following: (1) whether the failure of the contractor or subcontractor to pay the correct rate of per diem wages was a good faith mistake and, if so, the error was promptly and voluntarily corrected 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. The difference between such prevailing rate of per diem wage and the amount paid to each worker for each calendar day or portion thereof for which each worker was paid less than the prevailing rate of per diem wage shall be paid to each work by the Contractor or subcontractor. Labor Code section 1777.1 shall also apply.

13.8.6 MINIMUM WAGE RATES

Any worker employed to perform Work, which Work is not covered by any craft or classification listed in the general prevailing rate of per diem wages determined by the Director, shall be paid not less than the minimum rate of wages specified therein for the craft or classification which most nearly corresponds to the Work to be performed by them, and such minimum wage rate shall be retroactive to time of initial employment of such person in such craft or classification.

13.8.7 PER DIEM WAGES

Pursuant to Labor Code section 1773.1, per diem wages includes employer payments for health and welfare, pension, and vacation pay.

13.8.8 POSTING OF WAGE RATES AND OTHER REQUIRED JOB SITE NOTICES

The Contractor shall post at appropriate conspicuous points on the Site, a schedule showing all determined minimum wage rates and all authorized deductions, if any, from unpaid wages actually earned and all other required job site notices as prescribed by regulation.

13.9 RECORD OF WAGES PAID: INSPECTION

13.9.1 APPLICATION OF LABOR CODE

Pursuant to section 1776 of the Labor Code:

(a) Each Contractor and subcontractor shall keep accurate payroll records, 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 by him or her in connection with the public work. Each payroll record shall contain or be verified by a written declaration that is made under penalty of perjury, stating both of the following:

(1) The information contained in the payroll record is true and correct.

(2) The employer has complied with the requirements of sections 1771, 1811 and 1815 for any work performed by his or her employees on the public works project.

(b) The payroll records enumerated under subdivision (a) shall be certified and 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 his or her authorized representative on request.

(2) A certified copy of all payroll records enumerated in subdivision (a) shall be made available for inspection or furnished upon request to a representative of the Owner and the Division of Labor Standards Enforcement of the Department of Industrial Relations ("DIR") and as may be required by the Labor Commissioner under Labor Code section 1771.4. The Contractor and each subcontractor shall furnish a certified copy of all payroll records directly to the Labor Commissioner monthly or more frequently, if so specified in the Agreement and in a format the Labor Commissioner prescribes.

(3) A certified copy of all payroll records enumerated in subdivision (a) 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 either the body awarding the contract or the Division of Labor Standards Enforcement of the DIR. If the requested payroll records have not been provided pursuant to paragraph (2), the requesting party shall, prior to being provided the records, reimburse the costs of the preparation by the contractor, subcontractors, and the entity through which the request was made. The public may not be given access to such records at the principal office of the Contractor.

(c) Unless required as of January 1, 2015, to be furnished directly to the Labor

Commissioner under Labor Code section 1771.4(a)(3), the certified payroll records shall be on forms provided by the Division of Labor Standards Enforcement of the DIR or shall contain the same information as the forms provided by the division. The payroll records may consist of printouts of payroll data that are maintained as computer records, if the printouts contain the same information as the forms provided by the division and the printouts are verified in the manner specified in (a) above.

(d) A Contractor or subcontractor shall file a certified copy of the records enumerated in subdivision (a) with the entity that requested such records within 10 days after receipt of a written request.

(e) Except as provided in subdivision (f), any copy of records made available for inspection as copies and furnished upon request to the public or any public agency by the awarding body or the Division of Labor Standards Enforcement of the DIR 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 performing the Contract shall not be marked or obliterated. Any copy of records made available for inspection by, or furnished to, a multiemployer Taft-Hartley trust fund (29 U.S.C. Sec. 186(c)(5) that requests the records for the purposes of allocating contributions to participants shall be marked or obliterated only to prevent disclosure of an individual's full social security number, but shall provide the last four digits of the social security number. 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 (29 U.S.C. Sec. 175a) shall be marked or obliterated only to prevent disclosure of an individual's social security number.

(f) Notwithstanding any other provision of law, agencies that are included in the Joint Enforcement Strike Force on the Underground Economy established pursuant to Section 329 of the Unemployment Insurance Code and other law enforcement agencies investigating violations of law shall, upon request, be provided nonredacted copies of certified payroll records. Any copies of records or certified payroll made available for inspection and furnished upon request to the public by an agency included in the Joint Enforcement Strike Force on the Underground Economy or to a law enforcement agency investigating a violation of law shall be marked or redacted to prevent disclosure of an individual's name, address, and social security number. An employer shall not be liable for damages in a civil action for any reasonable act or omission taken in good faith in compliance with this subsection.

(g) The contractor shall inform the body awarding the contract of the location of the records enumerated under subdivision (a), including the street address, city and county, and shall, within five working days, provide a notice of a change of location and address.

(h) The contractor or subcontractor has 10 days in which to comply subsequent to receipt of written notice requesting the records enumerated in subdivision (a). In the

event that the Contractor or subcontractor fails to comply within the 10-day period, he or she shall, as a penalty to the state or political subdivision on whose behalf the contract is made or awarded, forfeit One Hundred Dollars ($100.00) for each calendar day, or portion thereof, for each worker, until strict compliance is effectuated. Upon the request of the Division of Labor Standards Enforcement of the DIR, these penalties shall be withheld from progress payments then due. A contractor is not subject to a penalty assessment pursuant to this section due to the failure of the subcontractor to comply with this section.

13.10 APPRENTICES

13.10.1 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 at which he or she is employed, 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 section 3077 of the Labor Code, who are in training under apprenticeship standards and 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. Contractor shall pay apprentices for any preemployment activities, as set forth in Labor Code section 1777.5.

13.10.2 APPRENTICE LABOR POOL

When the Contractor to whom the Contract is awarded by the Owner, or any Subcontractor under him or her, in performing any of the Work under the Contract or subcontract, employs workers in any apprenticeable craft or trade, the Contractor and Subcontractor shall apply to the joint apprenticeship committee administering the apprenticeship standards of the craft or trade in the area of the Site of the Project, 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, approval as established by the joint apprenticeship committee or committees shall be subject to the approval of the Administrator of Apprenticeship. The joint apprenticeship committee or committees, subsequent to approving the subject Contractor or Subcontractor, shall arrange for the dispatch of apprentices to the Contractor or Subcontractor in order to comply with this section. Every Contractor and Subcontractor shall submit the contract award information to the applicable joint apprenticeship committee which shall include an estimate of journeyman hours to be performed under the Contract, the number of apprentices to be employed, and the approximate dates the apprentices will be employed. There shall be an affirmative duty upon the joint apprenticeship committee or committees administering the apprenticeship standards of the crafts or trade in the area of the Site of the public work, to ensure equal employment and affirmative action and apprenticeship for women and minorities. Contractors or Subcontractors shall not be required to submit individual applications for approval to local joint apprenticeship committees provided they are already covered by the local apprenticeship standards. The ratio of work performed by apprentices to journeymen, who shall be employed in the craft or trade on the Project, may be the ratio stipulated in the apprenticeship

standards under which the joint apprenticeship committee operates, but, except as otherwise provided in this section, in no case shall the ratio be less than one (1) hour of apprentice work for every five (5) hours of labor performed by a journeyman. However, the minimum ratio for the land surveyor classification shall not be less than one (1) apprentice for each five (5) journeymen.

13.10.3 JOURNEYMAN/APPRENTICE RATIO; COMPUTATION OF HOURS

Any ratio shall apply during any day or portion of a day when any journeyman, or the higher standard stipulated by the joint apprenticeship committee, is employed at the job Site and shall be computed on the basis of the hours worked during the day by journeymen so employed, except for the land surveyor classification. The Contractor shall employ apprentices for the number of hours computed as above before the end of the Contract. However, the Contractor shall endeavor, to the greatest extent possible, to employ apprentices during the same time period that the journeymen in the same craft or trade are employed at the job Site. Where an hourly apprenticeship ratio is not feasible for a particular craft or trade, the Division of Apprenticeship Standards, upon application of a joint apprenticeship committee, may order a minimum ratio of not less than one (1) apprentice for each five (5) journeymen in a craft or trade classification.

13.10.4 JOURNEYMAN/APPRENTICE RATIO

The Contractor or Subcontractor, if he or she is covered by this section upon the issuance of the approval certificate, or if he or she has been previously approved in the craft or trade, shall employ the number of apprentices or the ratio of apprentices to journeymen stipulated in the apprenticeship standards. Upon proper showing by the Contractor that he or she employs apprentices in the craft or trade in the state on all of his or her contracts on an annual average of not less than one (1) hour of apprentice work for every five (5) hours of labor performed by a journeyman, or in the land surveyor classification, one (1) apprentice for each five (5) journeymen, the Division of Apprenticeship Standards may grant a certificate exempting the Contractor from the 1-to-5 hourly ratio as set forth in this section. This section shall not apply to contracts of general contractors or to contracts of specialty contractors not bidding for work through a general or prime contractor, when the contracts of general contractors or those specialty contractors involve less than Thirty Thousand Dollars ($30,000) or twenty (20) working days. Any work performed by a journeyman in excess of eight (8) hours per day or forty (40) hours per week, shall not be used to calculate the hourly ratio required by this section.

13.10.4.1 ***Apprenticeable Craft or Trade.*** "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 joint apprenticeship committee shall have the discretion to grant a certificate, which shall be subject to the approval of the Administrator of Apprenticeship, exempting a Contractor from the 1-to-5 ratio set forth in this Article when it finds that any one of the following conditions is met:

A. Unemployment for the previous three-month period in the area exceeds an average of fifteen percent (15%).

B. The number of apprentices in training in such area exceeds a ratio of 1-to-5.

C. There is a showing that the apprenticeable craft or trade is replacing at least one-thirtieth (1/30) of its journeymen annually through the apprenticeship training, either on a statewide basis or on a local basis.

D. Assignment of an apprentice to any work performed under this contract would create a condition which would jeopardize his or her life or the life, safety, or property of fellow employees or the public at large or if the specific task to which the apprentice is to be assigned is of such a nature that training cannot be provided by a journeyman.

13.10.5 RATIO EXEMPTION

When exemptions are granted to an organization which represents Contractors in a specific trade from the 1-to-5 ratio on a local or statewide basis, the member Contractors will not be required to submit individual applications for approval to local joint apprenticeship committees, if they are already covered by the local apprenticeship standards.

13.10.6 APPRENTICE FUND

A Contractor to whom the Contract is awarded 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 and who is not contributing to a fund or funds to administer and conduct the apprenticeship program in any such craft or trade in the area of the Site of the Project, to which fund or funds other contractors in the area of the Site of the Project are contributing, shall contribute to the fund or funds in each craft or trade in which he or she employs journeymen or apprentices on the Project in the same amount or upon the same basis and in the same manner as the other contractors do, but where the trust fund administrators are unable to accept the funds, contractors not signatory to the trust agreement shall pay a like amount to the California Apprenticeship Council. The Contractor or Subcontractor may add the amount of the contributions in computing his or her bid for the contract. The Division of Labor Standards Enforcement is authorized to enforce the payment of the contributions to the fund or funds as set forth in the Labor Code section 227.

13.10.7 PRIME CONTRACTOR COMPLIANCE

The responsibility of compliance with section 13.10 and section 1777.5 of the Labor Code for all apprenticeable occupations is with the Contractor.

13.10.8 DECISIONS OF JOINT APPRENTICESHIP COMMITTEE

All decisions of the joint apprenticeship committee under this section13.10 and Labor Code section 1777.5 are subject to Labor Code section 3081.

13.10.9 NO BIAS

It shall be unlawful for an employer or a labor union to refuse to accept otherwise qualified employees as registered apprentices on any public works on the grounds of race, religious creed, color, national origin, ancestry, sex, or age, except as provided in the Labor Code section 3077.

13.10.10 VIOLATION OF LABOR CODE

Pursuant to Labor Code sections 1777.1 and 1777.7, in the event a Contractor or Subcontractor fails to comply with the provisions of this section 13.10 and Labor Code section 1777.5, penalties shall apply, including among other things:

(a) If a Contractor or Subcontractor willfully fails to comply, the Labor Commissioner may deny to the contractor or subcontractor, and to its responsible officers, the right to bid on, or be awarded or perform work as a subcontractor on, any public works project for a period of up to one year for the first violation and for a period of up to three years for the second and subsequent violation. Each period of debarment shall run from the date the determination of noncompliance by the Labor Commissioner becomes a final order.

(b) A contractor or subcontractor who violates section 1777.5 shall forfeit as a civil penalty an amount not exceeding the sum of One Hundred Dollars ($100) for each full calendar day of noncompliance. Upon receipt of a determination that a civil penalty has been imposed, the awarding body shall enforce the penalty, which includes withholding the amount of the civil penalty from the contract progress payments or retention then due or to become due.

(c) In lieu of the penalty provided, the Labor Commissioner may for a first time violation and with the concurrence of an applicable apprenticeship program, order the contractor or subcontractor to provide apprentice employment equivalent to the work hours that would have been provided for apprentices during the period of noncompliance.

(d) Any funds withheld by the awarding body pursuant to this section shall be deposited in the General Fund.

(e) The interpretation and enforcement of section 1777.5 and this section shall be in accordance with the regulations of the California Apprenticeship Council.

Pursuant to Public Contract Code section 6109, no contractor or subcontractor may bid on, be awarded, or perform work as a subcontractor on a public works project if ineligible to bid or work on, or be awarded, a public works project pursuant to section 1777.1 of the Labor Code.

13.11 ASSIGNMENT OF ANTITRUST CLAIMS

13.11.1 APPLICATION

Pursuant to Public Contract Code section 7103.5 and Government Code section 4552, 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 Owner all rights, title, and interest in and to all causes of action it may have under Section 4 of the Clayton Act, (15 U.S.C. § 15) or under the Cartwright Act (Chapter 2 [commencing with § 16700] of Part 2 of Division 7 of the Bus. & Prof. 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 Progress Payment to the Contractor, without further acknowledgment by the parties. If the Owner receives, either through judgment or settlement, a monetary recovery for a cause of action assigned under Chapter 11 (commencing with § 4550) of Division 5 of Title 1 of the Government Code, the assignor may, upon demand, recover from the Owner any portion of the recovery, including treble damages, attributable to overcharges that were paid by the assignor but were not paid by the Owner as part of the bid price, less the expenses incurred in obtaining that portion of the recovery.

13.11.2 ASSIGNMENT OF CLAIM

Upon demand in writing by the assignor, the Owner 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 Owner has not been injured thereby or the Owner declines to file a court action for the cause of action.

13.12 AUDIT

Pursuant to and in accordance with the provisions of Government Code section 8546.7, or any amendments thereto, all books, records, and files of the Owner, 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 release of all retention under this Contract. Contractor shall preserve and cause to be preserved such books, records, and files for the audit period. During the progress of the Work and for three (3) years after Completion of the Work, Owner shall also have the right to an audit of all of Contractor's books, records, subcontracts, material and equipment contracts, files, and information related to the Contract, and Contractor must cooperate by producing all requested items within seven (7) days.

13.13 STORM WATER DISCHARGE PERMIT

If applicable, the Contractor shall file a Notice of Intent to comply with the terms of the general permit to discharge storm water associated with construction activity (WQ Order No. 920-08-DWQ). The Notice of Intent must be sent to the following address along with the appropriate

payment (warrant to be furnished by the Owner upon request by the Contractor, allow warrant processing time.): California State Water Resources Control Board, Division of Water Quality, Storm Water Permit Unit, P.O. Box 1977, Sacramento, CA 95812-1977. The Contractor may also call the State Water Board's Construction Activity Storm Water Hotline at (916) 657-1146. The Notice of Intent shall be filed prior to the start of any construction activity.

ARTICLE 14

TERMINATION OR SUSPENSION OF THE CONTRACT

14.1 TERMINATION BY THE CONTRACTOR FOR CAUSE

Contractor may not terminate performance for convenience. Contractor may only terminate performance for cause if the Work is stopped by others for a period of one hundred eighty (180) consecutive days through no act or fault of the Contractor, a Subcontractor of any tier, their agents or employees, or any other persons performing portions of the Work for whom the Contractor is contractually responsible, **and** the Work was stopped by others for one of the following reasons: (A) Issuance of an order of a court or other public authority having jurisdiction which requires Owner to stop all Work; or (B) an act of government, such as a declaration of national emergency, making material unavailable which requires Owner to stop all Work. If such grounds exist, the Contractor may serve written notice of such grounds on Owner and demand a meet-and-confer conference to negotiate a resolution in good faith within twenty (20) days of Owner's receipt of such notice. If such conference does not lead to resolution and the grounds for termination still exist, Contractor may terminate the Contract and recover from the Owner payment for Work executed and for reasonable verified costs with respect to materials, equipment, tools, construction equipment, and machinery, including reasonable overhead, profit, and damages for the Work executed, but excluding overhead (field and home office) and profit for (i) Work not performed and (ii) the period of time that the Work was stopped.

14.2 TERMINATION BY THE OWNER FOR CAUSE

14.2.1 GROUNDS FOR TERMINATION

The Owner may terminate performance of the Contract if the Contractor:

A. Refuses or fails to supply enough properly skilled workers or proper materials, or refuses or fails to take steps to adequately prosecute the Work to meet a Milestone Deadline or to Complete within the Contract Time;

B. Fails to make payment to Subcontractors for materials or labor in accordance with Public Contract Code section 10262 or Business and Professions Code section 7108.5, as applicable;

C. Violates Labor Code section 1771.1(a), subject to the provisions of Labor Code section 1771.1(f);

D. Disregards laws, ordinances, rules, regulations, or orders of a public authority having jurisdiction; or

E. Otherwise is in breach of the Contract Documents.

14.2.2 NOTIFICATION OF TERMINATION

When any of the above reasons exist, the Owner may, without prejudice to any other rights or remedies of the Owner, give notice to Contractor of the grounds for termination and demand cure of the grounds within seven (7) days (a "Notice of Intent to Terminate"). If Contractor fails to **either** (a) completely cure the grounds for termination within seven (7) days **or** (b) reasonably commence cure of the grounds for termination within seven (7) days and reasonably continue to cure the grounds for termination until such cure is complete, then Owner may terminate the performance of Contract effective immediately upon service of written Notice of Termination and may, subject to any prior rights of Contractor's surety on the performance bond ("Surety"):

A. Take possession of the Site and of all material, equipment, tools, and construction equipment and machinery thereon owned by the Contractor;

B. Accept assignment of subcontracts pursuant to section 5.4; and

C. Complete the Work by whatever reasonable method the Owner may deem expedient, including tender of completion to the Surety.

14.2.3 PAYMENTS

If the Owner terminates performance of the Contract for one of the reasons stated in section 14.2.1, the Contractor shall not be entitled to receive further payment until the Work is Complete.

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 Owner. This payment obligation shall survive Completion of the Work.

14.2.4 WRONGFUL TERMINATION

To claim a breach of contract or violation of law based on alleged wrongful termination for cause by the Owner, or if Contractor otherwise seeks any payment or damages related to a termination, within fifteen (15) days of the alleged breach of contract, violation of law, or wrongful termination Contractor shall submit a Claim pursuant and subject to Sections 4.5.3-4.5.6. The Contractor need not submit a Notice of Potential Change or a Change Order Request.

14.2.5 **INCLUSION OF TERMINATION FOR CONVENIENCE**

Any purported termination by Owner for cause under this section 14.2, which is revoked or determined to not have been for cause, shall be deemed to have been a termination for convenience effective as of the same date as the purported termination for cause.

14.3 SUSPENSION OR TERMINATION BY THE OWNER FOR CONVENIENCE

14.3.1 **SUSPENSION BY OWNER**

The Owner may, without cause, order the Contractor in writing to suspend, delay, or interrupt the Work in whole or in part for such period of time as the Owner may determine.

14.3.1.1 ***Adjustments.*** An adjustment shall be made for increases in the cost of performance of the Contract, including profit on the increased cost of performance caused by suspension, delay, or interruption. No adjustment shall be made to the extent:

A. That performance is, was or would have been so suspended, delayed, or interrupted by another cause for which the Contractor is responsible; or

B. That an equitable adjustment is made or denied under another provision of this Contract.

14.3.1.2 ***Adjustments for Fixed Cost.*** Adjustments made in the cost of performance may have a mutually agreed fixed or percentage fee.

14.3.2 **TERMINATION BY THE OWNER FOR CONVENIENCE**

14.3.2.1 The Owner may, at any time, terminate performance of the Contract for the Owner's convenience and without cause.

14.3.2.2 Upon receipt of written notice from the Owner of such termination for the Owner's convenience, the Contractor shall:

1. Cease operations as directed by the Owner in the notice;

2. Take actions necessary, or that the Owner may direct, for the protection and preservation of the Work; and

3. Except for Work directed to be performed prior to the effective date of termination stated in the notice, terminate all existing subcontracts and purchase orders and enter into no further subcontracts and purchase orders.

14.3.2.3 In case of such termination for the Owner's convenience, the Contractor shall be entitled to receive payment for Work executed, and costs incurred by reason of such termination.

14.4 NOT A WAIVER

Any suspension or termination by Owner of performance by Contractor for convenience or cause under this Article 14 shall not act as a waiver of any claims by Owner against Contractor or others for damages based on breach of contract, negligence or other grounds.

14.5 MUTUAL TERMINATION FOR CONVENIENCE

The Contractor and the Owner may mutually agree in writing to terminate performance of this Contract for convenience. The Contractor shall receive payment for all Work performed to the date of termination in accordance with the provisions of Article 9.

14.6 EARLY TERMINATION

Notwithstanding any provision herein to the contrary, if for any fiscal year of this Contract the governing body of the Owner fails to appropriate or allocate funds for future periodic payments under the Contract after exercising reasonable efforts to do so, the Owner may upon thirty (30) days' notice, order Work on the Project to cease. The Owner will remain obligated to pay for the Work already performed but shall not be obligated to pay the balance remaining unpaid beyond the fiscal period for which funds have been appropriated or allocated and for which the Work has not been done.

SECTION 00 9110 - ADDENDA

1. Changes or alterations of the approved plans and specifications prior to the letting of a construction contract for the Work shall be made by means of addenda, which shall be submitted to and approved by the City of Sanger when needed prior to distribution to contractors.

2. Addenda shall be stamped and signed by the Architect or Engineer in general responsible charge of preparation of the plans and specifications, and by the Architect or Engineer delegated responsibility for the portion affected by the addenda.

3. Addenda issued during bidding, if any, will be inserted following this page in the Contract Documents sets issued for construction.

4. The provisions of all Addenda shall become part of the Contract Documents and Contractor shall be obligated to construct the Project in accordance with the Contract Documents as modified or supplemented by the addenda provisions.

END OF SECTION 00 9110

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SECTION 01 1100 - SUMMARY OF WORK

PART 1 - GENERAL

1.1 SUMMARY:

A. Related Sections: Close coordination between this Section, the General and Supplementary Conditions, and Divisions 1 through 33 is required.

B. Project Location: 1254 Commerce Ave., Sanger, CA 93657

C. Project: The Project consists of the total construction of which the Work performed under the Contract Documents is a part and which may include construction by the Owner or by separate contractors, for:

ADMINISTRATION SERVICES REMODEL AT
BUSINESS PARK 2

D. Work: The Work of the Project consists of all labor, material, equipment, and services to perform all selective demolition and construction required by the Contract Documents, including but not limited to interior renovation of an existing pre-engineered metal building with associated on-site development. The proposed project will convert the former warehouse area (6,720 sq ft) to administrative office use, with related on-site improvements.

E. Applicable Codes: All work shall be performed in accordance with the plans, specifications and the following regulations:
1. 2025 Building Standards Administrative Code, Part 1, Title 24 CCR.
2. 2025 California Building Code (CBC), Part 2, Title 24 CCR.
3. 2025 California Electrical Code (CEC), Part 3, Title 24 CCR.
4. 2025 California Mechanical Code (CMC) Part 4, Title 24 CCR.
5. 2025 California Plumbing Code (CPC), Part 5, Title 24 CCR.
6. 2025 California Energy Code (CEC), Part 6, Title 24 CCR.
7. 2025 California Fire Code, Part 9, Title 24 CCR.
8. 2025 California Green Building Standards Code (CALGreen), Part 11, Title 24 CCR.
9. 2025 California Referenced Standards, Part 12, Title 24 CCR.
10. Title 19 CCR, Public Safety, State Fire Marshal Regulations.
11. 2025 NFPA 72 National Fire Alarm Code, as amended.
12. 2025 NFPA 80 Fire Door and Other Opening Protectives.
13. 2025 NFPA 13 Automatic Sprinkler Systems, as amended.
14. 2025 NFPA 17a Wet Chemical Systems.
15. 2025 NFPA 14 Standpipe Systems.
16. 2025 NFPA 20 Stationary Pumps for Fire Protection Systems.
17. 2025 NFPA 24 Private Fire Mains and Their Appurtenances, as amended.
18. 2025 NFPA 2001 Clean Agent Fire Extinguishing Systems, as amended.

F. Conflicts in the Drawings and Specifications:
1. When conflicts are noticed prior to bidding, the bidder shall notify the architect immediately in order that an addendum can be issued to all bidders prior to bidding. When the discrepancy is noticed after the bid, the architect shall be notified and will review the discrepancy and interpret the intent. For the purpose of bidding and interpreting, **the most restrictive and potentially most expensive condition may prevail.**
2. In the case of ambiguity, conflict, or lack of information, the Architect shall respond with reasonable promptness and provide additional instructions, by means of drawings and/or written instructions, as may

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be otherwise necessary for proper execution of the work. All such drawings and instructions shall be consistent with the contract documents, true developments thereof, and reasonably inferable therefrom.

1.2 INTENT OF THE CONTRACT DOCUMENTS

A. The intent of the Drawings and Specifications is that the Work of alteration, rehabilitation, or reconstruction shall be in accordance with Title 24, California Code of Regulations.

B. Should any existing conditions such as deterioration or non-complying conditions be discovered which is not covered by the Contract Documents, wherein the finished work will not comply with Title 24, California Code of Regulations, a Construction Change Document or separate set of Drawings and Specifications, detailing and specifying the work shall be submitted to and approved by the City of Sanger prior to proceeding with the Work.
   1. Refer to Section 01 2600 for modification procedures.

1.3 FEES AND PERMITS

A. The Owner will be responsible to obtain and pay for the following:
   1. Building permit and field inspection fee from governing jurisdiction.

B. The Contractor shall be responsible to obtain and pay for the following:
   1. Permits and licenses required for work performed in the public right-of-way.
   2. Permits, licenses, and inspection fees required for execution and completion of the Work which are not the responsibility of the Owner.
   3. Permits and inspection fees required for the alteration of the existing fire sprinkler system.

C. The Contractor shall be responsible for requesting all inspections required by the governing jurisdictions.

1.4 WORK SEQUENCE

A. Construct the Work within the following constraints:

   1. Fire Department Requirements: Maintain access to existing hydrants and maintain existing fire lanes free of obstruction.

   2. Finish Flooring Installation: Complete enclosure of interior spaces, make HVAC system operational, and bring interior spaces to design temperature and humidity 48 hours prior to vapor emission control treatment pre-testing as specified in Section 09 6110.

   4. Planting Schedule: Complete tree planting in planter areas east and west of the parking lot by end of normal working hours.
      a. Coordinate all site improvements of the playfield including site fencing, concrete, storm drain, sprinkler irrigation, electrical, water compaction, soil preparations, site grading, finish grading, pressure testing, water testing, tree planting, turf grass seeding, and all necessary work to meet the planting deadline.
      b. Contractor may be required to furnish, install, and maintain a temporary power supply for the irrigation controllers and booster pump if the proposed site power is not available in order to meet the planting deadline.
      c. Contractor is solely responsible for all costs associated with providing the temporary power.

1.5 CONTRACTOR'S USE OF PREMISES

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A. Limit use of the site to construction activities in the areas indicated.

B. Confine operations to areas within the Contract Limits indicated. Portions of the site beyond areas in which construction operations are indicated shall not be disturbed.

C. Keep all exits required by code open during construction period; provide temporary exit signs if exit routes are temporarily altered.

D. Keep driveways and entrances serving the premises clear and available to the Owner, the Owner's employees, and the public at all times.

E. Keep bus lanes and drop-off zones clear and available to the Owner at all times.

F. Use of existing toilets within the existing buildings, by the Contractor, shall not be permitted.

G. Store and stockpile materials on the property, excluding public rights-of-way.

1.6 OWNER OCCUPANCY

A. Owner intends to occupy the Project by the date stated in the Agreement as the Contract Completion Date.

B. Owner intends to continue to occupy adjacent portions of the existing building during the entire construction period. Do not interfere with the Owner's and public's use of the site and existing buildings outside of the Contract Limits indicated. Schedule the Work to accommodate Owner occupancy during construction. Cooperate with Owner to minimize conflict and to facilitate Owner's operations.

C. Limit conduct of especially noisy exterior work to the hours of [8:00 a.m. – 5:00 p.m.]

D. Limit conduct of especially noisy interior work to the hours of [8:00 a.m. – 5:00 p.m.]

E. Where the Work requires the HVAC system to be nonoperational in areas occupied by the Owner, provide temporary heating or cooling as needed for occupant comfort.

1.7 WORK BY OWNER

A. Items noted as NIC (Not In Contract) will be furnished and installed by the Owner.

B. The Owner will furnish and install the following work:
   1. Office room and miscellaneous equipment and furnishings indicated as NIC.

1.8 OWNER FURNISHED PRODUCTS

A. Owner will furnish certain products for installation by the Contractor as indicated on the Drawings and specified in the following specification sections:
   1. Residential equipment indicated on the Drawings.

C. The Owner will be responsible for shop drawings, delivery to the site, damaged items, and warranties. The Contractor shall be responsible for receipt of products at the site, protection of delivered products, and installation of the products.

D. Material List: Any material or accessories required for the installation in excess of the Owner furnished

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material shall be supplied by the Contractor. It is the Contractor's responsibility to determine the precise amount of material required for the completion of the Work and to provide excess material, as needed.

END OF SECTION 01 1100

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SECTION 01 2100 - CASH ALLOWANCES

PART 1 - GENERAL

1.1 SUMMARY

A. To provide adequate budget and bonding to cover items not precisely determined by the Owner prior to bidding, allow within the proposed Contract Sum the amounts described in this Section.

B. Related work:
1. Documents affecting work of this Section include, but are not necessarily limited to, General Conditions, Supplementary Conditions, and Sections in Division l of these Specifications.
2. Other provisions concerning Cash Allowances are stated in Article 3.8 of the General Conditions.
3. Other provisions concerning Cash Allowances also may be stated in other Sections of these Specifications.

1.2 CASH ALLOWANCE PROVISIONS

A. Costs Included in Cash Allowances: As defined in the General and Supplementary Conditions.

B. Architect Responsibilities: Architect shall meet with the Owner, Contractor and product manufacturer to determine the products for use.

C. Contractor Responsibilities: Cooperate with Owner’s testing laboratory to obtain timely information relative to substrate conditions and actual cost of products selected.

D. Differences between the allowance amount and the actual cost of the Work will be adjusted by Change Order.

1.3 ALLOWANCES SCHEDULE

A. Moisture Control Treatment for Flooring: Include the sum of **$33,500.00** for moisture control treatment for flooring in areas indicated in the Contract Documents.
1. Allowance includes use of an alternate flooring adhesive recommended by the floor covering manufacturer as suitable for the moisture and pH conditions present; low-VOC. In the absence of any recommendation from flooring manufacturer, provide a product recommended by adhesive manufacturer as suitable for substrate and floor covering and for conditions present
2. Allowance includes use of a coating intended by its manufacturer to resist water vapor transmission or internal relative humidity to the degree sufficient to meet flooring manufacturer's emission limits, resistant to the level of pH found, and suitable for adhesion of flooring without further treatment or with only the addition of a skim coat of patching compound or adhesive.
a. Moisture control treatment for flooring is specified in Section 09 6110.
3. Testing for moisture conditions in concrete floor slabs is specified in Section 09 0560.

B. Repair of Sprinkler Irrigation System and Landscaping: Include the sum of **$25,000.00** for repairs to the existing sprinkler irrigation system and reseeding of damaged lawn areas.

C. General Contingency: Include the sum of **$200,000.00** for general contingency.

END OF SECTION 01 2100

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SECTION 01 2500 - SUBSTITUTION PROCEDURES

PART 1 - GENERAL

1.1 SUMMARY

A. This Section describes procedures for securing approval of proposed substitutions.

B. Related Sections:
1. Documents affecting work of this Section include, but are not necessarily limited to, General Conditions, Supplementary Conditions, and Sections in Division l of these Specifications.
2. Make submittals in accordance with pertinent provisions of Section 01 3300.

1.2 SUBSTITUTIONS

A. Substitutions: Contractors, subcontractors and/or material suppliers shall comply with the requirements set forth in this Section. All requests for material substitutions shall be submitted with all required substantiating data, comparisons to the material specified, including samples and colors as needed to determine their acceptance. Failure to provide the required documentation is justification for rejection.
1. Prior to Bid: Substitution Requests shall be submitted a minimum of 10 days prior to the bid (if material is to be included on the final addendum). Substitutions may be submitted by general contractor or subcontractor bidders directly to the Architect.
2. After Award of Contract. Substitution Requests may be submitted not more than 35 days after the award of the contract. Substitution requests shall only be submitted by the General Contractor.
3. Substitution Requests received greater than 35 days after the award shall be rejected.

B. Required Substitution Submittal Requirements:
1. Submit required substitution information with a completed “Substitution Request Form” found at the end of this Section.
2. Manufacturer's descriptive literature and product specifications for each product, with the proposed products clearly identified.
3. Comparative specification data between the specified item and the proposed substitution, showing compliance with the specified requirements.
4. Test reports indicating compliance with ASTM standards and ICC ES approvals where compliance with such standards is required by the Contract Documents or where compliance is claimed by the Contractor requesting substitution.
5. Samples of actual material and color, where applicable.
6. **Submittal without this information will automatically be rejected.**

C. Approval of Substitutions:
1. Where the phrase "or equal," or "or equal as approved by the Architect," occurs in the Contract Documents, do not assume that the materials, equipment, or methods will be approved as equal unless the item has been specifically so approved for this Work by the Architect.
2. The burden of proof as to the equivalency of any material, process, or product shall rest with the Contractor. Any or all of the following will be used by the Architect to determine if a proposed substitution is equivalent to the specified products or materials:
a. Code and legislative compliance.
b. Functional performance and characteristics.
c. Industry standard compliance.
d. Composition of materials.

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e. Cost.
f. Aesthetic characteristics.
g. Environmental characteristics.
h. Manufacturer characteristics.
i. Installation characteristics.
j. Maintenance requirements.
k. Warranty characteristics.

3. **Approvals shall be at the sole discretion of the Architect and the decision of the Architect shall be final and binding.**
4. The provisions allowing submission of substitutions shall not in any way authorize an extension of time for performance of the Work.

D. Substitution of any material, system, or product that would normally be reviewed by the City of Sanger shall be submitted to and approved by the city prior to fabrication or use. Such substitutions shall be considered Construction Change Document in accordance with Section 01 2600.

1.3 DELAYS

A. Delays in construction arising by virtue of the non-availability of a specified material due to late approval and/or ordering of materials will not be considered as justifying an extension of the agreed Time of Completion, or reason for change.

B. All additional time required by the Architect or his consultants in dealing with such delay will be charged to the Contractor at the rates described in section 01 7700 1.4.B.2.

C. Equal or better material replacements caused by delay in approvals and/or ordering may cost more than the original material specified. Increased costs shall be absorbed by the Contractor and not the Owner.

END OF SECTION 01 2500

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SUBSTITUTION REQUEST FORM

PROJECT: _____

SPECFICIATION SECTION: _____ **ARTICLE/PARAGRAPH:** _____

SPECIFIED SECTION: _____

PROPOSE SUBSTITUTION: _____

Attach complete technical data including laboratory tests and code approvals, detailed drawings, and other data indicating compliance with the requirements of the Contract Documents. Clearly identify products being proposed for substitution. Include complete information on changes to Drawings and/or Specifications which proposed substitution will require for its proper installation.

FILL IN BLANKS BELOW:

A. Does the substitution affect dimensions on Drawings? ☐Yes ☐No

B. Will the undersigned pay for changes to the building design, including building design, engineering and detailing costs caused by the requested substitution? **(Negative response may be cause for rejection)**
☐Yes ☐No Explain: _____

C. What affect does substitution have on other trades? _____

D. Differences between proposed substitution and specified item? _____

E. Manufacturer's guarantee of the proposed and specified items are: ☐Same ☐Different
Explain: _____

F. Manufacturer will provide colors that match color selection in finish schedule: ☐Yes ☐No

The Undersigned hereby certifies that the function, appearance, and quality are equivalent to or superior to the specified item. The undersigned agrees to waive all claims for additional costs related to accepted substitution, including costs associated with changes to building design, engineering, or details, which may subsequently become apparent.

Submitted by: _____

Signature: _____ Date: _____

Firm: _____

Phone: _____ Address: _____

Fax: _____

ARCHITECT'S REVIEW AND ACTION

☐Accepted – Make submittals in accordance with Section 01 2500.
☐Accepted as noted – Make submittals in accordance with Section 01 2500.
☐Rejected – Use specified materials.
☐Received too late – Use specified materials.

By: _____ **Date:** _____

MANGINI ASSOCIATES INC.

Remarks: _____

SECTION 01 2610 - CONTRACT MODIFICATION PROCEDURES AND FORMS

PART 1 - GENERAL

1.1 SUMMARY:

A. This section includes procedural requirements for consideration and execution of modifications to and interpretations of the Contract Documents. This section is intended to supplement requirements set forth in the Agreement and the General and Supplementary Conditions.

B. Section includes:
1. Documentation of changes in Contract Sum and Contract Time.
2. Interpretation and clarification procedures.
3. Change procedures.
4. Correlation of Contractor submittals based on changes.

C. Related Sections:
1. Close coordination between this Section, the General and Supplementary Conditions, and Divisions 1 through 33 is required.
2. Section 00 5210: Agreement, Contract Sum, retainage, payment period, values of unit prices.
3. Section 00 7210: Requirements for progress payments, final payment, changes in the Work.
4. Section 00 7310: Percentage allowances for Contractor's overhead and profit.
5. Section 01 2100: Payment procedures relating to allowances.

1.2 DEFINITIONS

A. **Authority Having Jurisdiction (AHJ):** Officials, agencies, departments, and other organizations having statutory approval and enforcement authority, including federal, state, local, or other regional authorities having jurisdiction over the Project.

B. **Approved Construction Documents:** The approved construction documents are the drawings, specifications, addenda, deferred approvals, changes and bulletins approved by the governing code jurisdiction.

C. **Bulletin:** A bulletin is a document produced by the Architect to memorialize all changes, clarifications and interpretations to the approved Construction Documents. A bulletin may or may not change the Contract Sum or the Contract Time.

D. **Bulletin Log:** The Bulletin Log is an organized method of numbering, logging, cost accounting, and tracking the status of each bulletin issued.

E. **Change:** A change is a revision, modification, deletion, addition, or substitution to the approved Construction Documents.

F. **Change Order:** A document defining and memorializing construction changes that result in changes to the Construction Contract, usually changing Contract Sum or Contract Time.

G. **Clarification:** A clarification is a statement that clarifies (but does not change) the requirements of the approved Construction Documents.

H. **Contract:** A written agreement for construction, alteration, reconstruction, repair, or other construction activities.

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1.3 REGULATORY REQUIREMENTS

A. In addition to the modification requirements of this section, the Agreement, and the General and Supplementary Conditions, the AHJ may require that changes to the approved construction documents be submitted to and approved by the AHJ.

1.4 MODIFICATION PROCEDURES

A. For minor changes not involving an adjustment to the Contract Sum or Contract, the Architect will issue a Bulletin which provides supplementary instructions and information, including a detailed description of the change with supplementary or revised drawings and specifications.
   1. Proceeding with the changes described in the Bulletin indicates the Contractor's acknowledgment that there will be no change in Contract Sum or Contract Time.
   2. In the event the Contractor believes that such Bulletin constitutes a change to the adjustment to the Contract Sum or Contract Time, the Contractor shall immediately give written notice to the Architect within 10 calendar days of receipt of the Bulletin stating that the Contractor considers the Bulletin to be a Change Order. Failure to give such written notice shall waive the Contractor’s right to seek additional time or cost.

B. For changes involving adjustment to the Contract Sum or Contract Time, Architect will issue a Bulletin which provides a detailed description of the proposed change with supplementary or revised drawings and specifications.
   1. Contractor shall prepare and submit a fixed price quotation in the form of a Change Order Request (COR) within 14 calendar days.
   2. The Owner shall provide written acceptance of the Contractor's COR prior to the Contractor commencing work described in the COR.

C. The Contractor may propose a change by submitting a Change Order Request (COR) to Architect, describing the proposed change and its full effect on the Work, with a statement describing the reason for the change, and the effect on the Contract Sum and Contract Time with full documentation and a statement describing the effect on Work by separate or other contractors. Document any requested substitutions in accordance with Section 01 6200.

D. Execution of Change Orders: Architect will issue Change Orders on the form attached at the end of this Section for signatures of parties as provided in the Conditions of the Contract.

E. After execution of Change Order, promptly revise Schedule of Values and Application for Payment forms to record each authorized Change Order as a separate line item and adjust the Contract Sum.

F. Promptly revise progress schedules to reflect any change in Contract Time, revise sub-schedules to adjust times for other items of work affected by the change, and resubmit.

G. Promptly enter changes in Project Record Documents.

1.5 CONTRACT INTERPRETATION AND CLARIFICATION PROCEDURES

A. Request for Information (RFI): A written request from the Contractor to the Architect, seeking an interpretation or a clarification of some requirement of the Contract Documents. The Contractor shall clearly and concisely set forth the issue for which it seeks clarification or interpretation and why a response is needed from the Architect. The Contractor shall, in the written request, set forth its interpretation or understanding of the contract’s requirements along with reasons why it has reached such an understanding.

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1. The Architect will review all RFI to determine whether they are RFI within the meaning of this term. Project communications; substitution submittals; product data, shop drawings, or samples submittals, or construction schedule submittals shall not transmitted by RFI. Project communications shall not be considered RFI.
2. Responses to RFI shall be issued within 10 calendar days of receipt of the request from the Contractor unless the Architect determines that a longer time is necessary to provide an adequate response. If a longer time is determined necessary by the Architect, the Architect will, within 10 calendar days of receipt of the request, notify the Contractor of the anticipated response time. If the Contractor submits a Request for Information on an activity with 10 calendar days or less of float on the current project schedule, the Contractor shall not be entitled to any time extension due to the time it takes the Architect to respond to the request provided that the Architect responds within the 10 calendar days set forth above.
3. In the event the Contractor believes that a response to a Request for Information will cause a change to the requirements of the Contract Documents, the Contractor shall immediately give written notice to the Architect within 10 calendar days of receipt of the request the Architect stating that the Contractor considers the response to be a Change Order. Failure to give such written notice shall waive the Contractor's right to seek additional time or cost under the Changes article of the General Conditions.
4. Failure on the part of the Contractor to provide timely Requests for Information does not constitute a crisis solution from the Architect.
5. Requests for Information that affect structural, accessibility, or fire/life safety portions of the Project made after a contract for the Work has been let shall be submitted to and approved by DSA as a Construction Change Document prior to commencement of the Work shown thereon.

END OF SECTION 01 2610

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REQUEST FOR INFORMATION RFI NO.

TO: **Mangini Associates Inc.**
Attn:

DATE:
ARCHITECT'S RFI NO.:
PROJECT NO.:
DSA APPL. NO.:

PROJECT:

Subject:
Plan/Spec. Ref:
Question:

Suggestion:

Attachments:

Contractor's Contract Status:

- ☐ No change in contract time of sum required
- ☐ Change in contract time may be required
- ☐ Change in contract sum may be required

The undersigned certifies that the Contractor has thoroughly reviewed all Contract Documents and determines that the information requested is not contained in the Contract Documents.

By: **Company:** **Title:**
Phone: **Fax:** **Email:**

Response:

By: **Date:**
MANGINI ASSOCIATES INC.

CC:

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BULLETIN NO. 1

TO:	Contractor Name Contractor Address Contractor Address	**DATE:** **BULLETIN NO.:** **PROJECT NO.:** **DSA FILE NO.:**	January 1, 2023 One XXXX 54-12
PROJECT:	Project Name Owner Name	**DSA APPL. NO.:**	02-123456

☐ **Supplemental Instructions:** The Work shall be carried out in accordance with the following supplementary instructions, clarifications, or interpretations issued in accordance with the Contract Documents without change in Contract Sum or Contract Time. Proceeding with the Work in accordance with these instructions indicates your acknowledgment that there will be no change in Contract Sum or Contract Time.

☐ **Proposal Request:** Submit an itemized proposal for changes in Contract Sum and/or Time for to the proposed modifications to the Contract Documents described herein. **This is not a Change Order, a Construction Change Directive, or a direction to proceed with the changes to the Work described herein.**

BULLETIN DESCRIPTION:

Item BX.01: Description

Item BX.02: Description

ATTACHMENTS:

Drawing B1.1 dated January 1, 2023

END BULLETIN NO. XX

MANGINI ASSOCIATES INC.

By: _____ **Title:** _____

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CHANGE ORDER NO. 01

TO: Contractor Name
Contractor Address
Contractor Address

DATE: January 1, 2023
CHANGE ORDER NO.: One
PROJECT NO.: XXXX

PROJECT: Project Name
Owner Name

THE CONTRACT IS CHANGED AS FOLLOWS:

See attached Exhibit "A" for Description of Work.

TOTAL ADDS / (DEDUCTS):	ADD / (DEDUCT)	($0.00)
LESS ALLOWANCE AND CONTINGENCY:	(DEDUCT)	($0.00)
TOTAL THIS CHANGE ORDER:		**($0.00)**

Attachments: None

The Contractor agrees that this resolution constitutes a final accord and satisfaction of the Contractor's rights with respect to this change order.

The original Contract Sum was	$
Net change by previous Change Orders	$
The Contract Sum prior to this Change Order was	$
The Contract Sum will be changed by this Change Order	$
The new Contract Sum including this Change Order will be	$
The Contract Time will be (increased) (decreased) (unchanged) DAYS	(0) days
The Date of Completion as of the date of this Change Order therefore is	Month, Day, Year

Contractor: _____ Date: _____
Name, President
Company

Architect: _____ Date: _____
Name, Architect
Mangini Associates, Inc.

Owner: _____ Date: _____
Name, Superintendent
Owner Name

EXHIBIT "A"

Description of Work

Item No. 1: **BL #0:** Description of Work

DEDUCT ($0.00)

Reason:

Item No. 2: **BL #0:** Description of Work

NO COST

Reason:

Item No. 3: **BL #0:** Description of Work

ADD $0.00

Reason:

TOTAL ADDS $0.00
TOTAL DEDUCTS $0.00
TOTAL THIS CHANGE ORDER ..... ($0.00)

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CONSTRUCTION CHANGE DIRECTIVE NO. 01

TO: Contractor Name
Contractor Address
Contractor Address

DATE: January 2, 2023
CHANGE ORDER NO.: One
PROJECT NO.: XXXX

PROJECT: Project Name
Owner Name

THE CONTRACT IS CHANGED AS FOLLOWS:

See attached Exhibit "A" for Description of Work.

TOTAL THIS CHANGE ORDER: ADD / (DEDUCT) ($0.00)

Attachments: Bulletin Nos. X, XX

When signed by the Owner and Architect and received by the Contractor, this document becomes effective IMMEDIATELY as a Construction Change Directive (CCD), and the Contractor shall proceed with the change(s) described above.

Signature by the Contractor indicates the Contractor's agreement with the proposed adjustments in Contract Sum and Contract Time set forth in this Construction Change Directive, however no signature is required by the Contractor.

PROPOSED ADJUSTMENTS

1. The proposed basis of adjustment to the Contract Sum is:
   - ☐ Lump Sum (increase)(decrease) of $XXXXX.XX
   - ☐ Unit Price of $XXXXX.XX per XXXXXXXXXXXXXX
   - ☐ as provided in Subparagraph 7.3.6 of AIA Document A201.
   - ☐ as follows:

2. The Contract Time is proposed to (be adjusted)(remain unchanged). The proposed adjustment, if any, is (an increase of XXX days) (a decrease of XXX days).

Contractor: _____ Date: _____
Name, President
Company

Architect: _____ Date: _____
Name, Architect
Mangini Associates, Inc.

Owner: _____ Date: _____
Name, Superintendent
Owner Name

Description of Work

Item No. 1: **BL #0:** Description of Work

DEDUCT ($0.00)

Reason:

Item No. 2: **BL #0:** Description of Work

NO COST

Reason:

Item No. 3: **BL #0:** Description of Work

ADD $0.00

Reason:

TOTAL ADDS $0.00
TOTAL DEDUCTS $0.00
TOTAL THIS CHANGE ORDER ..... ($0.00)

SECTION 01 2910 - PAYMENT PROCEDURES

PART 1 - GENERAL

1.1 SUMMARY

A. Provide a detailed breakdown of the agreed Contract Sum showing values allocated to each of the various parts of the Work, as specified herein and in other provisions of the Contract Documents.

B. Related Sections:
1. General Conditions related to payment procedures.
2. Section 01 3210: Construction schedules and schedule updates.

1.2 SCHEDULE OF VALUES

A. One week prior to first application for payment, submit proposed Schedule of Values to Architect.
1. Meet with the Architect and determine additional data, if any, required to be submitted.
2. Secure Architect's approval of Schedule of Values prior to submitting first application for payment.
3. Without documentation, the Architect will value the work and spread the costs throughout the project.

B. Construction Schedule Correlation: Schedule of Values line items shall be identical to construction schedule activity items.

C. Activity Dollar Value: Assign a dollar value to each activity which includes overhead and profit.

D. Construction Activity Breakdown:
1. Limit activities to a single floor level.
2. Separate vertical activities from horizontal activities.
3. Separate site work into quadrants.
4. Separate on-site work from off-site work.
a. Additionally, separate utility work from point of connection up to and including any metering devices from the balance of “on-site” utility work.
5. For plumbing, mechanical, and electrical work, separate activities into underground, rough-in, and finish activities.
6. Separate costs (cabling, devices, installation, programming, testing) for each of the following systems from the other power and lighting electrical costs:
a. Fire alarm.
b. Data
c. Telephone.
d. Intercom / clock.
e. Intrusion alarm.
7. For concrete work, separate activities into footings, exterior walks, interior slabs, curbs/mowstrips.

E. Stored Materials: When the Contractor desires to request payment for stored materials (on-site or off-site), such materials shall be identified in the schedule as a material line item. Materials not identified as material line item will not be considered for payment as stored materials and will only be considered for payment when incorporated into the Work.

F. Division 1 Activities: At a minimum, break down Division 1 costs into the following categories:
1. Mobilization.
2. Surveying.

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3. Supervision/administration.
4. Bonds and insurance.
5. Temporary facilities and controls.
6. Demobilization.

G. Cost Correlation: Progress in terms of Contractor's applications for payment shall be measured as a percentage and shall be based on an estimate of actual dollar value of work completed and materials stored, versus total dollar value for each activity included in Schedule of Values, less applicable retainage.

1.3 QUALITY ASSURANCE

A. Assure arithmetical accuracy of the sums described.

B. When so requested by the Architect, provide copies of the subcontracts or other data acceptable to the Architect, substantiating the sums described.

1.4 PAYMENT FOR STORED MATERIALS

A. The Contractor is encouraged to order materials early in order to prevent delays. **Delays arising from non-availability of a specified material due to late approval and/or ordering of materials will not be considered as justifying an extension of time or reason for change. Refer to Section 01 6200.**

B. The Architect and Owner will consider payment for materials stored properly in accordance with the General Conditions. Payment for materials stored off-site will require, at a minimum:
1. Storage at a bonded or insured yard or warehouse with the stored materials properly tagged and identifiable for the project;
2. Insurance certificate acceptable to the Owner naming the Owner as additional insured, with the stored items specifically described on the certificate;
3. Verification by the Inspector of Record;
4. Manufacturer's invoices for materials and freight.

1.5 APPLICATIONS FOR PAYMENT

A. **General:** Use AIA Document G702, "Application for Payment" as summary and certification page.

B . **Initial Application for Payment:** Submittal of the following items is a condition precedent to certification and payment of the first application for payment. The Architect may refuse to certify payment, and the Owner shall have the right to refuse to pay any certified amount, if the Contractor has not completed or submitted any or all of the following:
1. Listing of subcontractors and principal suppliers and fabricators.
2. Schedule of Values approved by the Architect.
3. Construction Schedule reviewed by the Architect.
4. Listing of Contractor's staff assignments and principal consultants.
5. Inspector of Record signature on the AIA G702 document.

C. **Progress Payments:** Submittal of the following items is a condition precedent to certification and payment of each progress application for payment. **The Architect may refuse to certify payment, and the Owner shall have the right to refuse to pay any certified amount, if the Contractor has not completed and submitted any or all of the following:**
1. Updated construction schedule as specified in Section 01 3210.
2. Recovery schedule specified in Section 01 3210 when required.

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3. Inspector of Record signature on the AIA G702 document.

D. **Final Application for Payment:** Submittal of the following items is a condition precedent to certification and payment of the final application for payment. **The Architect may refuse to certify payment, and the Owner shall have the right to refuse to pay any certified amount, if the Contractor has not completed and submitted any or all of the following:**
   1. Administrative actions and submittals specified in Section 01 7700 as preliminary procedures for Final Acceptance.
   2. Inspector of Record signature on the AIA G702 document.

END OF SECTION 01 2910

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SECTION 01 3110 - PROJECT MEETINGS

PART 1 - GENERAL

1.1 DESCRIPTION

A. To enable orderly review during progress of the Work, and to provide for systematic discussion of problems, the Architect will conduct project meetings throughout the construction period. The Contractor's relations with his subcontractors and materials suppliers and discussions relative thereto, are the Contractor's responsibility and normally are not part of project meetings content.

B. Related Sections: Documents affecting work of this Section include, but are not necessarily limited to, General Conditions, Supplementary Conditions, and Sections in Division 1 of these Specifications.

1.2 SUBMITTALS

A. Agenda Items: To the maximum extent practicable, advise the Architect at least 48 hours in advance of project meetings regarding items to be added to the agenda.

B. Minutes: The Architect will compile minutes of each project meeting, and will furnish one copy to the Contractor and to the Owner. Recipients of copies may make and distribute such other copies as they wish.

1.3 QUALITY ASSURANCE

A. For those persons designated by the Contractor to attend and participate in project meetings, provide required authority to commit the Contractor to solutions agreed upon in the project meetings.

1.4 MEETING SCHEDULE

A. Except as noted below for Preconstruction Meeting, project meetings will be held weekly.

B. Coordinate as necessary to establish mutually acceptable schedule for meetings.

1.5 MEETING LOCATION

A. The Architect will establish meeting location. To the maximum extent practicable, meetings will be held at the job site.

1.6 PRECONSTRUCTION MEETING

A. Preconstruction Meeting will be scheduled to be held within 15 working days after the Owner has issued the Notice to Proceed.

1. Mandatory attendance by authorized representatives of the Contractor and major subcontractors, including but not limited to:
    a. Earthwork.
    b. Concrete.
    c. Roofing.
    d. Plumbing/mechanical.
    e. Electrical.
    f. Data

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2. The Architect will advise other interested parties, including the Owner, and request their attendance.

B. Minimum Agenda: Data will be distributed and discussed on at least the following items:
1. Organizational arrangement of Contractor's forces and personnel, and those of subcontractors, materials suppliers, and Architect.
2. Channels and procedures for communications.
3. Construction schedule, including sequence of critical work.
4. Contract Documents, including distribution of required copies of original Documents and revisions.
5. Processing of Shop Drawings and other data submitted to the Architect for review.
6. Processing of Requests for Information, Proposal Requests, Change Orders and Payment Requests.
7. Rules and regulations governing performance of the Work; and
8. Procedures for safety and first aid, security, quality control, housekeeping, and related matters.

1.7 PROJECT MEETINGS

A. Attendance:
1. To the maximum extent practicable, assign the same person or persons to represent the Contractor at project meetings throughout progress of the Work.
2. Subcontractors, materials suppliers, and others may be invited to attend those project meetings in which their aspect of the Work is involved.

B. Minimum Agenda:
1. Review, revise as necessary, and approve minutes of previous meetings.
2. Review progress of the Work since last meeting, including status of submittals for approval.
3. Identify problems which impede planned progress.
4. Develop corrective measures and procedures to regain planned schedule.
5. Complete other current business.
6. Verify that Record Drawings are current and accurate.

C. Revisions to Minutes:
1. Unless published minutes are challenged in writing prior to the next regularly scheduled progress meeting, they will be accepted as properly stating the activities and decisions of the meeting.
2. Persons challenging published minutes shall reproduce and distribute copies of the challenge to all indicated recipients of the particular set of minutes.
3. Challenge to minutes shall be settled as priority portions of "old business" at the next regularly scheduled meeting.

END OF SECTION 01 3110

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SECTION 01 3210 - CONSTRUCTION PROGRESS SCHEDULES (Bar Chart)

PART 1 - GENERAL

1.1 SUMMARY

A. Prepare and maintain construction schedules as specified in this Section.

B. Documents affecting work of this Section include, but are not necessarily limited to, General Conditions, Supplementary Conditions, and Sections in Division 1 of these Specifications.
1. Section 00 3110: Preliminary Schedules.
2. Section 01 1110: Work sequences and constraints, Owner occupancy, and Owner furnished items.
3. Section 01 2910: Schedule of values and payments.
4. Section 01 3300: Requirements for shop drawings, product data, and samples.
5. Section 01 7700: Project completion and closeout requirements.

1.2 SUBMITTALS

A. Schedule Development Submittals: Submit 3 color copies of schedule diagram with each submittal.

B. Schedule Updates: Submit 3 color copies of schedule diagram with each with each application for payment.

1.3 SCHEDULE DEVELOPMENT AND UPDATES:

A. Schedule: Submit schedule within 30 calendar days after date of Owner's Notice of Award and prior to first application for payment. Architect may refuse to certify application for payment if a construction schedule has not been submitted.

B. Schedule Updates:
1. Update schedule monthly as part of the application for payment specified in Section 01 2910.
   a. Record actual start and finish dates.
   b. Graphically indicate progress of each active activity and remaining duration.
2. In addition to updates required for applications for payment, provide a complete schedule submittal whenever the Contractor's planned sequence of construction is changed, when approved change orders impact critical path activities, or when time extension is approved by change order.

1.4 RESPONSIBILITY FOR THE SCHEDULE

A. Responsibility for construction planning and the effective and efficient implementation of such to meet the Contract Completion Date and any required milestones are the sole responsibility of the Contractor.

B. Review of the schedule and subsequent revisions by the Owner or the Architect shall be limited to review for compliance with the requirements of the Contract Documents; review shall not imply agreement of the Owner or Architect to the Contractor's planned procedures, coordination, scheduling, etc., as being appropriate or reasonable. Comments offered by the Owner or Architect relating to schedule logic or sequence which are the Contractor's responsibility are offered as a courtesy and are not conditions of acceptance.

C. Non-Waiver:
1. If the accepted schedule and subsequent revisions do not include contractually required constraints, review and/or acceptance of the schedule and subsequent revisions by the Owner or the Architect shall

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not waive such requirements.

2. Review of the schedule and subsequent revisions by the Owner or the Architect shall not constitute a waiver of any contract requirement.
3. Contract requirements shall take precedence in the event of conflicts between the accepted schedule and contract requirements.

1.5 CONTRACT MODIFICATIONS

A. When a contract modification is required, submit proposed schedule revisions reflecting the proposed change impact.

B. Time Impact Analysis: Time impact analysis shall be provided as support of a time extension request, claim or request for equitable adjustment by the Contractor.
1. Submit a time impact analysis illustrating the influence of each change or delay on the Contract Completion Date or milestones. The current monthly updated schedule accepted by the Architect shall be used to display the impacts of the change. No other non-approved modifications shall be incorporated into the schedule being used to justify the change impact.
2. Each time impact analysis shall include a fragmentary network demonstrating how the Contractor proposes to incorporate the impact into the schedule. The fragmentary network shall identify the predecessors to the new activities and demonstrate the impact to successor activities.
3. Include a narrative report describing the effects of new activities and relationships to interim and Contract Completion Dates.
4. Include written certification signed by the major subcontractors that they have reviewed and accepted proposed schedule revisions.

C. Determination of contract time extension shall be based on the schedule updates in effect for the time period in question, and other factual information. Actual delays found to be caused by the Contractor's own actions, which result in the extension of the schedule, will not be cause for time extension to the Contract Completion Date.

1.6 TIME EXTENSIONS

A. Extension of time for performance will be granted only to the extent that a delay occurs which impacts activities currently on the critical path, consumes all available float, and extends completion of the Work beyond the current Contract Completion Date.

B. The Contractor acknowledges and agrees that delays in activities which, according to the schedule, does not in fact actually affect any milestone completion or the Contract Completion Date shown on the schedule at the time of delay, will not be a basis for a time extension.

1.7 SCHEDULE RECOVERY

A. The Contractor shall take action to put the Project back on schedule, at no additional cost to the Owner, when it becomes apparent from the current schedule that, through no fault of the Owner:
1. The critical path becomes more than 5% behind the time remaining for completion of the Work.
2. Any milestone required by the Contract Documents may not be met.
3. Any schedule update reveals that the Work will complete later than the Contract Completion Date.

B. Action by the Contractor to put the Work back on schedule may include any or all of the following:
1. Increase construction manpower;

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2. Increase the number of working hours per shift, shifts per working day, working days per week, or the amount of construction equipment, or any combination of the foregoing;
3. Reschedule activities to achieve maximum practical concurrency of activities;
4. Expedite delivery of materials.

C. Notify the Architect of the specific measures taken or planned to increase the rate of progress together with an estimate of when scheduled progress will be regained and submit planned revisions to construction schedule prior to implementation of such measures and schedule revisions.

1.8 VOLUNTARY ACCELERATION

A. Early completion or voluntary acceleration of the schedule by the Contractor is acceptable provided that:
1. The Owner is agreeable to such acceleration and so notifies the Contractor in writing;
2. At the time of submission of the Preliminary Construction Schedule, such acceleration is clearly indicated and the Owner is notified of actions on the Owner's part necessary to accommodate the change or acceleration;
3. The Owner is compensated for any inconvenience or expense associated with such acceleration;
4. The time between early completion date and the Contract Completion date is identified as a schedule activity as “Project Float Time.” Such “Project Float Time” within the construction schedule is not for the exclusive use or benefit of either the Owner or the Contractor but is a jointly owned, expiring project resource available to both parties as needed to meet contract milestones and the Contract Completion Date.

B. The Owner may require various changes in the Work. Pursuant to the voluntary acceleration and float sharing provisions of this Section, no time extensions will be granted nor delay damages paid until a delay occurs that impacts activities currently on the critical path, consumes all available float, and extends completion of the Work beyond the current Contract Completion Date.

1.9 PROJECT SCHEDULE

A. Contract Time: As established by the Agreement Between the Owner and Contractor and amended by change order.

B. Progress of the Work:
1. Time is of the essence in the performance of this Contract.
2. Schedule the Work in such a manner as to provide for timely completion.
3. Begin schedule with the Notice to Proceed and conclude with the late-finish date of the critical path on the Contract Completion Date which shall be the date of Notice of Completion.

C. Plan of the Work: The schedule shall reflect Contractor’s actual plan for prosecution of the Work.

D. DSA Oversight Process: In connection with the DSA Construction Oversight Process, which includes the use of inspection cards and review of changes to the DSA-approved construction documents, the Contractor must (a) include specific tasks in its baseline schedule to take into account these procedures since they are critical path issues; and (b) include a reasonable amount of float in the baseline schedule to accommodate the additional time required by these DSA procedures.

E. Detail: Time scale network diagram in calendar days and prepare at level of detail and logic which will schedule as separate activities all salient features of the Work. At a minimum, include:
1. Project mobilization.
2. Schedule preparation and updates.

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3. Submittal and shop drawing preparation.
4. Review and DSA approval of deferred approvals.
5. Review of submittals and shop drawings for critical materials and equipment.
6. Procurement, fabrication, delivery, and installation of major equipment and critical materials.
7. Testing and inspection.

8. Significant activities of the work of each trade.
    a. Separate plumbing, mechanical, and electrical into underground, rough-in, and finish activities.
    b. Separate concrete work activities into footings, exterior walks, interior slabs, curbs/mowstrips.
9. Separate the following systems from other power and lighting electrical activities:
    a. Fire alarm system.
    b. Data, telephone, intercom / clock, intrusion alarm, audio visual systems.
10 Power shut-downs.
11. All milestone dates.
12. Testing of concrete floor slabs for moisture and pH.
13. Remediation of concrete floor slabs due to unsatisfactory moisture or pH conditions.
14. Final clean-up.
15. Start-up and testing.
16. Commissioning.
17. Correction list work.
18. Building flush out (100% outside air for 14 days).
19. Demobilization.
20. Closeout documentation.

F. Provide for schedule, logic, and operating constraints of the Work as specified in Section 01 1100.

1.10 BAR CHART SCHEDULE

A. Prepare a bar chart graphically showing the order of all activities necessary to complete the Work, and the sequence in which each activity is to be accomplished, as planned by the Contractor. Indicate a separate time bar for each activity.

B. Format:
    1. Sequence of Listings: The Table of Contents of this Project Manual.
    2. Coordination of Listings: Correspond each schedule activity to a line item listed in the Schedule of Values. Refer to Section 01 2910.
    3. Time Scale: Provide a continuous line to identify the first working day of each week.

C. Identify work of each separate stage and other logically grouped activities. In the case of multiple buildings on 1 site, separate the significant elements of the work of each trade for each building as a sub-schedule. Graphically group activities of separate stages and buildings, **do not use a random (or scattered) format.**

1.11 SCHEDULE ACTIVITIES

A. **Schedule Activities:**
    1. 30 day maximum duration.
    2. Limit activities to a single floor level.
    3. Separate vertical activities from horizontal activities.
    4. Separate site work into quadrants.
    5. Separate on-site work from off-site work.

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B. **Activity Information:** Indicate the following information for each activity on network diagram:
   1. Activity description.
   2. Activity number corresponding to the CSI section numbers listed in the Table of Contents.
   3. Duration.
   4. Start and completion dates.
   5. Status indicator (started or complete).

C. Milestone Activities: Indicate date on the diagram for each of the following milestone activities:
   1. Start project: Start schedule no earlier than the contract award date and the project duration shall start on the Notice to Proceed date.
   2. Early completion: If the Contractor's schedule shows completion of the project prior to the Contract Completion Date, the Contractor shall include an activity named "contractor early completion".
   3. End project: Include as the last activity an activity named "end project" finish date equal to the Contract Completion Date.

END SECTION 01 3210

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SECTION 01 3300 - SUBMITTAL PROCEDURES

PART 1 - GENERAL

1.1 SUMMARY

A. Make submittals required by the Contract Documents, and revise and resubmit as necessary to establish compliance with the specified requirements, all as described in this Section.
   1. **The section includes requirements for building systems described as Deferred Approval Items on the drawings or in the specifications.**

B. Related Sections:
   1. Documents affecting work of this Section include, but are not necessarily limited to, General Conditions, Supplementary Conditions, and Sections in Division 1 of these Specifications.
   2. Other requirements for submittals may be described in pertinent Sections of these Specifications.
   3. Section 01 3560: High Performance Criteria Summary.

C. Work not Included:
   1. Submittals not required by the Contract Documents will not be reviewed by the Architect.
   2. The Contractor may require his subcontractors to provide drawings, setting diagrams, and similar information to help coordinate the Work, but such data shall remain between the Contractor and his subcontractors and will not be reviewed by the Architect unless specifically called for within the Contract Documents.

1.2 SUBMITTALS

A. Make submittals of Shop Drawings, Samples, substitution requests, and other items in accordance with the provisions of this Section.

B. Substitutions shall comply with the procedures for substitutions specified in Section 01 2500.

C. High Performance Criteria: Submit in accordance with Section 01 3560 - High Performance Criteria Summary under Submittals.

1.3 QUALITY ASSURANCE

A. Coordination of Submittals:
   1. Prior to each submittal to the Architect, the **General Contractor shall** carefully review and coordinate all aspects of each item being submitted.
   2. Verify that each item and the submittal for it conform in all respects with the specified requirements.
   3. By affixing the Contractor's signature to each submittal, certify that this coordination has been performed.

B. Accuracy of Submittals:
   1. By approving and submitting Shop Drawings, Product Data, Samples, and similar submittals, the Contractor represents that the Contractor has determined and verified materials, field measurements, and field construction criteria relate thereto, or will so, and has checked and coordinated the information contained within such submittals with the requirements of the Work and of the Contract Documents.

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2. The Contractor shall not be relieved of responsibility for deviations from requirements of the Contract Documents by the Architect's review or approval of Shop Drawings, Product Data, Samples, or similar submittals unless the Contractor has specifically informed the Architect in writing of such deviation at the time of submittal requesting a substitution and the Architect has given written approval to the specific deviation. The Contractor shall not be relieved of responsibility for errors or omissions in Shop Drawings, Product Data, Samples, or similar submittals by the Architect's review thereof.

1.4 USE OF ARCHITECT'S CAD DRAWINGS

A. General:
1. Electronic CAD files of the Contract Drawings may be provided for Contractor's convenience and use in preparing submittals, subject to the requirements of this Section.
2. All requests by subcontractors for CAD drawings shall be transmitted through the Contractor and CAD files released by the Architect shall only be released to the Contractor.

B. Requirements for Release of Architect's Electronic CAD Files:
1. Release of CAD files is subject to Contractor's acceptance of Architect's "Waiver of Liability for Electronic CAD Files", a copy of which is attached at the end of this section.
2. Receipt of executed liability waiver agreement is a condition precedent to releasing architectural CAD files.

C. Requirements for Release of Civil Engineer's Electronic CAD Files:
1. Cost of Civil Engineer's preparation of civil CAD files shall be borne by the Contractor and is in addition to the Contract Sum.
2. Release of civil CAD files is subject to Contractor's acceptance of Civil Engineer's "Waiver of Liability for Electronic CAD Files". Contact the Civil Engineer to obtain the waiver form.
3. Receipt of executed liability waiver agreement is a condition precedent to releasing civil CAD files.

D. The Contractor assumes all liability and risk for use of electronic CAD files. Architectural / engineering drawings are essentially diagrammatic in terms of graphics and are not intended to provide scalable dimensional accuracy. Electronic CAD files are an incomplete representation of the Contract Documents which may not include addendum information or hand drawn additions or modifications. In the event of a conflict between the signed and approved Construction Documents and the electronic CAD files, the signed and approved Construction Documents shall govern.

E. The transfer of CAD files to the Contractor is for the Contractor's convenience only, and does not in any way release the Contractor from the requirement to produce its own shop drawings by the normal method of preparing plans and details by drafting. Delays in the release of CAD files shall not relieve the Contractor of preparing submittals in a timely fashion and such delays shall not provide a basis for claims of delay and damages.

PART 2 - PRODUCTS

2.1 TYPES OF SUBMITTALS

A. Shop Drawings:
1. Scale and Measurements: Make Shop Drawings accurately to a scale sufficiently large to show all pertinent aspects of the item and its method of connection to the Work.
2. Types of Prints Required: Submit Shop Drawings in the form of blackline prints of each sheet.

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3. Review comments of the Architect will be shown on the sepia transparency when it is returned to the Contractor. The Contractor may make and distribute such copies as are required for his purposes.

B. Manufacturer's Literature:
1. Where contents of submitted literature from manufacturers includes data not pertinent to the submittal, clearly show and highlight the portion of the contents being submitted for review.
2. Submit seven copies of each item.

C. Samples:
1. Provide Sample or Samples identical to the precise article proposed to be provided. Identify as described under "Identification of Submittals" below.
2. Provide three samples; one to be retained by the Architect, one to be returned to the Contractor, and one to be retained by the Inspector of Record.

D. Colors and Patterns: Unless the precise color and pattern is specifically called out in the Contract Documents, and whenever a choice of color or pattern is available in the specified products, submit accurate color and pattern charts to the Architect for selection.

2.2 ELECTRONIC SUBMITTALS

A. Electronic submittal are acceptable in lieu of hard copies providing the following requirements are met:
1. Submittal shall be in PDF format, with book marks for table of contents and each tab, and sub-bookmarks for each item.
2. All text shall be searchable, except text that is part of a graphic.
3. Submittal shall include all items required by the Contract Documents, except a binder is not required.
4. Electronic submittals shall be processed through normal channels. Do not submit directly to the Architect's consultants.
5. Contractor shall provide Owner and Inspector with hard copies of the final Submittal. Coordinate exact number required with the Architect.
6. One hard copy of any submittal may be required upon the Architect's request for use during review.

B. Electronic submittals which do not comply with the above requirements will be rejected.

PART 3 - EXECUTION

3.1 IDENTIFICATION OF SUBMITTALS

A. Consecutively number all submittals.
1. When material is submitted for any reason, transmit under a new letter of transmittal and with a new transmittal number.
2. On resubmittals, cite the original submittal number for reference.

B. Accompany each submittal with a letter of transmittal showing all information required for identification and checking.

C. On at least the first page of each submittal, and elsewhere as required for positive identification, show the submittal number in which the item was included.

3.2 GROUPING OF SUBMITTALS

A. Unless otherwise specified, make submittals in groups containing all associated items to assure that

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information is available for checking each item when it is received.

1. Partial submittals may be rejected as not complying with the provisions of the Contract.
2. The Contractor may be held liable for delays so occasioned.

3.3 TIMING AND REVIEW OF SUBMITTALS

A. Make submittals far enough in advance of scheduled dates for installation to provide time required for reviews, for securing necessary approvals, for possible revisions and resubmittals, and for placing orders and securing delivery.

B. In scheduling, allow at least 30 calendar days for review by the Architect following the Architect's receipt of the submittal, unless mutually agreed otherwise in writing by the Architect and the Contractor.

C. Resubmittal Costs: The Architect and the Architect's consultants will review the original submittal only as part of their services to the Owner. If the time expended in resubmittal reviews exceeds normal resubmittal review time, the costs of resubmittal reviews by the Architect or the Architect's consultants will be paid to the Architect by the Owner as additional services on an hourly basis.

1. The Architect will bill the Owner for the additional services required by the Architect and/or the Architect's consultants for such resubmittal reviews, time expended, and reimbursable expenses incurred, and the Owner shall be reimbursed by deducting the same amount from the Contractor's subsequent Application for Payment.

3.4 DEFERRED APPROVAL ITEMS

A. Deferred Approval Items: Deferred approval items are listed on the Cover Sheet of the Drawings.

3.5 REQUIRED SUBMITTALS

A. Provide Submittals as required by each Specification Section.

END OF SECTION 01 3300

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WAIVER OF LIABILITY FOR ELECTRONIC CAD FILES

Electronic CAD files for [**ADMINISTRATION SERVICES REMODEL AT BUSINESS PARK 2,** 1254 Commerce Ave., Sanger, CA 93657], have been requested by CONTRACTOR. These files are being provided, subject to the following terms and conditions, pursuant to the acceptance and execution of this agreement. For the purposes of this agreement the term ARCHITECT shall mean the Architect and all of its Consultants.

Electronic files provided are compatible with AutoCAD. ARCHITECT makes no representation as to the compatibility of these files with CONTRACTOR'S hardware or software. Due to the potential that the information presented on the electronic files can be modified, unintentionally or otherwise, ARCHITECT has the right to remove all indicia of ownership and or all involvement from electronic display.

Data contained on these electronic files are part of ARCHITECT'S instruments of service which are copyrighted and proprietary in nature and shall not be used by CONTRACTOR or any other entity receiving this data through or from CONTRACTOR for any purpose other than as a convenience in the preparation of shop drawings and field engineering for the referenced project. The CONTRACTOR agrees that the use of digital information provided by the ARCHITECT for any purpose or activity that constitutes the practice of Land Surveying and/or Civil Engineering, as defined by the California Business and Professions Code, will be by or under the direct supervision of a Land Surveyor or Civil Engineer licensed to practice in the State of California. Such practices include, but are not limited to creating a GPS model for earthwork. Any use or reuse by CONTRACTOR or by others will be at CONTRACTOR'S sole risk and without liability or legal exposure to ARCHITECT.

The transfer of electronic files to CONTRACTOR is for the CONTRACTOR'S convenience only, and does not in any way relieve CONTRACTOR from the requirement to produce shop drawings by the normal method of preparing plans and details by drafting. Delays in release of CAD files shall not relieve CONTRACTOR of responsibility for preparing shop drawings or providing field engineering in a timely fashion and such delays shall not provide a basis for claims of delay and damages.

The CONTRACTOR agrees to reciprocate with the ARCHITECT, upon request, relative to drawing files produced by it or its subcontractors for the subject project, under the same conditions as we have received digital files from the ARCHITECT.

The CONTRACTOR assumes all liability and risk for use of architectural / engineering electronic CAD files and agrees these electronic files are not construction documents and that differences may exist between these electronic files and corresponding hard copy construction documents. Electronic CAD files are an incomplete representation of the Contract Documents which may not include addendum information or hand drawn additions or modifications. In the event a conflict arises, signed and sealed hard copy construction documents will govern. By using these electronic files the CONTRACTOR is in no way relieved of its duty to fully comply with the contract documents, including, and without limitation, the need to check, confirm and coordinate all dimensions and details, take field measurements, verify field conditions and coordinate work with that of other CONTRACTORS on the project.

CONTRACTOR recognizes the instability of electronic storage media and that the transfer of electronic data may not be total or accurate, because of equipment and/or software incompatibility, or changes that may be made by CONTRACTOR and/or other entities receiving this data through or from CONTRACTOR during the editing of the information provided.

CONTRACTOR agrees to make no claim, and hereby waives, to the fullest extent permitted by law, any claim or cause of action against ARCHITECT, ARCHITECT'S officers, directors, employees, agents, or consultants that may arise out of or in connection with CONTRACTOR'S use of the electronic files. CONTRACTOR agrees to the fullest extent permitted by law, to indemnify and hold ARCHITECT and OWNER harmless from any damage, liability, or cost, including reasonable attorneys' fees and costs of defense, arising from any reuse or modification of the plans and specifications by CONTRACTOR or any person or entity which acquires or obtains the plans and specifications. In no event shall ARCHITECT or OWNER be liable for any loss of profit or any damages. It is understood that CONTRACTOR shall be solely responsible for verification of conditions and coordination of their work into the work product.

Under no circumstances shall delivery of the electronic files to CONTRACTOR be deemed a sale by ARCHITECT, and ARCHITECT makes no warranties, either express or implied, of merchantability and fitness for any particular purpose.

CONTRACTOR Name	Printed Name and Title
CONTRACTOR Address	Authorized Signature
	Date

List drawing sheets requested below or attach separate list:

SECTION 01 4520 - TESTING AND SPECIAL INSPECTION SERVICES

PART 1 - GENERAL

1.1 SUMMARY

A. This Section describes testing and inspection to be provided by the Owner and cooperation required from the Contractor with the Owner's selected testing agency and others responsible for testing and inspecting the Work. For detailed testing requirements, refer to the quality control requirements of the following sections:

1. Section 03 1510: Concrete expansion anchor testing.
2. Section 03 3000: Concrete testing and inspection.
3. Section 09 0560: Testing of concrete floor slabs for moisture and pH.
4. Section 32 1210: Asphaltic concrete paving testing.

B. Testing may be required per the Specification Sections noted above.

C. Related Sections: Documents affecting work of this Section include, but are not necessarily limited to, General Conditions, Supplementary Conditions, and Sections in Division 1 of these Specifications.

D. Work Not Included:
1. Selection of testing laboratory: The Owner will select a prequalified independent testing laboratory.

1.2 SUBMITTALS

A. Test Reports:
1. The testing laboratory will provide test and inspection reports for all testing and inspection required by this Section.
2. One copy of all test and inspection reports shall be forwarded by the testing laboratory to the Owner, the Architect, the Engineer, the Inspector, and the Contractor.
3. Reports shall include all tests made regardless of whether such tests indicate that the material is satisfactory or unsatisfactory.
4. Samples taken but not tested shall also be reported.
5. Reports shall indicate that the material or materials were sampled and tested in accordance with the requirements of Title 24, California Code of Regulations, and the Contract Documents.
6. Reports shall indicate the specified design strength and state definitely whether or not the material or materials tested comply with the requirements.

B. Contractor's Statement of Responsibility: In accordance with CBC Section 1704A.4, Contractor shall submit a statement of responsibility to the Architect, and the Owner, prior to the commencement of work of the main wind or seismic force resisting systems or component. Statement of responsibility shall contain acknowledgment of awareness of the special inspection requirements contained in the statement of special inspections.

C. Verified Reports: The testing laboratory will provide interim and final verified reports in accordance with Section 01 4320.

1.3 QUALITY ASSURANCE

A. The Owner will select an independent testing laboratory to conduct tests. Testing laboratory shall be approved by the Architect.

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B. Selection of material required for testing shall be by the laboratory or the Owner's representative and not by the Contractor.

C. Testing, when required, will be in accordance with all pertinent codes and regulations, and with selected standards of the American Society for Testing and Materials.

1.4 MATERIALS, TESTING, AND INSPECTION STANDARDS

A. Comply with the California Building Code, 2025 Edition.

B. Concrete - Section 03 3000:
   1. Material Standards:
      a. Portland cement: CBC Section 1903A.1, ACI 318, Table 26.4.1.1.1(a).
      b. Fly ash: ACI 318, Table 26.4.1.1.1(a).
      c. Concrete aggregates: CBC Section 1903A.5; ACI 318, Section 26.4.1.2.1(a)(1).
   2. Material Tests:
      a. Reinforcing bar test: CBC Section 1910A.2.
      b. Waiver of reinforcing bar testing: CBC Section 1910A.2.
      c. Concrete strength: ACI 318, Section 26.12.
      d. Drilled expansion / epoxy bolt: CBC Section 1910A.5.
      e. Composite construction cores: CBC Section 1910A.4.
   3. Special Inspections:
      a. Job site inspection: CBC Section 1704A.3, Table 1705A.3.
      b. Batch plant inspection: CBC Section 1705A.3.3.
      c. Waiver of batch plant inspection: CBC Section 1705A.3.3.1.
      d. Post-installed anchors: CBC Table 1705A.3, Type 4, Section 1910A.5.

O. Moisture Control Treatment Testing:
   1. Testing and Inspection: Refer to Section 09 0650.

Q. Earth Fill, Foundations, and Excavations - Section 31 2000:
   1. Special Inspection:
      a. Fill and Compaction: CBC Section 1705A.6 and Table 1705A.6.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Promptly process and distribute required copies of test reports and related instructions to assure necessary re-testing and replacement of materials with the least possible delay in progress of the Work.

PART 2 - PRODUCTS

2.1 PAYMENT FOR TESTING

A. Initial Testing: The Owner will pay for services requested by the Owner.

B. Retesting: When initial tests indicate non-compliance with the Contract Documents, subsequent retesting occasioned by the non-compliance shall be performed by the same testing agency and the costs thereof will be paid by the Contractor.

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2.2 CONTRACTOR'S CONVENIENCE TESTING

A. Inspecting and testing performed exclusively for the Contractor's convenience shall be the sole responsibility of the Contractor.

2.3 OWNER'S INSPECTOR

A. The work of construction in all stages of progress shall be subject to the personal continuous inspection 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 reasonable facilities for obtaining such information as may be necessary to keep the Inspector fully informed respecting the progress and manner of the work and character of the materials. Inspection of the work shall not relieve the Contractor from any obligation to fulfill this Contract.

PART 3 - EXECUTION

3.1 COOPERATION WITH TESTING LABORATORY

A. Representatives of the Owner and the testing laboratory shall have access to the Work at all times and at all locations where the Work or parts of the Work is in progress. The Contractor shall facilities for such access to enable the laboratory to perform its functions properly and safely.

3.2 TAKING SPECIMENS

A. Test specimens and prisms required for concrete, grout and mortar shall be taken by the testing laboratory and delivered directly to the testing laboratory as required by the California Building Code, 2025 Edition.

B. The testing laboratory shall be responsible for testing the samples.

C. Miscellaneous materials to be tested shall be tagged by the Project Inspector and delivered to the testing laboratory for testing. The testing laboratory shall provide specimen containers for the Project Inspector for the required tests.

3.3 SCHEDULES FOR TESTING

A. Establishing Schedule:
   1. The Contractor shall notify the Project Inspector a sufficient time in advance of the manufacture of material to be supplied under the Contract Documents, which must by terms of the Contract be tested, in order that the Inspector may arrange for testing of the material at the source of supply.
   2. The Contractor shall provide time within the construction schedule required for the laboratory to perform its tests and to issue each of its findings.
   3. Contractor shall coordinate times for testing of materials and/or installations with the testing laboratory not less than 48 hours prior to the need for testing.

B. Revising Schedule: When changes of construction schedule are necessary during construction, coordinate all such changes with the testing laboratory as required.

C. Adherence to Schedule: When the testing laboratory is ready to test according to the established schedule, but is prevented from testing or taking specimens due to incompleteness of the Work, all extra charges for testing attributable to the delay may be back charged to the Contractor and shall not be borne by the Owner.

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3.4 UNTESTED MATERIALS

A. Any material shipped by the Contractor from the source of supply prior to having satisfactorily passed any required testing and inspection, or prior to receipt of notice from the Architect that testing and inspection will not be required, shall not be incorporated into the Work.

B. If such non-inspected and non-tested material is incorporated into the project, it shall be removed at the Contractor's expense and no consideration will be given for delays or additional cost caused by this action.

END OF SECTION 01 4520

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SECTION 01 5000 - TEMPORARY FACILITIES AND CONTROLS

PART 1 - GENERAL

1.1 SUMMARY

A. Provide construction facilities and temporary controls needed for the Work including, but not necessarily limited to:
1. Temporary utilities such as heat, water, electricity, and telephone;
2. Field offices;
3. Sanitary facilities;
4. Enclosures such as tarpaulins, barricades, safety devices, and canopies;
5. Temporary fencing of the construction site and/or buildings as required to secure the project;
6. Temporary protect of new and existing work;
7. Project sign.
8. Temporary protection of existing buildings and site.

B. Related Sections:
1. Documents affecting work of this Section include, but are not necessarily limited to, General Conditions, Supplementary Conditions, and Sections in Division 1 of these Specifications.
2. Except that equipment furnished by subcontractors shall comply with requirements of pertinent safety regulations, such equipment normally furnished by the individual trades in execution of their own portions of the Work is not part of this Section.
3. Permanent installation and hookup of the various utility lines are described in other Sections.

1.2 QUALITY ASSURANCE

A. Comply with governing regulations and rules/recommendations of utility companies and governmental agencies having jurisdiction.

1.3 DELIVERY, STORAGE, AND HANDLING

A. Maintain temporary facilities and controls in proper and safe condition throughout progress of the Work.

PART 2 - PRODUCTS

2.1 TEMPORARY UTILITIES

A. Water:
1. Provide necessary temporary piping and water supply and, upon completion of the Work, remove such temporary facilities.
2. Provide and pay for water used in construction.

B. Electricity:
1. Provide all necessary temporary poles and wiring and, upon completion of the Work, remove such temporary facility.
2. Provide area distribution boxes so located that the individual trades may furnish and use 100 ft maximum length extension cords to obtain power and lighting at points where needed for work, inspection, and safety.
3. Provide lighting as needed to permit safe and reasonable lighted working conditions.

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4. Provide and pay for electricity used in construction.

C. Provide for and maintain safety during construction per Chapter 33 of the 2025 California Fire Code. Within 7 calendar days of the Notice of Award, the Contractor shall meet with the Owner, develop a Site Safety Plan (SSP) and submit the SSP in .pdf format to the Architect. At a minimum, the SSP shall include the following information required in CFC Section 3303.1.1:
   1. Name and contact information of site safety director.
   2. Documentation of training of the site safety director and fire watch personnel.
   3. Procedures for reporting emergencies.
   4. Fire department vehicle access routes.
   5. Locations of fire protection equipment, including portable fire extinguishers, standpipes, fire department connections and fire hydrants.
   6. Smoking and cooking policies, designated area to be used where approved, and signage locations in accordance with CFC Section 3305.8.
   7. Location and safety considerations for temporary heating equipment.
   8. Hot work (welding, roofing, etc.) plan.
   9. Plans for control of combustible waste.
   10. Locations and methods for storage and use of flammable and combustible liquids and other hazardous materials.
   11. Provisions for site security.
   12. Changes that affect this plan.
   13. Other site specific information requested by the local fire authority (LFA).

D. Safeguards During Construction: Provide for and maintain safeguards during construction and/or alteration of a building per Chapter 33 of the 2025 California Building Code.

E. Heating: Provide and maintain heat necessary for proper conduct of operations and temperature conditions needed for the Work.

F. Ventilation: Ventilate enclosed areas to achieve curing of materials, to dissipate humidity, and prevent accumulation of dust, fumes, vapors, or gases.

2.2 FIELD OFFICES AND SHEDS

A. Office Facilities:
   1. Contractor’s Office: Provide a field office (8' by 12' minimum size) and sheds adequate in size and accommodation for Contractor's offices, supply, and storage.
   2. Secure portable or mobile buildings when used. Provide steps and landings at each doorway. Meet all applicable codes and regulations.
   3. Remove all facilities when they are no longer needed, but only after approval of the Architect.

B. Sanitary Facilities:
   1. Provide temporary sanitary facilities in the quantity required for use by all personnel per local and state health and sanitary regulations.
   2. Maintain in a sanitary condition at all times and in reasonable proximity of the work.

2.3 TEMPORARY ENCLOSURES

A. Provide and maintain for the duration of construction all scaffolds, tarpaulins, canopies, warning signs, steps, platforms, bridges, lighting, and other temporary construction necessary for the safe and proper completion of the Work in compliance with pertinent safety and other regulations.

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B. Provide and maintain suitable temporary sidewalks, closed passageways, fences, and other structures required by law so as not to obstruct or interfere with traffic in public streets, alley ways, or private right-of-way. Leave an unobstructed way along public and private places for pedestrians and vehicles.

C. Provide temporary partitions and ceilings as needed to separate work areas from Owner occupied areas, to prevent penetration of dust and moisture into Owner occupied areas, and to prevent damage to existing materials and equipment.

2.4 TEMPORARY FENCING

A. Provide and maintain temporary fencing for the duration of construction to prevent unauthorized entry into construction areas and to protect existing facilities and adjacent properties from damage from construction operations.

B. Minimum fence height shall be 6'-0" high. Fence panels shall be stretched over 4-sided pipe frames.

C. Include fabric privacy screen at all temporary fencing. Install fabric tautly over chain-link or panel fencing, preventing sagging and billowing. Ensure fabric extends from top to bottom of the fence. Securely fasten fabric to posts, top rails, and bottom wires. Contractor to regularly inspect and repair or replace damaged fabric to maintain safety and appearance.
   1. Material: Woven polyethylene (HDPE) mesh fabric with UV inhibitors.
      a. Mesh Opening: Not to exceed 1/8 inch.
      b. Color: Green or Black.
      c. Strength: Minimum tensile strength of 100 lbs/inch (warp/fill) and 50 lbs/inch (tear).
   2. Fasteners: UV-resistant zip ties (minimum 50 lb tensile strength) or locking plastic fasteners.
      a. Application: Attach fabric to the fence frame at maximum 12-inch intervals both vertically and horizontally, ensuring tautness.

2.5 VEHICULAR ACCESS AND PARKING

A. Access the site as indicated on the Drawings, or as directed by the Owner.

B. Do not use existing parking areas for the Contractor's parking or storage of materials.

C. Schedule deliveries to minimize space and time requirements for storage of materials and equipment on the site.

D. Construct and maintain temporary roads accessing public thoroughfares to serve construction area. Extend and relocate as the Work requires.

E. Provide and maintain access to fire hydrants, free of obstructions, with an all-weather hard surface able to support 50,000 pounds minimum fire apparatus. Fire hydrants shall be charged and accessible by local fire authorities prior to loading the site with combustible materials.

F. Employees vehicles not required for the direct construction of the Work shall be parked offsite unless otherwise authorized by the Owner.

2.6 DUST PROTECTION

A. Provide dust suppression measures, including watering of all graded or excavated material at least twice a day, stopping grading and excavation activities when the wind speed exceeds 20 mph for one hour, watering or covering all material transported off-site, and minimizing the area disturbed by grading and excavation

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activities.

B. Maintain adequate water and trucks to be used throughout the progress of the project to mitigate airborne dust. Maintain the site in a damp condition, not allowing excessive powdering of soil.

2.7 PROTECTION

A. Landscaping: Protect all existing trees, shrubs, lawns, and landscape work from damage, providing guards and coverings. Maintain by irrigation any existing trees, shrubs, lawns, and landscape work though-out the Contract which are within the Contractor's temporary fencing. Damaged landscaping shall be repaired or replaced at the Contractor's expense.

B. Public and Private Streets, Curbs, and Walks:
1. Protect all existing streets, curbs, walks, and other street improvements and immediately make all necessary repairs for damage occurring thereto during the course of the Work at the Contractor's expense.
2. Keep all public and private streets and ways clean of debris, spilled materials and products, and wet and dry earth at all times and clean at the end of each working day. Clean wet earth from vehicles prior to their leaving the site.

C. Weather: Provide protection at all times against weather--rain, winds, storms, frost, or heat--so as to maintain all work, materials, apparatus, and fixtures free from injury or damage. At the end of the day's work, cover all work likely to be damaged.
1. Water Protection: Protect excavations, trenches, and/or building from damage from rain water, spring water, ground water, backing up of drains or sewers, and all other water at all times. Provide pumps and equipment and enclosure necessary to provide this protection.
2. Drainage: Construct and maintain all necessary temporary drainage and do all pumping necessary to keep excavations free of water.
3. Cold Weather: During cold weather, protect all work from damage.
4. Snow and Ice: Remove all snow and ice as may be required for proper protection and/or prosecution of the Work.

D. Installed Roofing Materials: Provide means for protection of roofing materials during construction activities. Provide a minimum of 3/4" plywood as protection for storage or materials, walking areas, and working areas. Protect from solvents, oils, or other materials harmful to the installed roofing material.

E. Existing Utilities and Services: Maintain in operation through-out the Contract all existing utilities and services serving the existing facilities occupied by the Owner or by others.

F. Existing Structures and Improvements: The Contractor shall be responsible for all existing structures and improvements within the work area, and shall provide adequate protection. Any existing structure or improvement damaged during construction shall be repaired or replaced with materials, fixtures, or equipment of the same kind, quality, and size. Any materials, and/or equipment temporarily removed for protection and not damaged, shall be reinstalled.

G. Adjacent Property: Provide necessary protection for adjacent property and the lateral support therefor in conformance with the 2025 California Building Code.

2.8 SECURITY

A. The Contractor shall be responsible for security and protection of his equipment and the site-stored and installed products whether paid for by the Owner or not, until the Owner accepts the Project.

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B. On-site security lighting shall be hooded and adjusted to reduce or eliminate illumination of surrounding properties and roadways.

2.9 DEBRIS CONTROL

A. Keep site clean and orderly in appearance at all times. Do not allow debris to accumulate over the site.

B. Collect debris daily and store in a central location or container. Remove from the site monthly prior to review of payment request.

2.10 PROJECT SIGN

A. Provide a project sign bearing the project name and the names of the Owner, Architect, consulting engineers (structural, mechanical, electrical, and civil), and Contractor, company logos, and other information as directed by the Architect. Sign shall be 4’ x 8’ x 1/2”plywood minimum.
   1. Submit sign drawing for review and approval by the Architect.
   2. Place sign in a prominent location as directed by the Architect.
   3. Sign shall be in place prior to approval of first payment request.
   4. Maintain sign in place during construction; remove and dispose of sign after project acceptance.

PART 3 - EXECUTION

3.1 MAINTENANCE AND REMOVAL

A. Maintain temporary facilities and controls as long as needed for safe and proper completion of the Work.

B. Remove such temporary facilities and controls as rapidly as progress of the Work will permit, or as directed by the Architect.

END OF SECTION 01 5000

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SECTION 01 5710 - EROSION CONTROL

PART 1 - GENERAL

1.1 SUMMARY

A. In accordance with pertinent provisions of this Section, install erosion control straw mat, straw wattles, and/or straw bales as needed to meet the requirements of the construction shown in the Contract Documents.

B. Related Sections:
1. Documents affecting work of this Section include, but are not necessarily limited to, General Conditions, Supplementary Conditions, and Sections in Division 1 of these Specifications.
2. Section 01 5725: Storm Water Pollution Prevention Plan.
3. Section 31 1000: Site clearing.

1.2 QUALITY ASSURANCE

A. Use equipment adequate in size, capacity, and numbers to accomplish the work in a timely manner.

B. In addition to complying with requirements of governmental agencies having jurisdiction, comply with the directions of the geotechnical engineer.

C. Install erosion control materials prior to expected rainfall and maintain throughout the construction period.

D. Comply with storm water pollution prevention plan.

1.3 SLOPE PROTECTION

A. Minor Slopes: Provide continuous straw mat protection over all soils disturbed by construction operations. Minor slopes shall be slope with finish grade less than 10 horizontal to 1 vertical, up to 6.5 horizontal to 1 vertical.

B. Major Slopes: Provide continuous straw mat protection plus horizontal trench with continuous straw wattles at 4' on center over all soils disturbed by construction operations. Major slopes shall be slope with finish grade equal to or greater than 6.5 horizontal to 1 vertical.

1.4 EXISTING UTILITIES

A. Field verify the location of all existing underground utilities prior to beginning any earthwork. Work around and protect all existing utilities during the course of the Work.

B. Where existing utilities are indicated on the drawings, extreme care shall be exercised in excavating near these utilities to avoid damage, and the Contractor will be held responsible for any damage caused by construction operations.

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PART 2 - PRODUCTS

2.1 EROSION CONTROL MATTING

A. Erosion control matting shall be straw blanket of 100% agricultural straw fiber matrix with a functional longevity of 6 months or greater. Evenly distribute straw fiber over the entire area of the mat. The blanket shall be covered on the top and bottom with a lightweight photodegradable polypropylene net with mesh size of approximately ½" by ½". Sew blanket together on 1.5" centers with degradable thread.

B. Acceptable Products:
1. North American Green, S150 straw erosion control blanket.
2. Cascade Geotechnical Inc., S-31 LD straw erosion control blanket.
3. Erosion Control Systems, ProGuard SS straw erosion control blanket.
4. Other equal product approved by the Architect.

2.2 STRAW WATTLES

A. Straw wattles are intended to capture and keep sediment on the slopes. Wattles shall be manufactured from 100% agricultural rice straw and wrapped in tubular black plastic netting or hemp. They are approximately 8" in diameter or larger by 25'-30' in length.

B. Acceptable Products:
1. California Straw Works,
2. Other equal product approved by the Architect

2.3 STRAW BALES

A. Provide Straw Bales continuously around all drainage inlets and maintain them to prevent silt build-up in storm drainage pipe. Clean storm drain pipes prior to acceptance of the project and verify there are no obstructions.

PART 3 - EXECUTION

3.1 SURFACE CONDITIONS

A. Examine the areas and conditions under which work of this Section will be performed. Correct conditions detrimental to timely and proper completion of the Work. Do not proceed until unsatisfactory conditions are corrected.

3.2 EROSION CONTROL MATTING

A. Provide straw bales as required for loose spreading straw over native disturbed soil during grading operations and foundation and stem wall construction. Fine grade soil as soon after floor and wall framing is complete but before anticipated rainfall.

B. Install erosion control matting at the top of the slope by anchoring the mat into an earthen trench and anchor as recommended by the manufacturer.

C. Roll mats downhill and then horizontally with laps and staples as recommended by the manufacturer.

3.3 STRAW WATTLES

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A. Prepare slope with Erosion Control Matting prior to laying the wattling material.

B. Dig and smooth trenches across the slope on contour, to place rolls. Provide trench depth as recommended by the manufacturer, but not less than ½ the diameter of the roll.

C. Trenches shall be placed 4' on center and perpendicular to water flow.

D. Anchor wattles in place with stakes driven and spaced as recommended by manufacturer.

3.4 FIELD QUALITY CONTROL

A. Inspect the erosion control blanket and wattles immediately following the first significant storm. Make sure all rolls are in full contact with soils.

B. Repair any gullys or washouts immediately.

C. Provide gravel or river rock in areas of excessive erosion acceptable to the Architect and at no additional cost to the Owner.

END OF SECTION 01 5710

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SECTION 01 5725 - STORM WATER POLLUTION PREVENTION PLAN

PART 1 - GENERAL

1.1 SUMMARY

A. The State Water Resources Control Board (SWRCB) regulates storm water discharges associated with construction and land disturbance activities. Certain projects are required to obtain permit coverage under California's Construction General Permit (GCP), Order No. 2009-0009-DWQ. A site-specific Storm Water Pollution Prevention Plan (SWPPP) is required to obtain permit coverage under the CGP.

B. Related Sections
   1. Section 01 5710: Erosion Control

C. This project disturbs less than one acre, therefore permit coverage has not been obtained and a SWPPP is **NOT** required, however the Contractor shall comply with the applicable sections of the California Green Building Code.

1.2 REFERENCES

A. Section 5.106 of the California Green Building Code, latest edition

END OF SECTION 01 5725

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SECTION 01 6200 - PRODUCT OPTIONS

PART 1 - GENERAL

1.1 SUMMARY

A. This Section describes product options available to bidders and the Contractor.

B. Related Sections:
1. Documents affecting work of this Section include, but are not necessarily limited to, General Conditions, Supplementary Conditions, and Sections in Division l of these Specifications.
2. Section 01 2500: Substitution procedures.
3. Section 01 3300: Submittal procedures.

1.2 PRODUCT OPTIONS

A. The Contract shall be based on standards of quality established in the Contract Documents.
1. In agreeing to the terms and conditions of the Contract, the Contractor has accepted a responsibility to verify that the specified products will be available and to place orders for all required materials in such a timely manner as is needed to meet his agreed construction schedule.
2. Neither the Owner nor the Architect has agreed to the substitution of materials or methods called for in the Contract Documents, except as they may specifically otherwise state in writing.

B. Colors: Provide finish selections indicated in the Finish Schedule.
1. Acceptable Manufacturers: The products and manufacturers specified in the Finish Schedule are for purposes of establishing color and quality. Refer to each Specification Section for additional manufacturers and Section 01 2500 for substitution requirements.
2. Manufacturer's Standard Colors and Finishes: Where the Finish Schedule specifies a manufacturer's standard color or finish, the Architect makes no guarantee that matching colors or finishes are available as other manufacturer's "standard colors" from the listing of acceptable manufacturers. The Contractor shall be responsible for providing colors matching those indicated on the Drawings.
3. Custom Colors: Where the Finish Schedule indicates a specific manufacturer's colors, other acceptable manufacturers shall provide matching custom colors where a standard color is not acceptable.

1.3 DELAYS

A. Delays in construction arising by virtue of the non-availability of a specified material due to late approval and/or ordering of materials will not be considered as justifying an extension of the agreed Time of Completion, or reason for change.

B. All additional time required by the Architect or his consultants in dealing with such delay will be charged to the Contractor at the rates described in section 01 7700 1.4.B.2.

C. Equal or better material replacements caused by delay in approvals and/or ordering may cost more than the original material specified. Increased costs shall be absorbed by the Contractor and not the Owner.

END OF SECTION 01 6200

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SECTION 01 6600 - STORAGE AND PROTECTION

PART 1 - GENERAL

1.1 SUMMARY

A. Protect products scheduled for use in the Work by means including, but not necessarily limited to, those described in this Section.

B. Related Sections:
1. Documents affecting work of this Section include, but are not necessarily limited to, General Conditions, Supplementary Conditions, and Sections in Division 1 of these Specifications.
2. Additional procedures also may be prescribed in other Sections of these Specifications.

1.2 QUALITY ASSURANCE

A. Include within the Contractor's quality assurance program such procedures as are required to assure full protection of work and materials.

B. **Materials not properly stored will not be paid for by the owner. Materials previously paid for but not properly stored at time of payment request will be deducted from the request.**

1.3 MANUFACTURERS' RECOMMENDATIONS

A. Except as otherwise approved by the Architect, determine and comply with manufacturers' recommendations on product handling, storage, and protection.

1.4 PACKAGING

A. Deliver products to the job site in their manufacturer's original container, with labels intact and legible.
1. Maintain packaged materials with seals unbroken and labels intact until time of use.
2. Promptly remove damaged material and unsuitable items from the job site, and promptly replace with material meeting the specified requirements, at no additional cost to the Owner.

B. The Architect may reject as noncomplying such material and products that do not bear identification satisfactory to the Architect as to manufacturer, grade, quality, and other pertinent information.

1.5 PROTECTION

A. Protect finished surfaces, including jambs and soffits of openings used as passageways, through which equipment and materials are handled.

B. Provide protection for finished floor surfaces in traffic areas prior to allowing equipment or materials to be moved over such surfaces.

C. Maintain finished surfaces clean, unmarred, and suitably protected until accepted by the Owner.

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1.6 REPAIRS AND REPLACEMENTS

A. In event of damage, promptly make replacements and repairs to the approval of the Architect and at no additional cost to the Owner. Additional time required to secure replacements and to make repairs will not be considered by the Architect to justify an extension in the Contract Time of Completion.

END OF SECTION 01 6600

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SECTION 01 7120 - FIELD ENGINEERING

PART 1 - GENERAL

1.1 SUMMARY

A. Provide such field engineering, staking services, and required certifications as required for proper completion of the Work including, but not necessarily limited to establishing and maintaining lines and levels.

B. Related Sections:
1. Documents affecting work of this Section include, but are not necessarily limited to, General Conditions, Supplementary Conditions, and Sections in Division 1 of these Specifications.
2. Additional requirements for field engineering also may be described in other Sections of these Specifications.
3. As described in the General Conditions, the Owner will furnish survey describing the physical characteristics, legal limitations, utility locations, and legal description of the site.

1.2 SUBMITTALS

A. Comply with pertinent provisions of Section 01 3300.

B. Submit the following:
1. Data demonstrating qualifications of persons proposed to be engaged for field engineering services.
2. Documentation verifying accuracy of field engineering work

1.3 QUALITY ASSURANCE

A. Use adequate numbers of skilled workmen 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.

1.4 PROCEDURES

A. In addition to procedures directed by the Contractor for proper performance of the Contractor's responsibilities:
1. Locate and protect control points before starting work on the site.
2. Preserve permanent reference points during progress of the Work.
3. Do not change or relocate reference points or items of the Work without specific approval from the Architect.
4. Promptly advise the Architect when a reference point is lost or destroyed, or requires relocation because of other changes in the Work.
    a. Upon direction of the Architect, require the field engineer to replace reference stakes or markers.
    b. Locate such replacements according to the original survey control.

END OF SECTION 01 7120

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SECTION 01 7300 - EXECUTION REQUIREMENTS

PART 1 - GENERAL

1.1 SUMMARY

A. This Section establishes administrative and supervisory requirements pertaining to project coordination and general installation provisions.

B. Related Sections: Documents affecting work of this Section include, but are not necessarily limited to, General Conditions, Supplementary Conditions, and Sections in Division 1 of these Specifications.

1.2 COORDINATION

A. Coordinate construction activities included under various Sections of these Specifications to assure efficient and orderly installation of each part of the Work. Coordinate construction operations included under different Sections of the Specifications that are dependent upon each other for proper installation, connection, and operation.
   1. Where installation of one part of the Work is dependent on installation of other components, either before or after its own installation, schedule construction activities in the sequence required to obtain the best results.
   2. Where availability of space is limited, coordinate installation of different components to assure maximum accessibility for required maintenance, service, and repair.

B. Coordinate scheduling, submittals, and work of the various sections of the Project Manual to ensure efficient and orderly sequence of installation of interdependent construction elements, with provisions for accommodating items installed later.

C. Notify affected utility companies and comply with their requirements.

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

E. Coordinate space requirements, supports, and installation of mechanical and electrical work which are indicated diagrammatically on Drawings. Follow routing shown for pipes, ducts, and conduit, as closely as practicable; place runs parallel with lines of building. Utilize spaces efficiently to maximize accessibility for other installations, for maintenance, and for repairs.

F. In finished areas except as otherwise indicated, conceal pipes, ducts, and wiring within the construction. Coordinate locations of fixtures and outlets with finish elements.

1.3 QUALITY ASSURANCE

A. Use adequate numbers of skilled workmen 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.

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PART 3 - EXECUTION

3.1 EXAMINATION

A. Verify that existing site conditions and substrate surfaces are acceptable for subsequent work. Start of work means acceptance of existing conditions.

B. Verify that 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. Take field measurements before confirming product orders or beginning fabrication, to minimize waste due to over-ordering or misfabrication.

E. Verify that utility services are available, of the correct characteristics, and in the correct locations.

F. Inspection of Conditions: Require the installer of each major component to inspect both the substrate and conditions under which Work is to be performed. Do not proceed until unsatisfactory conditions have been corrected in an acceptable manner.

G. Inspect materials or equipment immediately upon delivery and again prior to installation. Reject damaged and defective items.

3.2 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 any new material or substance in contact or bond.

3.3 GENERAL INSTALLATION REQUIREMENTS

A. Install products as specified in individual sections, in accordance with manufacturer's instructions and recommendations, and so as to avoid waste due to necessity for replacement. Comply with manufacturer’s installation instructions and recommendations, to the extent that those instructions and recommendations are more explicit or stringent than requirements contained in the Contract Documents.

B. Make vertical elements plumb and horizontal elements level, unless otherwise indicated.

C. Install equipment and fittings plumb and level, neatly aligned with adjacent vertical and horizontal lines, unless otherwise indicated.

D. Make consistent texture on surfaces, with seamless transitions, unless otherwise indicated.

E. Make neat transitions between different surfaces, maintaining texture and appearance.

F. Provide attachment and connection devices and methods necessary for securing Work. Allow for expansion and building movement.

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G. Provide uniform joint widths in exposed work. Arrange joints in exposed work to obtain the best visual effect. Refer questionable choices to the Architect for final decision.

H. Recheck measurements and dimensions prior to starting installation.

I. Install each component during weather conditions and project status that will ensure the best possible results. Isolate each part of the completed construction from incompatible material as necessary to prevent deterioration.

J. Coordinate temporary enclosures with required inspections and tests, to minimize the necessity of uncovering completed construction for that purpose.

K. Where mounting heights are not indicated, install individual components at standard mounting heights recognized within the industry for the particular application indicated. Refer questionable mounting height decisions to the Architect for final decision.

3.4 SITE CONDITIONS

A. Where existing utilities are indicated on the drawings, extreme care shall be exercised in excavating near these utilities to avoid damage, and the Contractor will be held responsible for any damage caused by construction operations.

B. Should utilities not indicated on the drawings be found during construction, the Contractor shall promptly notify the Architect for instructions as to further action. Failure to do so will make the Contractor liable for any damage arising from construction operations after discovery of these utilities.

3.5 CLEANING AND PROTECTION

A. During handling and installation, clean and protect construction in progress and adjoining materials in place. Apply protective covering where required to ensure protection from damage or deterioration until Notice of Completion.

B. Clean and maintain completed construction as frequently as necessary through the remainder of the construction period. Adjust and lubricate operable components to ensure operability without damaging effects.

C. Supervise construction activities to ensure that no part of the construction, completed or in progress, is subject to harmful, dangerous, damaging, or otherwise deleterious exposure during the construction period.

END OF SECTION 01 7300

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SECTION 01 7330 - CUTTING AND PATCHING

PART 1 - GENERAL

1.1 SUMMARY

A. This Section establishes general requirements pertaining to cutting (including excavating), fitting, and patching of the Work.

B. Provide boring, fitting, and patching of the Work, as specified, as indicated, and as needed to:
1. Make the several parts fit properly;
2. Install new work into existing construction.
3. Uncover work to provide for installing, inspecting, or both, of ill-timed work;
4. Remove and replace work not conforming to requirements of the Contract Documents;
5. Remove and replace defective work; and
6. Remove samples of installed work for testing.

C. Related Sections: Documents affecting work of this Section include, but are not necessarily limited to, General Conditions, Supplementary Conditions, and Sections in Division 1 of these Specifications.

D. Special Requirements:
1. In addition to other requirements specified, upon the Architect's request uncover work to provide for inspection by the Architect of covered work, and remove samples of installed materials for testing.
2. Prior to cutting, notching, or boring of any structural elements, including bearing/shear walls, footings, beams, etc., not specifically detailed in the drawings, obtain approval from the Architect and DSA prior to commencement of work.
3. Do not cut or alter work performed under separate contracts without the Architect's written permission.
4. The Contractor shall provide all encroachment permits or others as required in the right-of-way of any adjacent jurisdiction.

1.2 SUBMITTALS

A. Request for Architect's Consent:
1. Prior to cutting which effects structural safety, submit written request to the Architect for permission to proceed with cutting.
2. Should conditions of the Work, or schedule, indicate a required change of materials or methods for cutting and patching, so notify the Architect and secure his written permission and the required Change Order prior to proceeding.

B. Notices to Architect:
1. Prior to cutting and patching performed pursuant to the Architect's instructions, submit cost estimate to the Architect. Secure the Architect's approval of cost estimates and type of reimbursement before proceeding with cutting and patching.
2. Submit written notice to the Architect designating the time the Work will be uncovered, to provide for the Architect's observation.

1.3 QUALITY ASSURANCE

A. Use adequate numbers of skilled workmen 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.

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PART 2 - PRODUCTS

2.1 MATERIALS

A. For replacement of items removed, use materials complying with pertinent Sections of these Specifications.

2.2 PAYMENT FOR COSTS

A. The Owner will reimburse the Contractor for cutting and patching performed pursuant to a written Change Order, after claim for such reimbursement is submitted by the Contractor. Perform other cutting and patching needed to comply with the Contract Documents at no additional cost to the Owner.

B. For uncovering work and replacement of work for inspection by the Architect:
   1. If work is not compliant, Contractor shall pay all costs,
   2. If work is compliant, Owner shall pay for removal and replacement as a Change Order.

PART 3 - EXECUTION

3.1 SURFACE CONDITIONS

A. Inspection: Inspect existing conditions, including elements subject to movement or damage during cutting, excavating, patching, and backfilling. After uncovering the work, inspect conditions affecting installation of new work.

B. Discrepancies: If uncovered conditions are not as anticipated, immediately notify the Architect and secure needed directions. Do not proceed until unsatisfactory conditions are corrected.

3.2 BORING

A. Provide mechanical boring equipment to bore under existing asphalt, concrete, or other surfaces or objects as noted on the drawings. All borings shall be a minimum of 24" under the substrate material unless otherwise authorized by the Architect.

B. Holes shall be bored not to exceed 1" larger diameter than the largest component remaining in the excavation.

C. **Water or air pressure jetting** are not permitted, unless they comply with the following requirements.
   1. All surfaces of the hole can be visually inspected with 6' maximum length and,
   2. all objects shall be supported continuously to prevent sagging and,
   3. the hole shall be filled with compacted damp sand and inspected by the Project Inspector or Materials Testing lab technician.

3.3 PREPARATION PRIOR TO CUTTING

A. Provide required protection including, but not necessarily limited to, shoring, bracing, and support to maintain structural integrity of the Work.

B. Provide protection for other portions of the work which may be affected.

C. Provide protection from the elements when needed.

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3.4 CUTTING AND REMOVAL - GENERAL

A. Perform required excavating and backfilling as required under pertinent other Sections of these Specifications.
   1. Perform cutting and demolition by methods which will prevent damage to other portions of the Work and provide proper surfaces to receive installation of repair and new work.
   2. Perform fitting and adjusting of products to provide finished installation complying with the specified tolerances and finishes.

B. Remove existing work indicated to be removed, or as needed for installation of new work.

3.5 MATCHING AND PATCHING

A. Where items are removed from existing walls, ceilings, floors, partitions, or roofs to remain, repair walls, ceilings, floors, partitions, roofs, etc., disturbed by removal.

B. Where existing construction is removed, repair abutting walls, ceilings, floors, partitions, or roofs disturbed by removal.

C. Where existing construction is cut or otherwise disturbed to permit installation of new work, match and patch existing disturbed construction.

D. Use methods similar in appearance, and equal in quality to areas and surfaces being repaired.

E. Remove and replace areas, surfaces, or items which cannot be satisfactorily matched or patched.

END OF SECTION 01 7330

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SECTION 01 7400 - CLEANING

PART 1 - GENERAL

1.1 SUMMARY

A. Throughout the construction period, maintain the buildings and site in a standard of cleanliness as described in this Section.

B. Related Sections:
1. Documents affecting work of this Section include, but are not necessarily limited to, General Conditions, Supplementary Conditions, and Sections in Division l of these Specifications.
2. In addition to standards described in this Section, comply with requirements for cleaning as described in pertinent other Sections of these Specifications.

1.2 QUALITY ASSURANCE

A. Conduct daily inspection, more often if necessary, to verify that requirements for cleanliness are being met.

B. In addition to the standards described in this Section, comply with pertinent requirements of governmental agencies having jurisdiction, including the SWPPP requirements.

C. Contractor shall include the costs of cleaning and trash disposal in his/her bid designate it in the Schedule of Values.

PART 2 - PRODUCTS

2.1 CLEANING MATERIALS AND EQUIPMENT

A. Provide required personnel, equipment, and materials needed to maintain the specified standard of cleanliness.

B. Use only the cleaning materials and equipment which are compatible with the surface being cleaned, as recommended by the manufacturer of the material.

PART 3 - EXECUTION

3.1 PROGRESS CLEANING

A. General:
1. Retain stored items in an orderly arrangement allowing maximum access, not impeding traffic or drainage, and providing required protection of materials.
2. Do not allow accumulation of scrap, debris, waste material, and other items not required for construction of this Work.
3. At least twice each month, and more often if necessary, completely remove all scrap, debris, and waste material from the job site.
4. Provide adequate storage for all items awaiting removal from the job site, observing requirements for fire protection and protection of the ecology.

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3.2 FINAL CLEANING

A. "Clean," for the purpose of this Article, and except as may be specifically provided otherwise, shall be interpreted as meaning the level of cleanliness generally provided by skilled cleaners using commercial quality building maintenance equipment and materials.

B. Prior to completion of the Work, remove from the job site all tools, surplus materials, equipment, scrap, debris, and waste. Conduct final progress cleaning as described in Article 3.1 above.

C. Site: Unless otherwise specifically directed by the Architect, broom clean paved areas on the site and public paved areas adjacent to the site. Completely remove resultant debris.

D. Structures:
   1. Exterior:
      a. Visually inspect exterior surfaces and remove all traces of soil, waste materials, smudges, and other foreign matter visible from 5'.
      b. Remove all traces of splashed materials from adjacent surfaces.
      c. If necessary to achieve a uniform degree of cleanliness, hose down the exterior of the structure.
      d. In the event of stubborn stains not removable with water, the Architect may require light sandblasting or other cleaning at no additional cost to the Owner.
   2. Interior:
      a. Visually inspect interior surfaces and remove all traces of soil, waste materials, smudges, and other foreign matter visible from 5'.
      b. Remove all traces of splashed material from adjacent surfaces.
      c. Remove paint droppings, spots, stains, and dirt from finished surfaces.
   3. Glass: Clean inside and outside.
   4. Polished surfaces: Apply polish to surfaces requiring routine application of buffed polish as recommended by the manufacturer of the material.

E. Schedule final cleaning as approved by the Architect to enable the Owner to accept a completely clean Work.

3.3 CLEANING DURING OWNER'S OCCUPANCY

A. Should the Owner occupy the Work or any portion thereof prior to its completion by the Contractor and acceptance by the Owner, responsibilities for interim and final cleaning shall be as determined by the Architect in accordance with the General Conditions of the Contract.

END OF SECTION 01 7400

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SECTION 01 7425 - CONSTRUCTION WASTE MANAGEMENT AND CONTROL

PART 1 - GENERAL

1.1 SUMMARY:

A. This section specifies diversion of construction and demolition waste from the landfill. Contractor shall develop and follow a Waste Management Plan designed to implement these requirements.

B. Related Sections:
1. Documents affecting work of this Section include, but are not necessarily limited to, General Conditions, Supplementary Conditions, and Sections in Division 1 of these Specifications.
2. Section 01 3110: Additional requirements for project meetings and reports.
3. Section 01 3300: Additional requirements for submittal procedures and project documentation.
4. Section 01 5000: Additional requirements related to trash and waste collection and removal facilities and services.
5. Section 01 6600: Waste prevention requirements related to delivery, storage, and handling.
6. Section 01 7330: Trash/waste prevention procedures related to cutting and patching, installation, protection, and cleaning.
7. Section 31 1000: Handling and disposal of excavated soils and land clearing debris.

C. The following sources may be useful in developing the Waste Management Plan:
1. County engineering or building departments.
2. Sample forms found in “A Guide to the California Green Building Standards Code (Nonresidential)” located at www.bsc.ca.gov/Home/CALGreen.aspx may be used to assist in documenting compliance with the waste management plan.
3. Mixed construction and demolition debris (C&D) processors can be located at the California Department of Resources Recycling and Recovery (CalRecycle).

1.2 SCOPE OF CONSTRUCTION WASTE MANAGEMENT AND CONTROL

A. Intent: Construction waste management and control is intended to achieve the following specific objectives:
1. Generate the least amount of trash and waste possible.
2. Employ processes that ensure the generation of as little waste as possible due to error, poor planning, breakage, mishandling, contamination, or other factors.
3. Minimize trash/waste disposal in landfills; reuse, salvage, or recycle as much waste as economically feasible.

B. Construction Waste Management Requirement: Recycle and/or salvage for reuse a minimum of **65 percent** of the nonhazardous construction and demolition waste in accordance with Option 1, 2 or 3 listed below; or meet a local construction and demolition waste management ordinance, whichever is more stringent.
1. Option 1 - Construction waste management plan. (Cal Green Code 5.408.1.1) Where a local jurisdiction does not have a construction and demolition waste management ordinance that is more stringent, submit a construction waste management plan that:
a. Identifies the construction and demolition waste materials to be diverted from disposal by efficient usage, recycling, reuse on the project or salvage for future use or sale.
b. Determines if construction and demolition waste materials will be sorted on-site (source-separated) or bulk mixed (single stream).
c. Identifies diversion facilities where construction and demolition waste material collected will be taken.

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d. Specifies that the amount of construction and demolition waste materials diverted shall be calculated by weight or volume, but not by both.

2. Option 2 - Waste Management Company. (Cal Green Code 5.408.1.2) Utilize a waste management company that can provide verifiable documentation that the percentage of construction and demolition waste material diverted from the landfill complies with this section.
3. Option 3 - Waste Stream Reduction Alternative. (Cal Green Code 5.408.1.3) The combined weight of new construction disposal that does not exceed two pounds per square foot of building area may be deemed to meet the 65 percent minimum requirement as approved by the enforcing agency.
4. Documentation: Documentation shall be provided to the enforcing agency which demonstrates compliance with option 1, 2 or 3 above. The waste management plan shall be updated as necessary and shall be accessible during construction for examination by the enforcing agency.

C. Recycling Incentive programs are mandatory for this project; Contractor is responsible for implementation:
1. Any revenue or savings shall accrue to Contractor.
2. Any rebates and credits shall be applied for by Owner and shall accrue to Owner.

D. Owner may decide to pay for additional recycling, salvage, and/or reuse based on Landfill Alternatives Proposal specified below.

E. Required Recycling, Salvage, and Reuse: The following may not be disposed of in landfills or by incineration:
1. Aluminum and plastic beverage containers.
2. Corrugated cardboard.
3. Wood pallets.
4. Clean dimensional wood.
5. Excavated soils and land clearing debris, including brush, branches, logs, and stumps.
6. Concrete.
7. Concrete masonry units.
8. Asphalt paving.
9. Metals, including packaging banding, sheet metal, structural steel, piping, reinforcing bars, door frames, and other items made of steel, iron, galvanized steel, stainless steel, aluminum, copper, zinc, lead, brass, and bronze.
10. Glass.
11. Gypsum board and plaster.
12. Plastic buckets.
13. Carpet, carpet cushion, carpet tile, and carpet remnants.
14. Asphalt roofing shingles.
15. Paint.
16. Plastic sheeting.
17. Windows, doors, and door hardware.
18. Plumbing fixtures.
19. Mechanical and electrical equipment.
20. Fluorescent lamps (light bulbs).
21. Acoustical ceiling tile and panels.

F. Methods of trash/waste disposal that are not acceptable are:
1. Burning on the project site.
2. Burying on the project site.
3. Dumping or burying on other property, public or private.
4. Other Illegal dumping or burying.
5. Incineration either on- or off-site.

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G. Regulatory Requirements: Contractor is responsible for knowing and complying with regulatory requirements, including but not limited to federal, state and local requirements, pertaining to legal disposal of all construction and demolition waste materials.

1.3 DEFINITIONS:

A. Clean: Untreated and unpainted; not contaminated with oils, solvents, caulk, or the like.

B. Construction and Demolition Waste: Solid wastes typically including building materials, packaging, trash, debris, and nibble resulting from construction, remodeling, repair and demolition operations. Excavated soils and land clearing debris and hazardous or toxic waste are excluded from construction and demolition waste.

C. Hazardous: Exhibiting the characteristics of hazardous substances (i.e., ignitibility, corrosivity, toxicity or reactivity).

D. Nonhazardous: Exhibiting none of the characteristics of hazardous substances, i.e., ignitibility, corrosivity, toxicity or reactivity.

E. Nontoxic: Neither immediately poisonous to humans nor poisonous after a long period or exposure.

F. Recyclable: The ability of a product or material to be recovered at the end of its life cycle and remanufactured into a new product for reuse by others.

G. Recycle: To remove a waste material from the project site to another site for remanufacture into a new product for reuse by others.

H. Recycling: The process of sorting, cleansing, treating and reconstituting solid waste and other discarded materials for the purpose of using the altered form. Recycling does not include burning, incinerating, or thermally destroying waste.

I. Return: To give back reusable items or unused products to vendors for credit.

J. Reuse: To reuse a construction waste material in some manner on the project site.

K. Salvage: To remove a waste material from the project site to another site for resale or reuse by others.

L. Sediment: Soil and other debris that has been eroded and transported by storm or well production run-off water.

M. Source Separation: The act of keeping different types of waste materials separate beginning from the first time they become waste.

N. Toxic: Poisonous to humans either immediately or after a long period of exposure.

O. Trash: Any product or material unable to be reused, returned, recycled, or salvaged.

P. Waste: Extra material or material that has reached the end of its useful life In Its Intended use. Waste includes salvageable, returnable, recyclable, and reusable material.

1.4 SUBMITTALS:

A. General: Submit in accordance with Section 01 3300.

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B. Landfill Alternatives Proposal: Within 10 calendar days after receipt of Notice to Proceed, or prior to any trash or waste removal, whichever occurs sooner, submit a projection of trash/waste that will require disposal and alternatives to landfilling, with net costs.
   1. Submit to Architect for Owner's review and approval.
   2. If Owner wishes to implement any cost alternatives, the Contract Sum will be adjusted as specified elsewhere.
   3. Include an analysis of trash/waste to be generated and landfill options as specified for Waste Management Plan described below.
   4. Describe as many alternatives to landfilling as possible:
      a. List each material proposed to be salvaged, reused, or recycled.
      b. List the proposed local market for each material.
      c. State the estimated net cost resulting from each alternative, after subtracting revenue from sale of recycled or salvaged materials and landfill tipping tees saved due to diversion of materials from the landfill.
   5. Provide alternatives to landfilling for at least the materials that cannot be recycled, salvaged, or reused as stated under Waste Management Requirements above.
   6. Once Owner has determined which of the landfill alternatives addressed in the Proposal above ore acceptable, prepare and submit Waste Management Plan; submit within 10 calendar days after notification by Architect.

D. Submit Waste Management Plan within 10 calendar days after receipt of Notice to Proceed, or prior to any trash or waste removal, whichever occurs sooner; submit projection of all trash and waste that will require disposal and alternatives to land filling.

E. Waste Management Plan: Include the following information:
   1. Analysis of the trash and waste projected to be generated during the entire project construction cycle, including types and quantities.
      a. Identify construction waste materials to be diverted from disposal by efficient usage, recycling, reuse on the project or salvage for future use or sale.
   2. Materials Handling Procedures: Describe the means by which materials to be diverted from landfills will be protected from contamination and prepared for acceptance by designated facilities; include separation procedures for recyclables, storage, and packaging.
      a. Indicate if construction waste materials will be sorted on-site (source separated) or bulk mixed (single stream).
      b. Indicate how the amount of construction waste materials diverted shall be calculated; by weight or volume, but not both.
      c. Indicate deconstruction, salvage, and recycling strategies and processes.
   3. Landfill Options: The name, address, and telephone number of the landfill(s) where trash/waste will be disposed of, the applicable landfill tipping fee(s), and the projected cost of disposing of all project trash/waste in the landfill(s).
   4. Landfill Alternatives: List all waste materials that will be diverted from landfills by reuse, salvage, or recycling.
      a. List each material proposed to be salvaged, reused, or recycled.
      b. List the local market for each material.
      c. State the estimated net cost versus landfill disposal.
   5. Meetings: Describe regular meetings to be held to address waste prevention, reduction, recycling, salvage, reuse, and disposal.
   6. Transportation: Identify the destination and means of transportation of materials to be recycled; i.e. whether materials will be site-separated and self-hauled to designated centers, or whether mixed materials will be collected by a waste hauler.
   7. Recycling Incentives: Describe procedures required to obtain credits, rebates, or similar incentives.

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F. Waste Disposal Reports: Submit at specified intervals, with details of quantities of trash and waste, means of disposal or reuse, and costs; show both totals to date and since last report.
   1. Submit updated Report with each Application for Progress Payment; failure to submit Report will delay payment.
   2. Submit Report on a form acceptable to Owner.
   3. Landfill Disposal: Include the following information:
      a. Identification of material.
      b. Amount, in tons or cubic yards of trash/waste material from the project disposed of in landfills.
      c. State the identity of landfills, total amount of tipping fees paid to landfill, and total disposal cost.
      d. Include manifests, weight tickets, receipts, and Invoices as evidence of quantity and cost.
   4. Incinerator Disposal: Include the following information:
      a. Identification of material.
      b. Amount, in tons or cubic yards of trash/waste material from the project delivered to Incinerators.
      c. State the identity of Incinerators, total amount of fees paid to Incinerator, and total disposal cost.
      d. Include manifests weight tickets, receipts, and invoices as evidence of quantity and cost.
   5. Recycled and Salvaged Materials: Include the following Information for each:
      a. Identification of material, including those retrieved by installer for use on other projects.
      b. Amount in tons or cubic yards, date removed from the project site, and receiving party.
      c. Transportation cost, amount paid or received for the material, and the net total cost or savings of salvage or recycling each material.
      d. Include manifests, weight tickets, receipts, and invoices as evidence of quantity and cost.
      e. Certification by receiving party that materials will not be disposed of in landfills or by incineration.
   6. Material Reused on Project: include the following information for each:
      a. Identification of material and how it was used in the project.
      b. Amount, in tons or cubic yards.
      c. Include weight tickets as evidence of quantity.
   7. Other Disposal Methods: include information similar to that described above, as appropriate to disposal method.

G. Recycling Incentive Programs:
   1. Where revenue accrues to Contractor, submit copies of documentation required to qualify for incentive.
   2. Where revenue accrues to Owner, submit any additional documentation required by Owner in addition to information provided in periodic Waste Disposal Report.

PART 2 - PRODUCTS

2.1 PRODUCT SUBSTITUTIONS:

A. See Section 01 6200 - Product Requirements for substitution submission procedures.

B. For each proposed product substitution, submit the following information in addition to requirements specified in Section 01 6200:
   1. Relative amount of waste produced, compared to specified product.
   2. Cost savings on waste disposal, compared to specified product, to be deducted from the Contract Sum.
   3. Proposed disposal method for waste product.
   4. Markets for recycled waste product.

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PART 3 - EXECUTION

3.2 WASTE MANAGEMENT PLAN IMPLEMENTATION:

A. Manager: Designate an on-site person or persons responsible for instructing workers and overseeing and documenting results of the Waste Management Plan.

B. Communication: Distribute copies of the Waste Management Plan to job site foreman, each subcontractor, Owner, and Architect.

C. Instruction: Provide on-site instruction of appropriate separation, handling, and recycling, salvage, reuse, and return methods to be used by all parties at the appropriate stages of the project.

D. Meetings: Discuss trash/waste management goals and issues at project meetings; particularly at:
1. Pre-bid meeting.
2. Pre-construction meeting.
3. Regular job-site meetings.
4. Job safety meetings.

E. Facilities: Provide specific facilities for separation and storage of materials for recycling, salvage, reuse, return, and trash disposal for use by all contractors and installers.
1. As a minimum, provide:
   a. Separate area for storage of materials to be reused on site, such as wood cut-offs for blocking.
   b. Separate dumpsters for each category of recyclable.
   c. Recycling bins at worker lunch area.
2. Provide containers as required.
3. Provide temporary enclosures around piles of separated materials to be recycled or salvaged.
4. Provide materials for barriers and enclosures that ore nonhazardous, recyclable, or reusable to the maximum extent possible; reuse project construction waste materials if possible.
5. Locate enclosures out of the way of construction traffic.
6. Provide adequate space for pick-up and delivery and convenience to subcontractors.
7. If an enclosed area is not provided, clearly lay out and label a specific area on-site.
8. Keep recycling and trash/waste bin areas neat and clean and dearly marked In order to avoid contamination of materials.

F. Excavated Soils and Land Clearing Debris: 100% of trees, stumps, rocks, and associated vegetation and soils resulting primarily from land clearing shall reused or recycled, except for reuse, either on site or off site of vegetation or soil contaminated by disease or pest infestation.
1. For a phased project, such material may be stockpiled on site until the storage site is developed.
2. If contamination by disease or pest infestation is suspected, contact the County Agricultural Commissioner and follow its direction for recycling or disposal of the material.
3. See www.cdfa.ca.gov/exec/county/county_contacts.html.

G. Hazardous or Toxic Waste: Separate, store, and dispose of hazardous waste according to applicable regulations.

H. Recycling: Separate, store, protect, and handle at the site identified recyclable waste products in order to prevent contamination of materials and to maximize recyclability of identified materials. Arrange for timely pickups from the site or deliveries to recycling facility In order to prevent contamination of recyclable materials.

I. Reuse of Materials On-Site: Set aside, sort, and protect separated products in preparation for reuse.

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J. Salvage: Set aside, sort, and protect products to be salvaged for reuse oft-site.

END OF SECTION 01 7425

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SECTION 01 7700 - CONTRACT CLOSEOUT

PART 1 - GENERAL

1.1 SUMMARY

A. This Section specifies administrative and procedural requirements for an orderly and efficient transfer of the completed Work to the Owner.

B. Related Sections:
1. Documents affecting work of this Section include, but are not necessarily limited to, General Conditions, Supplementary Conditions, and Sections in Division 1 of these Specifications.
2. Section 01 3300: Submittal procedures.
3. Section 01 4520: Payment procedures for retesting.
4. Section 01 7400: Final cleaning.
5. Section 01 7820: Operation and maintenance data.
6. Section 01 7840: Project record documents.
7. Certifications and Warranties as noted in each specification section.

1.2 QUALITY ASSURANCE

A. Prior to requesting inspection by the Architect, use adequate means to assure that the Work is completed in accordance with the specified requirements and is ready for the requested inspection.

1.3 SUBSTANTIAL COMPLETION

A. Preliminary Procedures: Complete the following prior to requesting inspection for substantial completion.
1. Prepare and submit the list of items to be completed or corrected required by the General Conditions.
2. Closeout Submittals:
a. Prepare and submit an electronic submittal of each closeout submittals including, but not limited to, the following:
i. In-Service Certifications required by Divisions 1 through 33 of the specifications executed by the appropriate persons on form provided in this Section.
ii. Project Asbestos Certification executed by Contractor on form provided in this Section;
iii. Project record documents complying with the requirements of Section 01 7840;
iv. Project Warranty executed by the Contractor on form provided in this Section.
v. Special warranties as specified in Divisions 1 through 33 of the specifications.
vi. Maintenance agreements required by Divisions 1 through 33 of the specifications;
vii. Operation and maintenance manuals required by Divisions 1 through 33 of the specifications complying with the requirements of Section 01 7820;
viii. Manufacturer's recommended cleaning procedures required by Divisions 1 through 33;
ix. Certifications required by Divisions 1 through 33 of the specifications.
x. Test reports required by Divisions 1 through 33 of the specifications.
xi. Final versions of all: submittals, RFIs, bulletins, change order requests and change orders.
b. Upon the Architect’s acceptance of the Closeout Submittal, provide one complete hard copy in 3-ring binders, including “wet-signature” original documents for the Owner’s record.
3. Advise Owner of pending insurance change over requirements.
4. Obtain and submit releases from governmental agencies having jurisdiction enabling the Owner unrestricted use of the Work and access to service and utilities; include occupancy permits, operating certificates, and similar releases.
5. Deliver special tools, spare parts, extra materials, and similar items.

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6. Make final change-over of permanent locks and transmit keys to the Owner. Advise the Owner's personnel of change-over in security provisions.
7. Complete start-up testing and balancing of systems, and instruction and demonstration of the Owner's operating and maintenance personnel. Discontinue or change over and remove temporary facilities from the site, along with construction tools, mock-ups, and similar elements.
8. Complete final clean-up requirements, including touch-up painting. Touch-up and otherwise repair and restore marred exposed finishes.
9. Submit a list of subcontractors, service organizations, and principal vendors, including names, addresses, and telephone numbers where they can be reached for emergency service at all times including nights, weekends, and holidays.
10. In the presence of the Owner and the Inspector of Record, locate all utility devices required for control, manipulation, or shut-off of building and site utility systems including, but not limited to cleanouts, valves, dampers, valve boxes, pull boxes, handholes, manholes, etc., whether exposed, concealed, or in-ground.

B. Inspection Procedures:
1. Within 5 days of receipt of Contractor's list of items to be completed or corrected, the Architect will make an "initial inspection" and provide the Contractor with an additional list of discrepancies. When the Contractor corrects the items indicated by the Architect and any other, the Contractor shall notify the Architect for the Final Acceptance Inspection.
2. All closeout submittal items as listed in paragraph 1.3.A above shall be completed prior to Notice of Completion being submitted to the Owner for acceptance.

1.5 FINAL ACCEPTANCE

A. Preliminary Procedures: Prior to requesting final inspection for certification of final acceptance and final payment, prepare and submit the following:
1. Final application for payment with release of liens/stop notices and supporting documentation not previously submitted and accepted.
2. Updated final statement, accounting for final additional changes to the Contract Sum;
3. Final meter readings for utilities, a measured record of stored fuel, and similar data as of the date of Substantial Completion, or when the Owner took possession of and responsibility for corresponding elements of the Work.
4. Final liquidated damages settlement statement, where applicable.
5. Payment by the Contractor of all backcharge items, including but not limited to utilities, materials retesting, and reinspections.
6. Contractor shall coordinate switch-over of utilities following Substantial Completion and approval of the Architect. Provide proof of payment for electricity, water, gas and other utilities that are a part of this contract.

B. Inspection Procedures:
1. Within 5 days of receipt of Contractor's written request for Final Acceptance Inspection, the Architect will make a "final inspection" to review the "initial inspection" list of discrepancies and identify any additional discrepancies discovered.
2. Reinspection: Should the Contractor not have completed the Work as required by the Contract Documents, not have completed the items identified on the list of discrepancies, or should the Architect reject portions of the Work, all further inspections, time expended, and reimbursable expenses incurred by the Architect, his representatives, or consultants for final acceptance will be considered additional services and will be charged at the following rates:
    a. Project Architect: $270/hr or $540.00 per inspection minimum.
    b. Architect's Representative: $220/hr or $440.00 per inspection minimum.
    c. Consultants: The direct cost to the Architect plus 10% or $500.00 per inspection minimum.
3. The Architect will bill Owner for additional services required by the Architect and/or consulting engineers for such additional inspections, time expended, and reimbursable expenses incurred, and Owner shall be reimbursed by deducting the same amount from the final payment.

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4. Determination of necessity for such reinspections will be made by consultation between the Owner and the Architect.

END OF SECTION 01 7700

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MANGINI

MANGINI ASSOCIATES INC.
4320 West Mineral King Avenue
Visalia, California 93291
(559) 627-0530

www.mangini.us

Specification Section No._____

IN-SERVICE CERTIFICATION

PROJECT:	**PROJECT NAME** Project Address	**DATE:**	
OWNER:		**PROJECT NO.:**	
ARCHITECT:	Mangini Associates Inc.	**DSA FILE NO.:**	
CONTRACTOR:		**DSA APPL. NO.:**	
INSPECTOR:			

IN-SERVICE CONDUCTED BY: _____

MATERIALS REVIEWED (Check applicable boxes)

☐ **RECORD DRAWINGS**	☐ **SAFETY PROCEDURES**	☐ **SHUT DOWN**
☐ **WARRANTIES**	☐ **CLEANING PROCEDURES**	☐ **CONTROLS MANIPULATION**
☐ **MAINTENANCE AGREEMENT**	☐ **IDENTIFICATION SYSTEMS**	☐ **EMERGENCY PROCEDURES**
☐ **OPERATION & MAINTENANCE MANUALS**	☐ **START-UP**	☐ **NOISE/VIBRATION ADJUSTMENT**
☐ **SPECIAL TOOLS AND PARTS**	☐ **CONTROL SEQUENCES**	☐ **EFFECTIVE ENERGY UTILIZATION**

ATTENDEES (Please print name and sign below)

1. DISTRICT FACILITIES REPRESENTATIVE _____

2. SITE REPRESENTATIVE _____

3. DISTRICT MAINTENANCE REPRESENTATIVES _____ (Plumbing) _____ (Mechanical)

_____ (Electrical) _____ (Grounds)

4. OTHERS PRESENT (FOR GENERAL CONTRACTOR, ETC.) _____ _____

_____ _____

MEETING DATE: _____ **TIME OF START:** _____ **TIME OF COMPLETION:** _____

I CERTIFY THAT THE ABOVE NAMED IN-SERVICE COVERED ALL ASPECTS OF THE SPECIALTY FOR WHICH IT WAS CONVENED.

Signature _____ **Date** _____

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PROJECT ASBESTOS CERTIFICATION

PROJECT:	**PROJECT NAME** Project Address	**DATE:**	
OWNER:		**PROJECT NO.:**	
ARCHITECT:	Mangini Associates Inc.	**DSA FILE NO.:**	
CONTRACTOR:		**DSA APPL. NO.:**	
INSPECTOR:			

TO: _____

FROM: _____

SUBJECT: **Asbestos Containing Building Materials Letter**

I hereby certify that, to the best of my knowledge, the materials furnished and/or installed by

(General Contractor) _____

or its subcontractors on the (Name of Project) _____

located at (Street Address, City, State) _____

do not contain Asbestos Containing Building Materials.

_____
Date

_____
Contractor

_____
Address

_____

_____

_____
Telephone

_____
Signature of Contractor

_____
Title

MANGINI

MANGINI ASSOCIATES INC.
4320 West Mineral King Avenue
Visalia, California 93291
(559) 627-0530

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PROJECT WARRANTY

PROJECT:	**PROJECT NAME** Project Address	**DATE:**
OWNER:		**PROJECT NO.:**
ARCHITECT:	Mangini Associates Inc.	**DSA FILE NO.:**
CONTRACTOR:		**DSA APPL. NO.:**
INSPECTOR:		

_____ (Contractor) hereby warrants to the Owner that materials and equipment furnished under the Contract in the (Name of Project) _____
_____
are of good quality and new unless otherwise required or permitted by the Contract Documents, that the Work is free from defects not inherent in the quality required or permitted, and that the Work conforms with the requirements of the Contract Documents. Work not conforming to these requirements, including substitutions not properly approved and authorized, may be considered defective. This warranty excludes remedy for damage or defect caused by abuse, modifications not executed by the Contractor, improper or insufficient maintenance, improper operation, or normal wear and tear under normal usage.

If, within 1 year after the date of Substantial Completion of the Work or designated portion thereof, or by terms of an applicable special warranty required by the Contract Documents extending this time period, any of the Work is found to be not in accordance with the requirements of the Contract Documents or proves to be defective in materials or workmanship, the Contractor expressly agrees to correct it, without expense to the Owner, promptly after receipt of written notice from the Owner or his agent to do so unless the Owner has previously given the Contractor written acceptance of the condition. This period of 1 year shall be extended with respect to portions of the Work first performed after Substantial Completion by the period of time between Substantial Completion and the actual performance of the Work. This obligation of the Contractor to correct the Work shall survive acceptance of the Work under the Contract and termination of the Contract. The Owner shall give such notice promptly after discovery of the condition.

Nothing contained in this warranty shall be construed to establish a period of limitation with respect to other obligations which the Contractor might have under the Contract Documents. Establishment of the time period of 1 year, or special extended time periods required by the Contract Documents, for correction of the Work as described above relates only to the specific obligation of the Contractor to correct the Work, and has no relationship to the time within which the obligation to comply with the Contract Documents may be sought to be enforced, nor to the time within which proceedings may be commenced to establish the Contractor's liability with respect to the Contractor's obligations other than specifically to correct the Work.

In the event of the Contractor's failure to comply with the conditions of this warranty within 10 days after being notified in writing by the Owner or his agent, the Contractor hereby authorizes the Owner to proceed to have said defects repaired and made good at the Contractor's expense and the Contractor will honor and pay the costs and charges therefor upon demand.

The term "Work" means the construction and services required by the Contract Documents and includes all other labor, materials, equipment and services provided by the Contractor to fulfill the Contractor's obligations. The Work may constitute the whole or part of the total construction performed under the Contract Documents.

_____ _____
Date Telephone

_____ _____
Contractor Signature of Contractor

_____ _____
Address Title
_____

_____

SECTION 01 7820 - OPERATION AND MAINTENANCE DATA

PART 1 - GENERAL

1.1 SUMMARY

A. To aid the continued instruction of operating and maintenance personnel, and to provide a positive source of information regarding products incorporated into the Work, furnish and deliver the data described in this Section and in pertinent other Sections of these Specifications.

B. Related Sections:
   1. Documents affecting work of this Section include, but are not necessarily limited to, General Conditions, Supplementary Conditions, and Sections in Division l of these Specifications.
   2. Required contents of submittals also may be amplified in pertinent other Sections of these Specifications.

1.2 SUBMITTALS

A. Comply with pertinent provisions of Section 01 3300.

B. Submit an Electronic Submittal preliminary draft of the proposed Manual or Manuals to the Architect for review and comments.

C. Once the Architect has accepted the complete electronic submittal, submit one original hard copy set of binders to the Architect prior to the indoctrination of operation and maintenance personnel.

1.3 QUALITY ASSURANCE

A. In preparing data required by this Section, use only personnel who are thoroughly trained and experienced in operation and maintenance of the described items, completely familiar with the requirements of this Section, and skilled in technical writing to the extent needed for communicating the essential data.

PART 2 - PRODUCTS

2.1 OPERATION AND MAINTENANCE MANUALS

A. Where instruction Manuals are required to be submitted under other Sections of these Specifications, prepare in accordance with the provisions of this Section.

B. Preliminary Electronic Submittal:
   1. Comply with pertinent provisions of Section 01 3300.
   2. The submittal shall be one complete .pdf file consisting of all items described in Section 01 7700. Record Documents shall be separately, but similarly submitted in accordance with Section 01 7840.
   3. Minimum components:
      a. Neatly typewritten index near the front of the Manual, giving immediate information as to location within the Manual of all emergency information regarding the installation.
         i. Bookmark all .pdf files to match the Project Manual table of contents.
      b. Complete instructions regarding operation and maintenance of all equipment involved including lubrication, disassembly, and reassembly.
      c. Complete nomenclature of all parts of the equipment.

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d. Complete nomenclature and part number of all replaceable parts, name and address of nearest vendor, and all other data pertinent to procurement procedures.
e. All guarantees and warranties issued.
f. Manufacturers' bulletins, cuts, and descriptive data, where pertinent, clearly indicating the precise items included in this installation and deleting, or otherwise clearly indicating, all manufacturers' data with which this installation is not concerned.
g. Such other data as required in pertinent other Sections of these Specifications.

C. Final Hard Copy (Once electronic submittal is accepted):
1. Size: 8-1/2" x 11"
2. Paper: White bond, at least 20 lb weight
3. Text: Neatly written or printed
4. Drawings: 11" in height preferable; bind in with text; foldout acceptable; larger drawings acceptable but fold to fit within the Manual and provide a drawing pocket inside rear cover or bind in with text.
5. Flysheets: Separate each portion of the Manual with neatly prepared flysheets briefly describing contents of the ensuing portion; flysheets may be in color.
6. Binding: Use heavy-duty plastic or fiberboard covers with binding mechanism concealed inside the Manual; 3-ring binders will be acceptable; all binding is subject to the Architect's approval.
7. Measurements: Provide all measurements in U.S. standard units such as feet-and-inches, lbs, and cfm; where items may be expected to be measured within ten years in accordance with metric formulae, provide additional measurements in the "International System of Units" (SI).

D. Provide front and back covers for each Manual, using durable material approved by the Architect, and clearly identified on or through the cover with at least the following information:

OPERATING AND MAINTENANCE INSTRUCTIONS

(name and address of Work)

(name of Contractor)

(general subject of this Manual)

(space for signature of)
(the Architect, and approval date)

PART 3 - EXECUTION

3.1 OPERATION AND MAINTENANCE MANUALS

A. Preliminary:
1. Prepare a preliminary electronic submittal of each proposed Manual.
2. Show general arrangement, nature of contents in each portion, probable number of drawings and their size, and proposed method of binding and covering.
3. Secure the Architect's approval prior to proceeding.

B. Final: Complete the Manuals in strict accordance with the approved preliminary drafts and the Architect's review comments.

C. Revisions:

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1. Following the indoctrination and instruction of operation and maintenance personnel, review all proposed revisions of the Manual with the Architect.
2. Following the indoctrination meeting, complete the "In-Service Certification" form and include it as part of the Operation and Maintenance Manual.
3. If the Contractor is required by the Architect to revise previously approved Manuals, compensation will be made as provided for under "Changes" in the General Conditions.

END OF SECTION 01 7820

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SECTION 01 7840 - PROJECT RECORD DOCUMENTS

PART 1 - GENERAL

1.1 SUMMARY

A. Throughout progress of the Work, maintain an accurate record of changes in the Contract Documents, as described in Article 3.1 below and, upon completion of the Work, transfer the recorded changes to a set of Record Documents, as described in Article 3.2 below.

B. Related Sections:
1. Documents affecting work of this Section include, but are not necessarily limited to, General Conditions, Supplementary Conditions, and Sections in Division l of these Specifications.
2. Other requirements affecting Project Record Documents may appear in pertinent other Sections of these Specifications.

1.2 SUBMITTALS

A. Comply with pertinent provisions of Section 01 3300.

B. The Architect's approval of the current status of Project Record Documents may be a prerequisite to the Architect's approval of requests for progress payment and request for final payment under the Contract.

C. Prior to submitting each request for progress payment, secure the Architect's approval of the current status of the Project Record Documents.

D. Prior to submitting request for final payment, submit the final Project Record Documents to the Architect and secure his approval.

1.3 QUALITY ASSURANCE

A. Delegate the responsibility for maintenance of Record Documents to one person on the Contractor's staff as approved by the Architect.

B. Accuracy of Records:
1. Thoroughly coordinate changes within the Record Documents, making adequate and proper entries on each page of Specifications and each sheet of Drawings and other Documents where such entry is required to show the change properly.
2. Accuracy of records shall be such that future searches for items shown in the Contract Documents may rely reasonably on information obtained from the approved Project Record Documents.

C. Make entries within 24 hours after receipt of information that the change has occurred.

1.4 DELIVERY, STORAGE, AND HANDLING

A. Maintain the job set of Record Documents completely protected from deterioration and from loss and damage until completion of the Work and transfer of all recorded data to the final Project Record Documents.

B. In the event of loss of recorded data, use means necessary to secure data to the Architect's approval.
1. Such means shall include, if necessary in the opinion of the Architect, removal and replacement of

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concealing materials.

2. In such case, provide replacements to the standards originally required by the Contract Documents.

PART 2 - PRODUCTS

2.1 RECORD DOCUMENTS

A. Record Documents:
1. Job Set: Promptly following receipt of the Owner's Notice to Proceed, secure from Architect, at no charge to Contractor, one complete set of all Documents comprising the Contract, and post all addenda.
2. Post all requests for information, bulletins, and change orders as they occur.
3. Show all underground utility locations and routings by horizontal and vertical dimension.
   a. Record width of trenches in cases were multiple pipes or conduits are installed.
   b. Record the number and sizes of pipes and conduit where trench combines power, fire alarm, and communications.
4. Show all overhead utility locations and routings by horizontal and vertical dimension.
5. At a time nearing completion of the Work, submit the Job Set to the Architect for review.

B. Preliminary Record Documents Submittal:
1. Make an electronic PDF format color copy of the Job Set and submit to the Architect for review.
   a. Bookmark each sheet with sheet number and title to match the sheet index on the cover sheet of the drawings.

C. Final Record Documents:
1. Upon the Architect’s acceptance of the Job Set, make one complete copy of all sheets, including copies of the backs of sheets used to post record information, and including added sheets used to post record information. This copy shall be submitted to the Architect for distribution to the Owner.
2. Include an electronic PDF format color copy of the accepted Job Set.

PART 3 - EXECUTION

3.1 MAINTENANCE OF JOB SET

A. Immediately upon receipt of the job set described in Paragraph 2.1.A above, identify each of the Documents with the title, "RECORD DOCUMENTS - JOB SET", and post all addenda.

B. Preservation:
1. Considering the Contract completion time, the probable number of occasions upon which the job set must be taken out for new entries and for examination, and the conditions under which these activities will be performed, devise a suitable method for protecting the Job Set to the approval of the Architect.
2. Do not use the Job Set for any purpose except entry of new data and for review by the Architect.
3. Maintain the Job Set at the site of Work as designated by the Architect.

C. Making Entries on Drawings:
1. Using an erasable colored pencil (not ink or indelible pencil), clearly describe the change by graphic line and note as required.
2. Date all entries.
3. Call attention to the entry by a "cloud" drawn around the area or areas affected.
4. In the event of overlapping changes, use different colors for the overlapping changes.

D. Make entries in the pertinent other Documents as approved by the Architect.

E. Conversion of Schematic Layouts:

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1. In some cases on the Drawings, arrangements of conduits, circuits, piping, ducts, and similar items, is shown schematically and is not intended to portray precise physical layout.
    a. Final physical arrangement is determined by the Contractor, subject to Architect's approval.
    b. However, design of future modifications of the facility may require accurate information as to the final physical layout of items which are shown only schematically on the Drawings.
2. Show on the Job Set, by dimension accurate to within one inch, the centerline of each run of items such as are described in subparagraph 3.1.E.1 above.
    a. Clearly identify the item by accurate note such as "cast iron drain", "galv. water", and the like.
    b. Show, by symbol or note, the vertical location of the item ("under slab", "in ceiling plenum", "exposed", and the like).
    c. Make all identification so descriptive that it may be related reliably to the Specifications.
3. The Architect may waive the requirements for conversion of schematic layouts where, in the Architect's judgment, conversion serves no useful purpose. However, do not rely upon waivers being issued except as specifically issued in writing by the Architect.

3.2 FINAL PROJECT RECORD DOCUMENTS

A. The purpose of the final Project Record Documents is to provide factual information regarding all aspects of the Work, both concealed and visible, to enable future modification of the Work to proceed without lengthy and expensive site measurement, investigation, and examination.

B. Method of Showing Changes:
    1. Carefully record change data, coordinating the changes as required.
    2. Clearly indicate at each affected detail and other Drawings a full description of changes made during construction, and actual location of underground and overhead utility locations and routes.
    3. Call attention to each entry by drawing a "cloud" around the area or areas affected.
    4. Make changes neatly, consistently, and with the proper media to assure longevity and clear reproduction.

3.3 CHANGES SUBSEQUENT TO ACCEPTANCE

A. The Contractor has no responsibility for recording changes in the Work subsequent to Final Completion, except for changes resulting from work performed under Warranty.

END OF SECTION 01 7840

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SECTION 02 0160 - EXISTING PLANTS TO REMAIN

PART 1 - GENERAL

1.1 SUMMARY

A. Provide protection of all existing plants and planted areas indicated to remain as indicated on Drawings.

B. Related Sections:
1. Documents affecting work of this Section include, but are not necessarily limited to, General Conditions, Supplementary Conditions, and Sections in Division l of these Specifications.
2. Section 32 8420: Irrigation System.
3. Section 32 9000: Landscaping.

1.2 PROJECT CONDITIONS

A. Review: Visit and walk the site with the Owner and Landscape Architect to clarify scope of work and understand project conditions.

B. Documentation: Confirm location of all plant materials designated on Drawings as "Existing to Remain". Examine existing irrigation system to remain, and report all malfunctioning equipment, to be repaired by Owner. Record all discrepancies and all conditions which threaten existing plantings. Owner shall arrange for correction of detrimental conditions.

C. Acceptance: Commencing work shall be taken as acceptance by the Contractor of responsibility for the protection of all existing site plantings.

1.3 SUBMITTALS

A. General: Submit in accordance with Section 01 3300.
1. Shop Drawings: Construction details for protective barriers and barricades are required.
2. Schedule: Watering schedule, where interruption of irrigation systems will exceed one watering period.
3. Record existing conditions by video recording prior to beginning any work on the project site. Provide video recording of site on DVD format.

1.4 DEFINITIONS

A. Protection: Provide all barricades as required to prevent damage to existing plant materials to remain, including but not limited to protection from mechanical damage, and soil compaction, pollution from all sources, and disruption of environmental support which would result in the loss of vigor of said plantings.

B. Drip Line: An imaginary line on the ground around a plant representing its outermost branch tips. All of the area within the drip line of existing plants to remain is to be protected from damage as specified herein, unless otherwise noted.

1.5 SCHEDULING

A. Construct all protective barriers prior to demolition and selective clearing. See Demolition Plan.

B. A demolition meeting will be called prior to demolition where the Landscape Architect and Owner will set the extent of barriers.

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1.6 WARRANTY

A. General: Warrant all existing plant materials against decline resulting from damage during construction and for a period of one year.

B. Exclusions: Damage due to, Acts of God, or neglect by Owner.

1.7 REPLACEMENTS

A. General: Existing planting to remain which exhibits conditions which are determined as unacceptable due to inadequate protection during construction shall be replaced by Contractor at no expense to Owner.

B. Quality: Closely match replacements to adjacent specimens of the same species, variety, and cultivar.

C. Replacement size shall be equal to material being replaced. Contractor shall visit site prior to bidding in order to familiarize himself with possible replacement sizes.

D. Planting, Maintenance, and Warranty of Replanted Materials: See Section 32 9000.

E. When required replacement of plant material shall be performed within two working weeks of written notice from project inspector.

F. Liquidated damages will be assessed to the Contractor by the Owner for failure to complete the replacement of plant material within allotted time. The amount will be $200.00 for each calendar day the work is not completed.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Fertilizers, Herbicides, and Pest Control as required shall be of best industry standards as approved by the Landscape Architect.

2.2 SAFETY

A. Provide all reflective signage and/or flashers as required by all codes and ordinances affecting barricaded plantings to remain.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Provide barriers at the drip line of all trees designated to remain. Grouping of trees may be enclosed by a single protective fence. Similarly protect turf, groundcover, and shrub areas from construction activities.

3.2 OPERATIONS

A. Storage: Do not store materials or equipment under the branches of all existing trees nor in turf or ground cover areas to remain.

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B. Traffic: Do not operate nor park equipment within the drip line of existing trees to remain. Keep foot traffic out of existing ground cover and turf areas. Protect shrub areas from cross traffic.
C. Operations: Do not permit burning, temporary or permanent dumping or storage of construction debris within drip line of existing trees to remain. Give written notification if any construction activity by any contractor threatens to damage existing plants to remain.

3.3 IRRIGATION

A. One week prior to construction start the Contractor shall install and maintain a controlled water system accessed through existing irrigation system. System shall be drip type and be configured to give the appropriate amount of water for each type of plant.

B. If the irrigation system is disrupted for any reason during construction the Contractor shall restore irrigation within twenty-four (24) hours of disrupted service.

3.4 EXCAVATING AND GRADING

A. Cut: Do not permit machine excavation within the drip line of existing trees to remain. All such work shall be by hand labor. Do not permit more than 2" of existing soil to be removed within the drip line except as authorized in writing by Landscape Architect.

B. Fill: Do not permit stockpiling of soil within the drip line of all existing trees nor on existing turf or groundcover areas. Do not permit more than 3" of fill to be placed within the drip line during grading operations without written acceptance by Landscape Architect.

3.5 REPAIR OF DAMAGED MATERIAL

A. During the course of construction, if roots two inches (2") or larger in diameter are cut, the Contractor shall take the following immediate action to minimize further damage to the plant material.
   1. Stop construction activity; inform project inspector and District to contact a qualified arborist for inspection.
   2. If the arborist determines that damage occurred the Contractor will be directed within 48 hours to perform the following:
      a. Prune plant material to I.S.A. specifications to compensate for root loss.
      b. Aerate soil to relieve compaction and to improve oxygen exchange to root system.
      c. Fertilize trees with deep water bore at rate of 1 pound of actual nitrogen per 1,000 sq. ft.
      d. Inject plant hormones (growth stimulator) through irrigation system.
   3. This process shall be implemented within 48 hours of direction by arborist. Failure to perform repairs within specified time will institute liquidated damages of $200.00 for each calendar day by which the completion of repairs is delayed.
   4. The Owner reserves the right to hire a person or persons to perform the repair work in the event the Contractor does not respond in a timely manner. The expense for this work will be billed to the Contractor at no future expense to the Owner.

3.6 MAINTENANCE OF EXISTING PLANTING

A. General: Maintain all existing plantings to remain for a period of 45 days per Standard Horticultural practices as deemed necessary by Landscape Architect.

B. Fertilizers: Do not use complete fertilizers on existing plant materials unless soils test Indicates specific nutrient deficiencies.

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3.7 CLEAN UP

A. At close of construction in each area, remove all protective barriers at the direction of the Landscape Architect. Transport all barrier materials off site at no additional expense to Owner.
B. Repair all grades and restore all damaged plant materials.

END OF SECTION 02 0160

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SECTION 02 3100 - SUBSURFACE UTILITY INVESTIGATION

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes investigation and identification of location of overhead, surface, and underground utilities by the Contractor using firm specializing in underground utility verification.

B. Related Sections:
1. Documents affecting work of this Section include, but are not necessarily limited to, General Conditions, Supplementary Conditions, and Divisions 1 through 16 of these Specifications.
2. Section 02 4100: Demolition.
3. Section 31 2000: Earthwork.

PART 2 - PRODUCTS

2.1 UTILITY VERIFICATION COMPANIES

A. Use utility verification firm specializing in underground utility location.
1. Off-site utility verification: Underground Service Alert (USA), 800/642-2444.
2. On-site utility verification:
a. MDR Utility, (559) 827-3713.
3. Verify and stake all on-site utilities with Owner and on-site investigation prior to excavation.

PART 3 - EXECUTION

3.1 INVESTIGATION

A. Prior to demolition, trenching, and earthwork operations, identify location, routing, and elevation of underground utilities in the construction area and along utility trench routings with the Owner.

B. Verify existing utilities with the service providers (i.e., power, telephone, water, sewer, cable TV, etc.) to the point of connection on site (meter, transformer, etc.)

C. Locate underground utilities using electronic detection when available, utility map analysis, and on-site survey.

D. Underground utilities include but are not limited to gas, water, sewer, storm drain, electrical power and signals (fire alarm, telephone, computer, intercom, data), and sprinkler irrigation and controls.

E. Where non-metallic utilities such as storm drain lines are in the work site, snake metallic trace lines through the line prior to electronic detection.

3.2 IDENTIFICATION

A. Identify underground utilities by stakes, flags, and painted lines.

B. Document the invert elevation of all cleanouts, manholes, and drainage structures.

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C. Maintain staking and marking of such utilities throughout the duration of the Work.

3.3 COORDINATION

A. Coordinate the proposed routing and elevation of pipes, conduits, and trenches that are part of the Work with existing utilities.

B. Coordinate the routing and elevation of new underground utilities with existing underground utilities. Notify the Architect immediately of any conflicts, prior to proceeding with demolition, trenching, or earthwork operations.

3.4 SITE CONDITIONS

A. Where existing utilities are indicated on the drawings, extreme care shall be exercised in excavating near these utilities to avoid damage, and the Contractor will be held responsible for any damage caused by construction operations.

B. Should utilities not indicated on the drawings be found during construction, the Contractor shall promptly notify the Architect for instructions as to further action. Failure to do so will make the Contractor liable for any damage arising from construction operations after discovery of these utilities.

3.5 UNFORSEEN CONDITIONS

A. Utilities and obstructions not traceable or noted on the Drawings will be considered unforeseen. Should such lines be encountered and damaged, the Contractor shall repair such condition immediately. The cost of repairs will be compensated to the Contractor on a time-and-materials basis by change order.

END OF SECTION 02 3100

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SECTION 02 4210 - SELECTIVE DEMOLITION

PART 1 - GENERAL

1.1 SUMMARY

A. In accordance with pertinent provisions of this Section, carefully demolish and remove from the site those items scheduled to be so demolished and removed. Section includes:
   1. Selective demolition of built site elements.
   2. Selective demolition of building elements for alterations purposes.
   3. Abandonment and removal of existing utilities and utility structures.
   4. Removal and/or relocation of designated building equipment and fixtures.
   5. Removal of designated construction.
   6. Disposal of materials.
   7. Storage of removed materials where indicated.

B. Related Sections: Documents affecting work of this Section include, but are not necessarily limited to, General Conditions, Supplementary Conditions, and Sections in Division l of these Specifications.
   1. Section 01 1100: Work sequence, continued occupancy of the building, limitations on Contractor’s use of site and premises, description of items to be removed by Owner, description of items to be salvaged or removed for re-use by Contractor.
   2. Section 01 5000: Temporary enclosures, dust control barricades, security at occupied areas, waste removal, and cleanup during construction.
   3. Section 01 5725: Temporary erosion and sedimentation control.
   4. Section 01 6600: Handling and storage of items removed for salvage and relocation.
   5. Section 01 7300: Project conditions; protection of bench marks, survey control points, and existing construction to remain; reinstallation of removed products.
   6. Section 01 7330: Cutting and patching.
   7. Section 02 0160: Relocation of existing trees, shrubs, and other plants, pruning of existing trees to remain.
   8. Section 31 1000: Vegetation and existing debris removal.
   9. Section 31 2000: Fill material for filling holes, pits, and excavations generated as a result of removal operations.

1.2 REFERENCES

A. 29 CFR 1926 - U.S. Occupational Safety and Health Standards; current edition.

B. NFPA 241 - Standard for Safeguarding Construction, Alteration, and Demolition Operations; 2022.

1.3 QUALITY ASSURANCE

A. Applicable Codes: Conform to applicable code for demolition work, dust control, products requiring electrical disconnection and re-connection. Perform demolition work in accordance with Chapter 33, 2022 California Fire Code.

B. Obtain required permits from authorities and comply with the requirements of the governing jurisdictions.

C. Do not close or obstruct egress from any building exit or site exit.

D. Do not disable or disrupt building fire or life safety systems without 3 days' prior written notice to Owner.

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E. Conform to applicable regulatory procedures when hazardous or contaminated materials are discovered.

1.4 PROJECT CONDITIONS

A. Conduct demolition to minimize interference with adjacent and occupied properties in the general area of the project site.

B. Cease operations immediately if operations appear to be causing any detrimental effect to adjacent properties and notify Architect. Do not resume operations until directed.

PART 2 - PRODUCTS

(NOT USED)

PART 3 - EXECUTION

3.1 PREPARATION

A. Provide, erect, and maintain temporary barriers as required for the work.

B. Protect any existing improvements noted to remain or not noted for demolition.

C. Mark location and termination of utilities.

3.2 EXAMINATION

A. Drawings showing existing construction and utilities are based on casual field observation and existing record documents only. By careful study of the Contract Documents, determine the location and extent of selective demolition to be performed. Visit the site and verify the extent and location of selective demolition required.
   1. Verify that construction and utility arrangements are as shown.
   2. Carefully identify limits of selective demolition.
   3. Mark interface surfaces as required to enable workmen also to identify items to be removed and items to be left in place intact.
   4. Report discrepancies to Architect before disturbing existing installation.
   5. Beginning of alterations work constitutes acceptance of existing conditions.

3.2 GENERAL PROCEDURES AND PROJECT CONDITIONS

A. Comply with applicable codes and regulations for demolition operations and safety of adjacent structures and the public.
   1. Obtain required permits.
   2. Comply with applicable requirements of NFPA 241.
   3. Use of explosives is not permitted.
   4. Provide, erect, and maintain temporary barriers and security devices.
   5. Use physical barriers to prevent access to areas that could be hazardous to workers or the public.
   6. Conduct operations to minimize effects on and interference with adjacent structures and occupants.
   7. Do not close or obstruct roadways or sidewalks without permit.
   8. Conduct operations to minimize obstruction of public and private entrances and exits; do not obstruct required exits at any time; protect persons using entrances and exits from removal operations.
   9. Obtain written permission from owners of adjacent properties when demolition equipment will traverse, infringe upon or limit access to their property.

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B. Demolished material shall be considered property of the Contractor and shall be completely removed from the job site except where specifically noted otherwise. Do not burn or bury materials on site.

C. Use means necessary to prevent dust becoming a nuisance to the public, to neighbors, and to other work being performed on or near the site.

D. Do not begin removal until receipt of notification to proceed from Owner.

E. Do not begin removal until built elements to be salvaged or relocated have been removed.

F. Do not begin removal until vegetation to be relocated has been removed and specified measures have been taken to protect vegetation to remain.

G. Remove materials as demolition progresses. Upon completion of demolition, leave areas in clean condition.

H. Protect existing structures and other elements that are not to be removed.
   1. Provide bracing and shoring.
   2. Prevent movement or settlement of adjacent structures.
   3. Stop work immediately if adjacent structures appear to be in danger.

I. If hazardous materials are discovered during removal operations, stop work and notify Architect and Owner; hazardous materials include regulated asbestos containing materials, lead, PCB's, and mercury.

3.3 EXISTING UTILITIES

A. Coordinate work with utility companies; notify before starting work and comply with their requirements; obtain required permits.

B. Protect existing utilities to remain from damage.

C. Do not disrupt public utilities without permit from authority having jurisdiction.

D. Do not close, shut off, or disrupt existing life safety systems that are in use without at least 7 days prior written notification to Owner.

E. Do not close, shut off, or disrupt existing utility branches or take-offs that are in use without at least 3 days prior written notification to Owner.

F. Locate and mark utilities to remain; mark using highly visible tags or flags, with identification of utility type; protect from damage due to subsequent construction, using substantial barricades if necessary.

G. Remove exposed piping, valves, meters, equipment, supports, and foundations of disconnected and abandoned utilities.

H. Prepare building demolition areas by disconnecting and capping utilities outside the demolition zone; identify and mark utilities to be subsequently reconnected, in same manner as other utilities to remain.

3.4 SELECTIVE DEMOLITION FOR ALTERATIONS

A. Drawings showing existing construction and utilities are based on casual field observation and existing record documents only.

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1. Verify that construction and utility arrangements are as shown.
2. Report discrepancies to Architect before disturbing existing installation.
3. Beginning of demolition work constitutes acceptance of existing conditions.

B. Separate areas in which demolition is being conducted from other areas that are still occupied.
   1. Provide, erect, and maintain temporary dustproof partitions of construction specified in Section 01 5000 in locations indicated on drawings.
   2. Provide sound retardant partitions of construction indicated on drawings in locations indicated on drawings.

C. Maintain weatherproof exterior building enclosure except for interruptions required for replacement or modifications; take care to prevent water and humidity damage.

D. Remove existing work as indicated and as required to accomplish new work.

E. Protect existing work to remain.
   1. Prevent movement of structure; provide shoring and bracing if necessary.
   2. Perform cutting to accomplish removals neatly and as specified for cutting new work.
   3. Repair adjacent construction and finishes damaged during removal work.
   4. Patch as specified for patching new work.

F. Services (Including but not limited to HVAC, Plumbing, Fire Protection, Electrical, Telecommunications, and Intrusion Alarm): Remove existing systems and equipment as indicated.
   1. Maintain existing active systems that are to remain in operation; maintain access to equipment and operational components.
   2. Where existing active systems serve occupied facilities but are to be replaced with new services, maintain existing systems in service until new systems are complete and ready for service.
   3. See Section 01 1110 for other limitations on outages and required notifications.
   4. Verify that abandoned services serve only abandoned facilities before removal.
   5. Remove abandoned pipe, ducts, conduits, and equipment, including those above accessible ceilings; remove back to source of supply where possible, otherwise cap stub and tag with identification.

3.5 DEBRIS AND WASTE REMOVAL

A. Remove debris, junk, and trash from site.

B. Remove from site all materials not to be reused on site.

C. Leave site in clean condition, ready for subsequent work.

D. Clean up spillage and wind-blown debris from public and private lands.

3.6 REPLACEMENTS

A. In the event of demolition of items not so scheduled to be demolished, promptly replace such items to the approval of the Architect and at no additional cost to the Owner.

END OF SECTION 02 4210

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SECTION 03 1510 - POST-INSTALLED ANCHORS

PART 1 - GENERAL

1.1 SUMMARY

A. Provide post-installed anchors where shown on the Drawings, as specified herein, and as needed for a complete and proper installation.
   1. Definition: Post-installed anchors are concrete anchors installed in drilled holes after concrete has hardened and includes expansion anchors, screw anchors, and epoxy-type (adhesive) anchors.

B. Related Sections:
   1. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division - 1 Specification Sections, apply to work of this section.
   2. Section 03 3000: Cast-in-place concrete.
   3. Section 05 5000: Metal fabrications.

1.2 SUBMITTALS

A. General: Submit in accordance with Section 01 3300.

B. Product Data:
   1. Submit manufacturer's descriptive literature and product specifications for each product.
   2. Include data to indicate compliance with the specified requirements.
   3. Submit manufacturer's recommended installation procedures.
   4. Submit current ICC research or evaluation reports evidencing maximum allowable shear and withdrawal load data.

1.3 QUALITY ASSURANCE

A. Single Source Responsibility: To ensure consistent quality of anchorage, obtain concrete expansion anchors from a single manufacturer.

B. Manufacturer Qualifications: Provide concrete expansion anchors with current International Code Council Evaluation Service Reports acceptable to the Division of the State Architect, and in conformance with the 2025 California Building Code.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Subject to compliance with requirements, manufacturers offering products which may be incorporated in the work include, but are not limited to, the following:
   1. Hilti KB-TZ2 (ESR 4266).
   2. Simpson Strong-Bolt (ESR-1771).
   3. Hilti HUS-EZ (ESR-3027).
   4. SimpsonTiten HD (ESR-2713).
   5. Products specified are for establishing the type, design, and quality required. Products of equal or better type, design, and quality produced by other manufacturers will be considered provided the request for substitution is submitted in accordance with Section 01 2500.

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B. Finish: Type 316 stainless steel at exterior applications; zinc-plated at interior applications; mechanically galvanized or type 316 stainless steel when in contact with preservative treated lumber.

PART 3 - EXECUTION

3.1 PREPARATION

A. Coordinate and furnish anchorages and directions for installation from manufacturer for items to be embedded in concrete construction.

3.2 INSTALLATION

A. Fastening to In-Place Construction (New or Existing Concrete): Provide anchorage devices where necessary for securing designated items indicated on the drawings, or as necessary for a complete and proper job to in-place construction.

B. Install post-installed anchors in strict accordance with the manufacturer's written instructions.

C. Cutting, Fitting and Placement: Perform cutting, drilling and fitting required for designated items of construction. Set work accurately in location, alignment and elevation, level true and free of rack, measured from established lines and levels.

D. Concrete shall attain the specified design strength per the contract documents (2,500 psi minimum) prior to installation of post-installed anchors. Adhesive anchors shall be installed into concrete having a minimum age of 21 days at the time of installation. No anchors shall be installed into concrete that is less than 7 days old.

3.3 TESTING AND INSPECTION REQUIREMENTS

A. General Testing Requirements:
   1. For verifying satisfactory installation workmanship, an independent testing laboratory shall proof load tests for concrete expansion anchors acting in tension in the presence of the project inspector.
   2. If any anchor fails testing, test all anchors of the same type, not previously tested until 20 consecutive anchors pass, then resume the initial test frequency.
      a. If anchors are used for the support and bracing of non-structural components such as pipe, duct or conduit, the 20 consecutive anchors shall be only those anchors installed by the same trade.
   3. Continuous Inspection: Continuous inspection shall be provided during installation by project inspector.

B. Testing Frequency:
   1. Sill Plate Bolting: Test 10% of anchors.
   2. Other Structural Applications: Test all anchors.
   3. Non-structural Applications and Equipment Anchorage: Test 50% or alternate bolts in a group, including at least 1/2 of the anchors in each group.
   4. Exceptions:
      a. Undercut anchors that allow visual confirmation of full set shall not require testing.
      b. Where the factored design tension on anchors is less than 100 pounds and the anchor is clearly noted on the approved construction documents, only 10% of those anchors shall be tested.
      c. Where adhesive anchor systems are used to install reinforcing dowel bars in hardened concrete, only 25% of the dowels shall be tested if all of the following conditions are met:
         1) The dowels are used exclusively to transmit shear forces across joints between existing and new concrete.
         2) The number of dowels in any one member equal or exceeds 12.

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3) The dowels are uniformly distributed across a seismic force resisting members (such as shear walls, collectors, and diaphragms).
4) Anchors to be tested shall be selected at random by the special inspector.

d. Testing of shear dowels across cold joints in slabs on grade, where the slab is not part of the lateral force-resisting systems shall not be required.
e. Testing is not required for power actuated fasteners used to attach metal tracks of interior non-shear wall partitions for shear only, where there are at least three fasteners per segment of track.

C. Test Loads: Test loads shall be listed in the contract drawings and shall be determined by one of the following methods:
1. Twice the maximum allowable tension load or 1-1/4 times the maximum design strength of anchors as provided in the anchor's ICC-ESR or in accordance with Appendix D of ACI 318.
a. Tension test load need not exceed 80% of nominal yield strength of anchor element ($0.8A_bF_y$).
2. Tension or torque test values from the table within the contract drawings.

D. Test Acceptance Criteria: Use the ICC-ESR for the anchor installed or the manufacturer's written instructions, acceptable to DSA. Field tests shall satisfy the following minimum requirements:
1. Hydraulic Ram Method: Anchors tested with a hydraulic jack or spring loaded devices shall maintain the test load for a minimum of 15 seconds and shall exhibit no discernible movement during the tension test, e.g. as evidence of loosening of the washer under the nut. For adhesive anchors, where other than bond is being tested, the testing devices shall not restrict the concrete shear cone type failure mechanism from occurring.
2. Torque Wrenched Method: Anchors tested with a calibrated torque wrench must attain the specified torque within 1/2 turn of the nut.
a. Exceptions:
1). Wedge or Sleeve type: 1/4 turn of the nut for a 3/8" sleeve anchor only.
2). Screw Type: 1/4 turn of screw after initial seating of the screw head.

E. Testing Procedure:
1. Testing procedure shall be as required by the manufacturer’s ICC-ESR.
2. Manufacturer’s recommendation for testing may be approved by the enforcing agency, when ICC-ESR does not provide testing procedure.

END OF SECTION 03 1510

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SECTION 03 3000 - CAST-IN-PLACE CONCRETE

PART 1 - GENERAL

1.1 SUMMARY

A. Provide cast-in-place concrete, including form work and reinforcement, where shown on the Drawings, as specified herein, and as needed for a complete and proper installation.
   1. The work of this Section includes special precautions to reduce cracking in concrete slabs.
   2. The work of this Section includes special procedures to reduce moisture vapor emissions through interior concrete slabs.

B. Related Sections:
   1. Documents affecting work of this Section include, but are not necessarily limited to, General Conditions, Supplementary Conditions, and Sections in Division 1 of these Specifications.
   2. Section 03 1510: Post-installed Anchors.
   3. Section 07 9210: Joint Sealants.
   4. Section 09 6110: Moisture control treatment for flooring.
   5. Section 31 2000: Earthwork.

C. Special Coordination Requirements: Coordinate with the work of the following sections to identify the finish flooring manufacturer's concrete slab requirements. Such requirements may be over and above the requirements of the Contract Documents and may require additional materials, means, or methods, which shall be included as part of the Work.
   1. Section 09 6800: Carpeting.

1.2 SUBMITTALS

A. General: Submit in accordance with Section 01 3300.
   1. Mix Designs: Secure concrete mix designs from the concrete supplier or the testing laboratory in accordance with provisions of Section 01 4520, and submit to the Architect for review and approval. Distribute approved mix designs to testing laboratory, batch plant, job site, and governmental agencies having jurisdiction.
      a. Include a statement clearly indicating the concrete supplier's proposed basis of concrete mix proportions based on ACI 301-16, Section 4.2.3.
      b. When ACI 301-16, Section 4.2.3 is used, strength records used for establishing and documenting concrete mixture proportions shall not be more than 24 months old.
   2. Product Data: Submit manufacturer's descriptive literature and product specifications for each product. Include data to indicate compliance with the specified requirements for the following:
      a. Vapor barrier.
      b. Curing materials.
      c. Admixtures.
      d. Slip dowel system.
   3. Shop Drawings: Submit shop drawings for the reinforcing steel.
   4. Submit cementitious materials certification to Architect complying with CBC Section 1910A.1.
   5. Submit batch tickets of each load to the Inspector of Record.

1.3 QUALITY ASSURANCE

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A. Codes and Standards: Comply with 2025 California Building Code except where more stringent requirements are shown or specified.

B. In accordance with CBC Section 1705A.3.5, do not place concrete until forms and reinforcement have been inspected, all preparations for placement have been completed, and preparations have been checked by the Inspector, all subject to observation of the Architect and Structural Engineer.

C. Placing Record: In accordance with CBC Section 1705A.3.6, keep a concrete placing record on site recording the time and date of placing the concrete in each portion of the structure. Keep placing record until completion of the structure and make available to the inspection of the Owner, Architect, Structural Engineer and Inspector.

1.4 NOTICE CONCERNING SLAB CURLING AND SHRINKAGE CRACKING

A. The Contractor is hereby notified that concrete construction practices and concrete materials can significantly increase the potential for cracking and slab curling, which include the following:
   1. Placement of slabs over high-moisture content subgrade.
   2. Increased mix temperature.
   3. Excessive haul in transit mixture, too long a waiting period at the project site, or too many revolutions at mixing speed.
   4. Use of smaller size aggregate under conditions where larger could have been used.
   5. Use of mixture having high shrinkage characteristics.
   6. Excessive coatings on aggregate due to insufficient washing or contamination during handling.
   7. Use of aggregates of poor inherent quality with respect to shrinkage.
   8. Exceeding the maximum water/cement ratio.

B. The Contractor is responsible for choosing concrete materials and for implementing concrete construction practices which minimize slab curling and shrinkage cracking.

1.5 INTERNAL MOISTURE REDUCTION

A. Moisture in Concrete Slabs:
   1. The Contractor is hereby notified that finish flooring adhesive is extremely sensitive to alkaline solutions (generally pH of 9.0 or greater). Highly alkaline solutions can be formed by moisture vapor within concrete slabs condensing under impermeable flooring materials and combining with alkaline materials naturally occurring in concrete. Impermeable finish flooring materials include sheet vinyl, vinyl composition tile, vinyl-backed carpet, and elastomeric floor systems.
   2. The Contractor is hereby notified that concrete construction practices are a major source of moisture within concrete slabs. These practices should be given proper attention to help reduce moisture within concrete slabs:
      a. Water/cement ratio too high to provide for proper hydration and densification.
      b. Lack of protection of prepared moisture barrier assembly from precipitation.
      c. Floating practices which seal the surface of the concrete and prevent proper evaporation of bleed water.
      d. Curing practices and admixtures that prevent proper hydration by rushing the process.

B. Contractor's Responsibility:
   1. Interior concrete slabs shall meet the requirements of the Contract Documents. The Contractor shall use whatever means and methods are necessary to place and maintain slabs meeting such requirements.
   2. Interior concrete slabs shall conform to additional requirements and recommendations of the finish flooring manufacturers.

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1.6 SPECIAL WARRANTY

A. Manufacturer's Warranty: In addition to the warranty requirements of the Contract Documents, submit 2 copies of a warranty from the interior slab curing product manufacturer with an extended correction period of **15-years** covering labor and materials to replace or repair floor covering that fails due to moisture migration or moisture-born alkalinity contaminates originating from the concrete.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Products specified are for establishing the type, design, and quality required. Products of equal or better type, design, and quality produced by other manufacturers will be considered provided the request for substitution is submitted in accordance with Section 01 2500.

2.2 FORMS

A. Design, erect, support, brace, and maintain formwork so it will safely support vertical and lateral loads which might be applied until such loads can be supported safely by the concrete structure.

B. Except for metal forms, use new materials. Materials may be re-used during progress of the Work, provided they are completely cleaned and reconditioned, recoated for each use, and capable of producing formwork of the required quality.
   1. Form Facing for Exposed to View Finish Concrete: Contractor's choice of materials that will provide smooth, stain-free final appearance.
   2. Chamfer or radius outside corners of beams, joists, columns, and walls.

C. Slip Dowel System: Speed Dowel by Westec Barrier Technologies; #4 rebar dowels x 24" long at 18" on center, minimum of 12" sleeve.

D. Snap Ties: Snap Ties by Dayton/Richmond Concrete Accessories (Constar Supply 559-564-5012), with A-8 Waterseal Washer.

E. Form Release Agent: Capable of releasing forms from hardened concrete without staining or discoloring concrete or forming bugholes and other surface defects, compatible with concrete and form materials, and not requiring removal for satisfactory bonding of coatings to be applied.

2.3 MOISTURE BARRIER

A. Capillary Break: 3" of 3/8" natural pea gravel or 3/4" maximum crushed rock. Less than 5% passing No. 4 sieve.

B. Vapor Barrier: Multi-layer, fabric-, cord-, grid-, or aluminum-reinforced polyethylene or equivalent, ASTM E1745, Class A; stated by manufacturer as suitable for installation in contact with soil or granular fill under concrete slabs. The use of single ply polyethylene is prohibited.
   1. Acceptable Products:
      a. Stego Wrap 15-mil Vapor Barrier by Stego Industries LLC.
      b. Vaporguard by Reef Industries.
      c. Perminator 15-mil by W.R. Meadows.
      d. Viper Vaporcheck II 15-mil Class A Vapor Barrier by ISI Building Products.
   2. Material Properties:
      a. Manufactured from prime virgin resins.
      b. Permeance Rating: ASTM F1249, 0.01 perms or lower.

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c. Permeance after Conditioning: ASTM E154, Sections 8, 11, 12, and 13: Less than 0.01 perms.
d. Puncture Resistance: ASTM E1709, minimum 2200 grams.
e. Tensile Strength: ASTM D882, minimum 50.0 lbf/in.

3. Seal Tapes: Manufacturer's recommended tape for sealing seams in the vapor barrier and for sealing the vapor barrier to fresh concrete.
4. Mastic: Manufacturer’s recommended mastic.
5. Accessories: Construct pipe boots from vapor barrier material, pressure sensitive tape and/or mastic per manufacturer’s instructions.

C. Compactable Slab Base: 3" of granular fill that is compactable, will remain stable, and support construction traffic.
1. Granular fill is defined as a clean, fine grained uniformly-graded material with at least 10% to 30% of particles passing a No. 100 sieve, but not contaminated with clay, silt, or organic material.
2. Expansion Index: < 15
3. The use of clean concrete sand will not be permitted.

2.4 REINFORCEMENT

A. Comply with the following as minimums:
1. Bars: ASTM A615, Grade 40 for #3 bars and smaller, Grade 60 for #4 bars and larger, using deformed bars for #3 and larger.
2. Bending: ACI 318-19, Section 26.6.3.
a Bars shall be limited to one shop or field bend at any location on the bar.
b. Partially embedded bars shall not be field bent, except as indicated on the Drawings or permitted by the Architect.
c. A bar bent in the incorrect location shall not be straightened; such bars shall be discarded.

B. Fabricate reinforcement to the required shapes and dimensions, within fabrication tolerances stated in ACI 318-19.

C. Do not use reinforcement having any of the following defects:
1. Bar lengths, depths, or bends exceeding the specified fabricating tolerances;
2. Bends or kinks not indicated on the Drawings or required for this Work;
3. Bars with cross-section reduced due to excessive rust or other causes.

D. Shop fusion welded stirrup/tie cages shall be permitted provided they are in conformance with CBC 1903A.8.

2.5 CONCRETE

A. Portland Cement: ASTM C150, Type II.

B. Fly Ash: May be used as a partial substitute for Portland cement as follows:
1. Fly ash: ASTM C618, Class N or F (Class C is not permitted).
2. Fly ash used may be included in the water/cement ratio calculation.
3. Not more than 20% by weight of fly ash shall be substituted for Portland cement.

C. Normal Weight Aggregate: ACI 318 Section 26.4.1.2.1(a).(1) and ASTM C 33, except as modified in CBC Section 1903A.5. Provide aggregates from a single source for exposed concrete.

D. Water: ACI 318-19, Section 26.4.1.4.

E. Admixtures:
1. Do not use calcium chloride admixtures.

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2. Admixtures are not permitted without approval from Architect.

2.6 NORMAL WEIGHT CONCRETE DESIGN MIX

A. Proportions: Concrete mix shall be proportioned based on field experience or trial mixtures in accordance with ACI 318-19, Section 26.4.3, and ACI 301-16, Section 4.2.3.
   1. Mix design submittals shall include a statement clearly indicating the concrete supplier's proposed basis of concrete mix proportions through the use of one of the following:
      a. Field experience under ACI 301-16 paragraph 4.2.3.4a, or
      b. Trial mixtures under ACI 301-16 paragraph 4.2.3.4b.
   2. When ACI 301-16, Section 4.2.3 is used as the concrete supplier's proposed basis of concrete mix proportions, strength records used for establishing and documenting concrete mixture proportions shall not be more than 24 months old.

B. Design Professional: A registered civil or structural engineer, licensed in California, with experience in concrete mix design shall select the relative amounts of ingredients to be used as basic proportions of the concrete mixes proposed for use.
   1. Mix design submittals shall include the engineer’s stamp and signature.

C. Cement Content: Minimum of 5.5 sacks of cement per cubic yard, unless otherwise noted below.
   1. Minimum of 5.0 sacks of cement per cubic yard for rat slabs.
   2. Off-site concrete shall conform to governing agency standards.

D. Type A Water Reducer (interior slab on grade only): 28.20 oz/cy, plus or minus 20%.

E. Water/Cementitious Material Ratio:
   1. Footings: Maximum of 0.56.
   2. Site Concrete: Maximum of 0.67.
   3. Interior Slabs/Parking Lots/Fire Lanes: Maximum of 0.50.

F. Minimum Compressive Strength:
   1. Footings, interior slabs, parking lots, fire lanes and retaining walls: 3,000 psi at 28 days.
   2. Site Concrete and rat slabs: 2,500 psi at 28 days.

G. Aggregate Gradation Optimization:
   1. Workability Factor: 32-42%; **target 35%.**
   2. Coarseness Factor: 52-72%; **target 60%.**
   3. Fineness Modulus: 2.80 to 3.10.
   4. Paste Fraction: 27% plus or minus.
   5. Mortar Fraction: Passing the No. 8 sieve.
      a. ¾” to 1” aggregate: 55-57%.
      b. 1-1/2” aggregate: 53-54%.

H. Aggregate Gradation Limits of Combined Mixture:

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Sieve Size	% Passing	
	Interior Slabs Parking Lots Fire Lanes 1-1/2"	**Footings Site Concrete Rat Slab Retaining Walls 1"**
2"	100	--
1-1/2"	95-100	100
1"	80-96	94-100
3/4"	65-80	87-99
1/2"	55-65	65-78
3/8"	45-60	55-64
#4	35-50	40-55
#8	25-38	33-43
#16	20-30	19-32
#30	10-20	9-24
#50	2-12	4-12
#100	1-6	1-8
#200	0-4	0-4

I. Slump Limits: Proportion and design mixes for slump at point of placement of 4" plus or minus 1".

J. Concrete Temperature: 90 deg F maximum at time of placement.

K. Ready-Mix Concrete: Comply with ASTM C94, and as herein specified.

2.7 LIGHTWEIGHT CONCRETE DESIGN MIX

A. Proportions: Concrete mix shall be proportioned based on field experience or trial mixtures in accordance with ACI 318-19, Section 26.4.3, and ACI 301-16, Section 4.2.3.
   1. Mix design submittals shall include a statement clearly indicating the concrete supplier's proposed basis of concrete mix proportions through the use of one of the following:
      a. Field experience under ACI 301-16 paragraph 4.2.3.4a, or
      b. Trial mixtures under ACI 301-16 paragraph 4.2.3.4b.
   2. When ACI 301-16, Section 4.2.3 is used as the concrete supplier's proposed basis of concrete mix proportions, strength records used for establishing and documenting concrete mixture proportions shall not be more than 24 months old.

B. Aggregate: Expanded shale, vacuum saturated or thermal quenched; ASTM C330.
   1. Maximum Lightweight Aggregate Size: 3/4".

C. Shrinkage Control: Aggregate shall be prepared within 72 hours of being used or be re-wetted for 1/2 hour, twice a day if longer storage is required at the plant.

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D. Compressive Strength: 3,000 psi at 28 days. Polished concrete: 3,500 to 4,000 psi at 28 days.

E. Slump Limits: 3" plus or minus 1", measured at the end of the discharge line.

F. Cement Content: Minimum 6.0 sacks of cement per cubic yard.

G. Water/Cement Ratio: 0.50 maximum, measured on free water only.

H. Maximum Lightweight Aggregate Size: 3/4".

I. Entrained Air: 4% to 7%.

J. Weight: 110 pounds per cubic foot, plus or minus 3 pounds.

2.8 CURING MATERIALS

A. Interior Slabs with floor covering (resilient flooring and carpet): Concrete surface treatment applied the day of the concrete placement; volatile organic compound (VOC) content rating as required to suit regulatory requirements.
   1. Acceptable Products:
      a. PMC3300 by Curranseal, www.curranseal.com.
      b. VC-5 by Sinak Corporation, www.sinak.com.
      c. Synthetics 10S by Synthetic International, www.syntheticsintl.com.

B. Interior Slabs with tile, polished concrete, sealed concrete or bare concrete: Curing blanket, 4 mil white opaque polyethylene laminated over 10 oz. burlap; ASTM C171.

C. Exterior Flatwork Receiving Traffic Coatings: Curing blanket, 4 mil white opaque polyethylene laminated over 10 oz. burlap; ASTM C171.

D. Exterior Flatwork on Grade: Clear, Curing compound, colorless, non-yellowing material containing 30% solids content minimum; ASTM C309.
   1. Shall not discolor concrete or other materials, shall not leave an oily residue upon evaporation of solvent.
   2. Shall afford moisture loss not greater than 0.055 grams/cm^2 at minimum average of 300 square feet.
   3. Meet State of California Air Regulation Board Solvent Emission Standards.
   4. Curing compounds may not be used on areas to receive traffic coatings unless specifically accepted by the traffic coating manufacturer.
   5. Solvent borne acrylic cure and seal products are not acceptable; ASTM C1315.

2.9 OTHER MATERIALS

A. Provide other materials, not specifically described but required for a complete and proper installation, as selected by the Contractor subject to the approval of the Architect.

B. Expansion Joint Filler: Comply with ASTM D1751 or provide resin-impregnated fiberboard conforming to ASTM D1752.

C. Non-shrink Grout:
   1. Factory premixed grout; ASTM C1107.
   2. Compressive strength: 7,000 psi at 28 days.

D. Dry Pack Grout: One part Portland Cement to two parts fine sand.

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PART 3 - EXECUTION

3.1 SURFACE CONDITIONS

A. Examine the areas and conditions under which work of this Section will be performed. Correct conditions detrimental to timely and proper completion of the Work. Do not proceed until unsatisfactory conditions are corrected.

B. Coordinate with Section 31 2000 – Earthwork prior to placing any concrete.

3.2 MOISTURE BARRIER

A. Installation of Capillary Break:
1. Prior to placing the rock capillary break, provide trench for all materials laid on the subgrade (i.e. piping and conduits), so that no material will project more than 3/4" above the subgrade.
2. Evenly spread pea gravel over compacted subgrade.

B. Install vapor barrier in accordance ASTM E1643:
1. Level and tamp or roll aggregate, sand or tamped earth base.
2. Install vapor barrier in strict accordance with the manufacturer's written instructions, taping all joints and installing the manufacturer's pipe boots at all penetrating pipes and conduits.
3. Unroll vapor barrier with the longest dimension parallel with the direction of the pour.
4. Overlap joints 6" minimum and seal with manufacturer’s tape.
5. Seal vapor barrier to footings or concrete stemwall per manufacturer’s instructions.
6. Seal all penetrations (including pipes) per manufacturer’s instructions.
7. **No penetration of the vapor barrier is allowed except for reinforcing steel and permanent utilities.** Use slab forming and screeding methods and products which do not puncture the vapor barrier.
8. Repair damaged areas by cutting patches of vapor barrier, overlap damaged area 6", and tape all four sides with tape.
9. Where ganged conduits are required, bundle with manufacturer’s tape and fill voids with mastic.

C. Installation of Slab Base:
1. Slab base material is a granular fill that is compactible, easy to trim, and will remain stable and support construction traffic.
2. Cover vapor barrier with granular fill spread evenly to 3" thickness with a tolerance of +0" / -1" when measured from the bottom of the slab.
3. Hold granular fill 12" away from exterior walls.
4. Proof roll granular fill after installation to determine if it is uniformly stable to provide adequate bearing support during and after construction.
5. **Moisture Content:** Granular fill moisture content shall be **below 6%** at time of concrete placement. If granular fill is saturated prior to placement of concrete, remove the material and replace.
6. If rain is forecast prior to continuation of slab placement, remove granular fill adjacent to completed slab, cut and fold back vapor barrier over slab and seal to protect from water penetration into granular fill under existing concrete slab. Prior to continuing slab placement, fold back the vapor barrier, provide vapor barrier transition with minimum of 6" lap continuous both sides, replace granular fill and continue with concrete placement.

D. Protection of Installed Slab Base:
1. Protect all installed slab base construction from precipitation and water penetration by covering and providing positive drainage away from the slab base.
2. Cover slab openings and blockouts around columns to prevent penetration of water into the slab base and capillary break.

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3.3 FORMWORK INSTALLATION

A. Construct forms to the exact sizes, shapes, lines, and dimensions shown, and as required to obtain accurate alignment, location, grades, and level and plumb work in the finished structure.
   1. **Non-Exposed Surfaces:** Where concrete surfaces are not exposed to view, construct formwork conforming to a Class B Surface, Paragraph 4.8.3 of ACI PRC-117.1-14.
   2. **Exposed Surfaces:** Where concrete surfaces are exposed to view, construct forms so that concrete surfaces will have a tolerance of 1/2 of the tolerance limits of a Class A Surface, Paragraph 4.8.3 of ACI PRC-117.1-14.

B. Forms shall be substantial and sufficiently tight to prevent leakage of mortar. They shall be properly braced or tied together to maintain position and shape. Forms and their supports shall be designed so as not to damage previously placed structure.
   1. Slab Forming Techniques: Do not puncture the vapor barrier.

3.4 SOIL TREATMENT OF SIDEWALK AND PAVEMENT AREAS WITH HERBICIDES

A. Just prior to placing concrete for pavements and sidewalks, apply herbicide soil treatment at recommended rates for application. Protect desirable vegetation from herbicide treatment.

B. Herbicide shall bear evidence of registration under Federal Insecticide, Fungicide, and Rodenticide Act for weed control application.

3.5 REINFORCING

A. Comply with the following, as well as the specified standards, for details and methods of reinforcing placement and supports.
   1. Clean reinforcement and remove loose dust and mill scale, earth, oil, and other materials which reduce bond or destroy bond with concrete.
   2. Position, support, and secure reinforcement against displacement by forms, construction, and the concrete placement operations. Provide metal chairs, dobies, or other aids manufactured for this purpose.
   3. Place reinforcement to obtain the required coverages for concrete protection.
   4. Reinforcement of site concrete and fire lane paving shall be placed at 2” below the concrete surface unless otherwise shown.
   5. Unless otherwise shown or noted on the Drawings, lap bars as noted on Lap Schedule in structural drawings.
   6. Partially embedded reinforcing shall not be bent without the approval of the Structural Engineer.

3.6 EMBEDDED ITEMS

A. Do not embed piping, other than electrical conduit, in structural concrete. See structural drawings for provisions for pipes, sleeves, conduits or other penetrations into or through the footings.

B. Set bolts, inserts, and other required items in the concrete, accurately secured so they will not be displaced, and in the precise locations needed. **IN NO CASE SHALL ANY BOLT OR ANCHOR BE STABBED IN PLACE WHILE OR AFTER THE CONCRETE IS POURED.** Evidence of stabbing will necessitate testing at the expense of the contractor.

C. **Slip Dowel System:** Install in accordance with manufacturer’s written recommendations.

3.7 MIXING CONCRETE

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A. Transit mix the concrete in accordance with provisions of ASTM C94.
   1. Water shall only be added at the beginning of discharge and shall be a one-time addition of water. At a minimum, the drum shall be turned an additional 30 revolutions after addition of water. After discharge has begun the addition of water is prohibited.
   2. Discharge of the concrete shall be completed within 90 minutes, or before the drum has revolved 300 times after the cement has been exposed to the mixing water or aggregates.

B. Cold Weather Requirements:
   1. Adequate equipment shall be provided for heating concrete materials and protecting concrete during freezing or near-freezing weather. All concrete materials and all reinforcement, forms, fillers, and ground with which concrete is to come in contact shall be free from frost. Frozen materials or materials containing ice shall not be used.
   2. When mixing concrete during freezing or near-freezing weather, the mix shall have a temperature of at least 55 deg F., but not more than 90 deg F. When necessary, concrete materials shall be heated before mixing. Special precautions shall be taken for the protection of transit-mixed concrete.
   3. The concrete shall be maintained at a temperature of at least 55 deg F. for not less than 72 hours after placing. After the initial curing period allow the concrete surface to dry prior to exposure. Do not permit the concrete to cool faster than the rate of 5 deg F per hour or more for the first 24 hours.

C. Hot Weather Requirements:
   1. During hot weather, proper attention shall be given to ingredients, production methods, handling, placing, protection and curing to prevent excessive concrete temperatures or water evaporation that may impair required strength or serviceability of the member or structure.
   2. When air temperature is between 85 deg F and 90 deg F, reduce mixing and delivery time from 1-1/2 hours to 75 minutes, and when air temperature is above 90 deg F, reduce mixing and delivery time to 60 minutes.

3.8 PLACING CONCRETE

A. Concrete shall not be placed until the forms and reinforcement have been inspected, all preparations for the placement have been completed, and the preparations have been checked by the Inspector of Record, all subject to the observation of the structural engineer or Architect.

B. Preparation:
   1. Remove foreign matter accumulated in the forms.
   2. Rigidly close openings left in the formwork.
   3. Wet wood forms sufficiently to tighten up cracks; wet other material sufficiently to maintain workability of the concrete.
   4. Use only clean forms and tools.

C. Conveying: ACI 318-19, Section 26.5.2.1.
   1. Concrete shall be conveyed from mixer to place of final deposit by methods that will prevent separation or loss of materials.
   2. Conveying equipment shall be capable of providing a supply of concrete at site of placement without separation of ingredients and without interruptions sufficient to permit loss of plasticity between successive increments.
   3. Remove rejected concrete from the job site.

D. Placing Concrete in Forms: ACI 318-19, Section 26.5.2.1.
   1. Concrete shall be deposited as nearly as practicable in its final position to avoid segregation due to rehandling or flowing. Concreting shall be carried on at such a rate that concrete is at all times plastic and flows readily into spaces between reinforcement.

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2. Where concrete is placed in lifts, each lift shall be thoroughly consolidated before the next layer is placed. The rate of placement shall be rapid enough so that previously placed concrete has not yet set when the next lift of concrete is placed upon it. Do not allow flow lines, seams, and planes of weakness (cold joints) to form as a result of placement means and methods.

E. Placing Concrete Slabs:
1. Deposit and consolidate concrete slabs in a continuous operation, within limits of construction joints, until the placing of a panel or section is completed.
2. Bring slab surfaces to the correct level with a straightedge, and then strike off.
3. Use wood bullfloats or darbies to smooth the surface, leaving the surface free from bumps and hollows.
4. Do not sprinkle water on the plastic surface. Do not disturb the slab surface prior to start of finishing operations.

3.9 CONSOLIDATION

A. All concrete shall be thoroughly consolidated by suitable means during placement and shall be thoroughly worked around reinforcement and embedded fixtures and into corners of forms.
1. Where conditions make consolidation difficult, or where reinforcement is congested, batches of concrete adjusted to use smaller size aggregates shall be used as approved by the structural engineer and the enforcement agency.
2. Do not vibrate forms or reinforcement.
3. Do not use vibrators to transport concrete inside the forms.
4. Perform consolidation by experienced personnel.

3.10 JOINTS

A. Construction Joints (CJ):
1. Do not use horizontal construction joints except as may be shown on the Drawings.
2. If additional construction joints are found to be required, secure the Architect's approval of joint design and location prior to start of concrete placement.
3. Joints shall be constructed in accordance with ACI 318-19, Section 26.5.6.

B. Isolation Joints (IJ):
1. Do not permit reinforcement or other embedded metal items that are being bonded with concrete (except dowels in floors bonded on only one side of the joints) to extend continuously through any isolation joint, unless specifically noted.
2. Fill isolation joints full depth with joint material approved by the Architect.
3. Provide isolation joints as shown on plans.

C. Crack Control Joint (CCJ):
1. Provide template or guide as required for straight sawcut.
2. Joints shall be spaced as indicated on the Drawings, but not more than 10'-0" on center.
a. Joints shall be placed to produce panels that are as square as possible and never exceed a length to width ratio of 1 ½ to 1 – in which case additional joints shall be installed.
3. Saw cut joints before concrete begins to cool, within 2 to 12 hours after placing.
4. Use 1/8" thick blade and cut at least 1" deep but not less than one third (1/3) the depth of the slab.

3.11 CONCRETE SLAB FINISHING

A. Finish work shall be performed in accordance with ACI 302.1R-15, Chapter 10.

B. Finished Slab Surfaces: Except as may be shown otherwise on the Drawings, provide the following finishes at the indicated locations:
1. Scratch Finish: Apply to monolithic slab surfaces that are to receive concrete floor topping or mortar

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setting bed.

2. Float Finish: Apply to monolithic slab surfaces that are to receive trowel finish and other finishes specified hereinafter, and to slab surfaces which are to be covered with tile on a setting bed.
3. Trowel Finish: Apply to interior monolithic slab surfaces that are to be exposed to view, unless otherwise shown, and to slab surfaces that are to be covered with resilient flooring, carpeting, thin-set tile, paint, or other thin-film finish coating system.
4. Non-slip Broom Finish: Apply to exterior walks, stairs, drives, ramps, and similar pedestrian and vehicular areas. Coordinate required final finish with Architect before application.
    a. Medium broom finish for slopes < 5%.
    b. Heavy broom finish for slopes ≥5%.

C. Finish Concrete Slab Tolerances:
1. Slabs shall be level unless slope is otherwise specified.
2. Tolerances of finished slab surfaces shall comply with ACI 117.1R-14 "Class A Surface Finish Tolerance". Depressions in floor between high spots shall not be greater than 1/8" between a 10' long straight edge.
3. Depressed surfaces shall be leveled with an approved filler and sanded smooth.
4. High spots shall be ground down until level. Remove dislodged aggregate and patch floor.
5. Grind or fill surface defects which would telegraph through applied floor covering systems.
6. Owner reserves the right to test floors and concrete members for conformance to ACI 117.1R-14 Tolerance Specifications by Use of the "Dipstick Floor Profiler". Should tolerances not be within the limits specified, the Contractor shall be required to pay for all testing costs and repairs required to bring materials into compliance.

D. Exterior Flatwork Edge and Joint Finishing:
1. Finish slab edges, including those at formed joints, with an edger having a radius of 1/8".
2. Edge transverse joints prior to brooming. Brooming shall eliminate the flat surface left by the surface face of the edger.
3. Corners and edges which have crumbled and areas which lack sufficient mortar for proper finishing shall be cleaned and filled solidly with the properly proportioned mortar mixture and then finished.

E. Required Grinding of Interior Slab:
1. The Contractor shall anticipate that grinding will be required as a result of curling or other slab defects. Grinding required to bring the slab surface into acceptable tolerances for finished flooring installation shall be included as part of the Work.
2. Provide a slip resistant surface after grinding and filling with a 0.6 coefficient of friction at exposed slabs and exterior flatwork.

3.12 CURING

A. ACI 318, Section 26.5.3: Protect freshly placed concrete from premature drying and excessive cold or hot temperatures.

B. Curing Methods with Surface Applied Curing Products: Apply curing products immediately after concrete finishing in strict accordance with the manufacturer’s written installation instructions.

D. Start initial curing as soon as free water has disappeared from concrete surface after placing and finishing. Avoid rapid drying at end of final curing period.

E. Protection of Slabs After Curing: After curing is completed, do not allow water to stand on completed slabs. Remove standing water as soon as possible.

3.13 REMOVAL OF FORMS

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A. ACI 318, Section 26.11.2.
   1. Forms shall be removed in such manner as not to impair safety and serviceability of the structure. All concrete to be exposed by form removal shall have sufficient strength not to be damaged thereby.

B. No portion of the forming and shoring system may be removed less than 12 hours after placing concrete. When stripping time is less than the specified curing time, measures shall be taken to provide adequate curing and thermal protection of the stripped concrete.
   1. Do not remove shoring until the member has acquired sufficient strength to support its own weight, the load upon it, and the added load of construction.
   2. Do not strip vertical concrete in less than 7 days.

C. Finished Surfaces:
   1. Exercise care in removing forms from finished concrete surfaces so that surfaces are not marred or gouged.
   2. Release sleeve nuts or clamps, and pull the form ties neatly.
   3. Do not permit steel spreaders, form ties, or other metal to project from, or be visible on, any concrete surface except where so shown on the Drawings.

D. Repair of Surface Defects: Repair or replace deficient work at no additional cost to the Owner.
   1. Repair tie holes and other surface defects immediately after formwork removal.
   2. Where the concrete surface will be textured by sandblasting or bush-hammering, repair surface defects before texturing.
   3. Repair tie holes and surface defects to match surrounding concrete color and surface texture.
   4. Repair tie holes and surface defects in conformance with ACI 301-16, Paragraph 5.3.7.

3.14 SURFACE FINISH OF VERTICAL CONCRETE SURFACES

A. Unexposed Form Finish: Rub down or chip off fins or other raised areas.

B. Exposed (to view) Form Finish: Rub down or chip off and smooth fins or other raised areas.
   1. As-Cast Finish: Provide surface finish 3.0 in accordance with ACI 301-16, Paragraph 5.3.3.3.
   2. Rubbed Finish:
      a. Smooth Rubbed Finish: Wet concrete and rub with carborundum brick or other abrasive, not more than 24 hours after form removal.
      b. Grout Cleaned Finish: Wet areas to be cleaned and apply grout mixture by brush or spray; scrub immediately to remove excess grout. After drying, rub vigorously with clean burlap, and keep moist for 36 hours.
      c. Cork Floated Finish: Immediately after form removal, apply grout with trowel or firm rubber float; compress grout with low-speed grinder, and apply final texture with cork float.

3.15 FINISH OF CURBS AND GUTTERS

A. Finish of Curbs and Gutters:
   1. Tool edges of gutter and top of curb with an edging tool to a radius of 1/2"
   2. Float and finish surfaces with a smooth wood float until true to grade, section and uniform in texture.
   3. Brush floated surfaces with a fine-hair brush using longitudinal strokes.
   4. Immediately after removing the front curb form, rub face of curb with wood or concrete rubbing block and water until blemishes, form marks, and tool marks have been removed. While still wet, brush surface in the same manner as the gutter and curb top.
   5. Finish the top surface of gutter and entrance drives to grade with a wood float.

3.16 MISCELLANEOUS CONCRETE ITEMS

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A. Curbs: Provide monolithic finish to interior curbs by stripping forms while concrete is still green and steel-troweling surfaces to a hard, dense finish with corners, intersections and terminations slightly rounded.

B. Grout base plates and foundations as indicated, using specified non-shrink grout. Use non-metallic grout for exposed conditions, unless otherwise indicated.

C. Dry Pack Grout:
   1. Pack solid under sill plates where indicated to provide continuous bearing.
   2. Provide dry pack prior to installation of roof framing.

3.17 QUALITY CONTROL TESTING DURING CONSTRUCTION

A. Testing of concrete materials shall comply with Section 01 4520, CBC Chapter 17A, and CBC Section 1910A.

B. The Owner will employ a testing laboratory to perform tests and to submit test reports. Sampling and testing for quality control during placement of concrete may include the following, as directed by the Architect.

C. Compaction and Moisture Testing sub-grade.
   1. Test sub-grade immediately prior to placing any concrete or placing a vapor barrier as described in Section 31 2000 – Earthwork.

D. Sampling Fresh Concrete: Comply with requirements of ASTM C172.
   1. Slump: ASTM C143; one test at point of discharge for each day's pour of each type of concrete; additional tests when concrete consistency seems to have changed.
   2. Concrete Temperature: Test hourly when air temperature is 40 degrees F and below, and when 80 degrees F and above; and each time a set of compression test specimens are made.
   3. Compression Test Specimen: ASTM C31; one set of 4 standard cylinders for each compressive strength test, unless otherwise directed. Mold and store cylinders for laboratory cured test specimens except when field-cure test specimens are required.
   4. Compressive Strength Tests: ASTM C39; one set for each day's pour, but not less than one set for each 50 cubic yards or each 2,000 square feet of surface area of slabs or walls for each concrete class placed in any one day; one specimen tested at 7 days, two specimens tested at 28 days; and one specimen retained in reserve for later testing if required.
   5. When frequency of testing will provide less than 5 strength tests for a given class of concrete, conduct testing from at least 5 randomly selected batches or from each batch if fewer than 5 are used.

E. Batch Plant Inspection:
   1. Continuous batch plant inspection during mixing will be required on this project for structural concrete, including but not limited to footings, foundation walls, retaining walls, columns, and floor slabs in compliance with CBC Section 1705A.3.3.
   2. Batch plant inspection may be waived in accordance with CBC Section 1705A.3.3.1.

F. Reinforcing Steel Testing **will be required on this project**, except for non-structural concrete work. Comply with CBC Section 1910A.2; testing will be waived if mill certificates are provided.

G. Slab Finish Tolerance Testing: Where requested by the Architect, test slabs for finish tolerance in accordance with ACI 117 Tolerance Specifications by Use of the "Dipstick Floor Profiler".

H. Test Results will be reported in writing to Architect and Contractor within 24 hours that tests are made. Reports of compressive strength tests shall contain the project identification name and number, date of concrete placement, name of concrete testing service, concrete type and class, location of concrete batch in structure, design compressive strength at 28 days, concrete mix proportions and materials; compressive breaking strength and type of break for both 7-day tests and 28-day tests.

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I. Non-Destructive Testing: Rebound hammer, sonoscope, or other non-destructive device may be permitted but shall not be used as the sole basis for acceptance or rejection.

J. Additional Tests:
   1. The testing service will make additional tests of in-place concrete when test results indicate specified concrete strengths and other characteristics have not been attained in the structure, as directed by Architect.
   2. Testing service may conduct tests to determine adequacy of concrete by cored cylinders complying with ASTM C 42, or by other methods as directed.
   3. The Owner shall pay for such tests conducted, and any other additional testing as may be required, when unacceptable concrete is verified.
   4. The Owner shall be compensated for such additional testing by deducting the additional costs from the General Contractor's final payment.

END OF SECTION 03 3000

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SECTION 03 3540 - POLISHED AND DYED CONCRETE

PART 1 - GENERAL

1.1 SUMMARY

A. Provide colored and bonded abrasive polished concrete floors using multi-step wet/dry mechanical process where shown on the Drawings, as specified herein, and as needed for a complete and proper installation.

B. Related Sections:
1. Documents affecting work of this Section include, but are not necessarily limited to, General Conditions, Supplementary Conditions, and Sections in Division l of these Specifications.
2. Section 02 4210: Selective Demolition
3. Section 03 3000: Cast-In-Place Concrete

1.2 SUBMITTALS

A. Submit in accordance with Section 01 3300.
1. Product Data: Submit manufacturer's descriptive literature and product specifications for each product. Include data to indicate compliance with the specified requirements.
a. Available dye colors for Architect’s selection.
2. Installation Procedures: Submit manufacturers recommended installation procedures.
3. Installer Qualifications: Submit data for company, principal personnel, experience, and training as specified.

B. Field Quality Control Submittals:
1. Dynamic Coefficient of Friction Test Reports: Submit field quality control reports of testing as specified.
2. Static Coefficient of Friction Test Reports: Submit field quality control report as specified.

C. Contract Closeout Submittals:
1. Submit instructions for maintenance of installed work, including methods and frequency recommended for maintaining optimum condition under anticipated use.
2. Include precautions against cleaning products and methods which may be detrimental to finishes and performance.

1.3 DEFINITIONS

A. Terminology: As defined by Concrete Polishing Council (CPC).

B. Polished Concrete: The act of changing a concrete floor surface, with or without aggregate exposure, to achieve a specified level of gloss.

C. Bonded Abrasive Polished Concrete: The multi-step operation of mechanically grinding, honing, polishing of a concrete floor surface with bonded abrasives to cut a concrete floor surface and to refine each cut to the maximum potential to achieve a specified level of finished gloss as defined by the CPC. This yields the most durable finish and requires the least amount of maintenance.

1.4 QUALITY ASSURANCE

A. Polisher Qualifications:

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1. Experience: Company experienced in performing specified work similar in design, products, and extent to scope of this Project; with a record of successful in-service performance; and with sufficient production capability, facilities, and personnel to produce specified work.
2. Supervision: Maintain competent supervisor who is at Project during times specified work is in progress, and is currently certified as Craftsman - Level I or higher by CPC.

B. Manufacturer Qualification: Approved by manufacturer to apply liquid applied products.

C. Walkway Auditor: Certified by CPC or NFSI to test bonded abrasive polished concrete floors for dynamic and static coefficient of friction according to ANSI B101.1 and B101.3.

D. Coefficient of Friction: Achieve following coefficient of friction by field quality control testing in accordance to the following standards:
1. ANSI B101.1 Static Coefficient of Friction - Achieve a minimum of .42 for level floor surfaces.
2. ANSI B101.3 Dynamic Coefficient of Friction - Achieve a minimum of .35 for level floor surfaces.

E. Field Mock-up: Before performing work of this Section, provide following field mock-up to verify selections made under submittals and to demonstrate aesthetic effects of polishing. Approval does not constitute approval of deviations from Contract Documents, unless Architect specifically approves deviations in writing.
1. Form, reinforce, and cast concrete slab for 10 foot square field mock-up.
2. Concrete shall be same mix design as scheduled for Project.
3. Perform placement and finishing work using same personnel as will place and finish concrete for Project.
4. Mock-up shall be representative of work to be expected.
5. Perform grinding, joint filling, honing, and polishing work as scheduled for Project using same personnel as will perform work for Project.
6. Approval is for following aesthetic qualities:
    a. Compliance with approved submittals.
    b. Compliance with specified aggregate exposure.
    c. Compliance with specified finished gloss and Distinctness of Image (DOI) level.
    d. Compliance with specified color.
7. Obtain Architect’s approval before starting work on Project.
8. Protect and maintain approved field mock-ups during construction in an undisturbed condition as a standard for judging completed work.

F. Pre-Installation of Concrete Conference: Prior to placing concrete for areas scheduled for polishing, conduct conference at Project to comply with requirements of applicable Division 01 Sections.
1. Required Attendees:
    a. Owner.
    b. Architect.
    c. Contractor, including supervisor.
    d. Concrete producer.
    e. Concrete finisher, including supervisor.
    f. Concrete polisher, including supervisor.
    g. Technical representative of liquid applied product manufacturers.
    h. Walkway auditor.
2. Minimum Agenda: Polisher shall demonstrate understanding of work required by reviewing and discussing procedures for, but not limited to, following:
    a. Tour field mock-up and representative areas of required work, discuss and evaluate for compliance with Contract Documents, including substrate conditions, surface preparations, sequence of procedures, and other preparatory work performed by other installers.
    b. Review Contract Document requirements.
    c. Review approved submittals and field mock-up.

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d. Review procedures, including, but not limited to:
   1) Section 03 3000 on cast-in-place concrete.
      a) Specific mix design.
      b) Specified curing methods/procedures.
      c) Projected 3, 10, and 28 day compression strength test related to specified aggregates exposure for finished floor and project phasing.
      d) Protection of concrete substrate during construction and prior to polishing process.
      e) Project phasing and scheduling for each step of grinding, honing and polishing operations including, but not limited to:
         i. Quality of qualified personnel committed to project.
         ii. Quality and size of grinders committed to project.
         iii. Proper disposal of concrete slurry and/or concrete dust.
      f) Details of each step of grinding, honing, and polishing operations.
         i. Application of color.
         ii. Application of liquid applied products.
         iii. Protecting polished concrete floors after polishing work is complete.

3. Reports: Record discussions, including decisions and agreements reached, and furnish copy of record to each party attending.

1.5 FIELD CONDITIONS

A. Damage and Stain Prevention: Take precautions to prevent damage and staining of concrete surfaces to be polished.
   1. Prohibit use of markers, spray paint, and soapstone.
   2. Prohibit improper application of liquid membrane film forming curing compounds.
   3. Prohibit vehicle parking over concrete surfaces.
   4. Prohibit pipe-cutting operations over concrete surfaces.
   5. Prohibit storage of any items over concrete surfaces for not less than 28 days after concrete placement.
   6. Prohibit ferrous metals storage over concrete surfaces.
   7. Protect from petroleum, oil, hydraulic fluid, or other liquid dripping from equipment working over concrete surfaces.
   8. Protect from acids and acidic detergents contacting concrete surfaces.
   9. Protect from painting activities over concrete surfaces.

B. Environmental Limitations: Comply with manufacturer's written instructions for substrate temperature, ambient temperature, moisture, ventilation, and other conditions affecting liquid applied product application.

PART 2 – PRODUCTS

2.1 LIQUID APPLIED PRODUCTS

A. Lithium Silicate Densifier: A chemical treatment used to enhance the grinding and polishing process of architectural polished concrete surfaces.

B. Micronized Water Borne or Acetone Dye: A translucent dye. Acid stains are not acceptable. Color to be selected by Architect.

C. Stain and Wear Protection: A lithium fortified finish for deep penetration, increased surface hardness and superior reflectivity on concrete.

2.2 ACCESSORIES

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A. Repair Material: A product that is designed to repair cracks and surface imperfections. The specified material must have sufficient bonding capabilities to adhere after the polishing to the concrete surface and provide abrasion resistance equal to or greater than the surrounding concrete substrate. All repair materials shall be compatible with the liquid applied products.

B. Grout Material: A thin mortar used for filling spaces. Acceptable products shall be:
   1. Epoxy, urethane, polyurea, or polyaspartic resins.
   2. Latex or acrylic binders mixed with cement dust from previous grinding steps.
   3. Silicate binders mixed with cement dust from previous grinding steps.

C. Protective Cover: Non-woven, puncture and tear resistant, polypropylene fibers laminated with a multi-ply, textured membrane, not less than 18 mils in thickness.

D. Joint Filler: A semi-rigid polyurea joint sealant with 100% solids. Metger/McGuire Spal-Pro RS 65 or approved equal.
   1. Clear color unless otherwise required after field mock-up is reviewed.
   2. Hardness, Shore “A” at 70 deg F, ASTM D-2240, Results A64-69.
   3. Tensile elongation at 70 deg F, ASTM D-412, Results 162%.
   4. Tensile strength at 70 deg F, ASTM D-412, Results 393 psi.

2.3 POLISHING EQUIPMENT

A. Field Grinding and Polishing Equipment:
   1. A multiple head, counter rotating, walk behind or ride on machine, of various size and weights, with diamond tooling affixed to the head for the purpose of grinding concrete. Excludes janitorial maintenance equipment.
   2. If dry grinding, honing, or polishing, use dust extraction equipment with flow rate suitable for dust generated, with squeegee attachments.
   3. If wet grinding, honing, or polishing, use slurry extraction equipment suitable for slurry removal and containment prior to proper disposal.

B. Edge Grinding and Polishing Equipment: Hand-held or walk-behind machines which produces same results, without noticeable differences, as field grinding and polishing equipment.

C. Burnishing Equipment: High speed walk-behind or ride-on machines capable of generating 1000 to 2000 revolutions per minute with sufficient head pressure of not less than 20 pounds to raise floor temperature by 20 degrees F.

D. Diamond Tooling: Abrasive tools that contain industrial grade diamonds within a bonded matrix (such as metallic, resinous, ceramic, etc.) that are attached to rotating heads to refine the concrete substrate.
   1. Bonded Abrasive: Abrasive medium that is held within a bonding that erodes away to expose new abrasive medium as it is used.
   2. Metal Bond Tooling: Diamond tooling that contains industrial grade diamonds with a metallic bonded matrix that is attached to rotating heads to refine the concrete substrate. These tools are available in levels of soft, medium, and hard metallic matrices that are matched with contrasting concrete substrates (i.e. hard matrix/soft concrete, medium matrix/medium concrete, soft matrix/hard concrete) and are typically used in the grinding and early honing stages of the polishing process.
   3. Resin Bond Tooling: Diamond tooling that contains industrial grade diamonds within a resinous bonded matrix (poly-phenolic, ester-phenolic, thermoplastic-phenolic) that is attached to rotating heads to refine the concrete substrate. Resin bond tooling does not have the soft/medium/hard characteristics of metal bond tooling and are typically used for the later honing and polishing stages of the polishing process.

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4. Hybrid Tooling: Diamond tooling that combines metal bond and resin bond that has the characteristics of both types of tooling. These types of tools are typically used as either transitional tooling from metal bond tools to resin bond tools or as a first cut tool on smooth concrete surfaces.
5. Transitional Tooling: Diamond tooling that is used to refine the scratch pattern of metal bond tooling prior to the application of resin bond tooling in an effort to extend the life of resin bond tooling and to create a better foundation for the polishing process.
6. Abrasive Pad: An abrasive pad, resembling a typical floor maintenance burnishing pad, that has the capability of refining the concrete surface on a microscopic level that may or may not contain industrial grade diamonds. These pads are typically used for the maintenance and/or restoration of previously installed polished concrete flooring.

PART 3 – EXECUTION

3.1 EXAMINATION

A. Acceptance of Surfaces and Conditions:
   1. Examine substrates to be polished for compliance with requirements and other conditions affecting performance.
   2. Concrete Finished Floor Flatness according to applicable Division 03 Section on cast-in-place concrete.
   3. Concrete curing methods according to applicable Division 03 Section on cast-in-place concrete.
   4. Concrete Compression strength per according to applicable Division 03 Section on cast-in-place concrete.

B. Proceed only when unsatisfactory conditions have been corrected in a manner complying with Contract Documents.

C. Starting work within a particular area will be construed as acceptance of surface conditions.

3.2 PREPARATION

A. Cleaning concrete surfaces to receive polished and dyed concrete.
   1. Prepare and clean concrete surfaces.
      a. Clear surfaces of any debris and construction materials.
      b. Chemical preparation of the substrate is acceptable provided chemicals are approved for use by the polished concrete material manufacturer. Chemicals must be compatible with densifiers, dyes, stain and wear protection, caulking, patching materials and grout materials.
      c. Suppress dust during demolition with the use of dust collection equipment to reduce or eliminate airborne concrete and substrate dust.
   2. Provide sound concrete surfaces free of laitance, glaze, efflorescence, curing compounds, form-release agents, dust, dirt, grease, oil, paint splatter, and other contaminants incompatible with liquid applied products and polishing.

B. Repair concrete surfaces to receive polished and dyed concrete in accordance with the manufacturer's recommendations.
   1. Verify that substrate is smooth, level, at required finish elevation, and without more than 1/8" in 10'-0" variation from level or slopes shown on the Drawings.
   2. Clean cracks, divots, chips and holes in surface.
   3. Broom clean or vacuum the surfaces to be repaired and polished.
   4. Fill and smooth cracks, divots, chips and holes with repair material.
   5. Do not fill expansion joints, isolation joints, or other moving joints.
   6. Prohibit traffic until repair material is cured and ready to be polished and dyed.

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3.3 JOINT FILLING

A. Prepare the joints and Install joint filling materials in accordance with the manufacturer's recommendations. Joint filler shall not be installed prior to 30 days after slab placement.

B. All joints shall be filled after the initial grinding pass but before any subsequent grinding continues.
   1. Should joint filling be required after the polishing process, apply tape or soap to the edge of the concrete to keep the joint filler from staining the concrete.
   2. Fill joints in one pass, 1/2" deep over closed-cell compressible backer rod.

3.4 COLORING CONCRETE FLOORS

A. Dye Application:
   1. Auto scrub the surface completely clean and remove any remaining dust. Allow the surface to dry completely before application.
   2. Apply using methods and techniques required by manufacturer to produce finish matching approved field mock-ups. Sequence installation with honing / polishing / burnishing and allow it to dry in accordance with the manufacturer's recommendations before proceeding. Apply dye immediately prior to final honing step, unless otherwise indicated by the manufacturer's recommendations.
   3. Maintain wet edge, working newly applied solution into edges of adjacent wet edges of previously treated surfaces.
   4. Maintain consistent saturation throughout application. Apply dye to rejection.
   5. Avoid splashing, dripping, or puddling of solution on adjacent substrates.
   6. Remove all rejected dye from the surface using an auto-scrubber.

3.5 POLISHED CONCRETE FLOOR FINISH

A. Final Polished Concrete Floor Finish:
   1. Aggregate Exposure Class B – Fine / Sand Aggregate Finish: Remove not more than 1/16 inch of concrete surface by grinding and polishing resulting in majority of exposure displaying fine aggregate with no, or small amount of, medium aggregate at random locations. Also referred to as a "salt and pepper" finish.
   2. Finished Gloss Level 1 – Low Gloss Appearance – 400/800 Grit: Determine the gloss level by incorporating a reflective sheen reading between 30 to 40 and Distinctness of Image (DOI) no less than 10 points below the measured gloss level prior to the application of stain and wear protection.

3.6 POLISHING CONCRETE FLOORS

A. Perform all polishing procedures to ensure a consistent appearance from wall to wall.

B. Grinding:
   1. Use grinding equipment with metal or semi-metal bonded tooling and sufficient size equipment.
   2. Begin grinding with either 18/20 or 30/40 grit diamond tooling (depending on the project conditions) to meet specified aggregate exposure class.
   3. Make sequential passes with each pass perpendicular to previous pass using finer grit tool with each pass, up to 100/120 grit metal bonded tooling.
      a. Make no fewer than three grit steps between the initial grind and the final 100/120 grind.
      b. Achieve maximum refinement with each pass before proceeding to finer grit tools.
      c. Clean floor thoroughly after each pass using dust extraction equipment properly fitted with squeegee attachment or walk behind auto scrubber suitable to remove all visible loose debris and dust.
   4. After the 60/80 grit grinding, treat the surface imperfections.

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a. Mix patching compound or grout material with dust created by grinding operations, grout mix, cement slurry, epoxies, manufacturer's tint, sand or a combination of the above to closely match color of adjacent concrete surfaces.
b. Fill surface imperfections including, but not limited to, holes, surface damage, small and micro cracks, air holes, pop-outs, and voids with grout to eliminate micro pitting in finished work.
c. Work compound and treatment until color differences between concrete surface and filled surface imperfections are not reasonably noticeable when viewed from 10 feet away under lighting conditions that will be present after construction.
d. Use grinding equipment and appropriate grit and bond diamond tooling.
e. Apply grout, forced into the pore structure of the concrete substrate, to fill surface imperfections.

f. Clean floor thoroughly after each pass using dust extraction equipment properly fitted with squeegee attachment or walk behind auto scrubber suitable to remove all visible loose debris and dust.

5. Continue grinding until aggregate exposure matches approved field mock-ups.

C. Honing:
1. Clean floor thoroughly after each pass using dust extraction equipment properly fitted with squeegee attachment or walk behind auto scrubber suitable to remove all visible loose debris and dust.
2. Hone concrete in one direction starting with 120/140 grit resin bonded diamond tooling and increasing to 200 grit making as many sequential passes as required to remove scratches, each pass perpendicular to previous pass, up to 400 grit resin bonded diamond tooling reaching maximum refinement with each pass before proceeding to finer grit tooling.
3. Apply dye in accordance with section 3.4 of this specification.
4. Apply liquid densifier and allow it to dry in accordance with the manufacturer's recommendations before proceeding.
5. Hone concrete in one direction with 400 grit resin bonded diamond tooling and make as many sequential passes as required to remove scratches, each pass perpendicular to previous pass, reaching maximum refinement with each pass before proceeding.

D. Burnishing (Finished Gloss Level 1 – Low Gloss Appearance – 400/800 Grit):
1. Dry mop floor clean to remove all debris after each pass.
2. Burnish concrete in one direction with 400 grit diamond impregnated pad and make as many sequential passes as required, each pass perpendicular to previous pass, reaching maximum refinement with each pass before proceeding.
3. Apply stain and wear protection and allow it to dry in accordance with the manufacturer's recommendations before proceeding.
4. Burnish concrete in one direction with 400 grit diamond impregnated pad and make as many sequential passes as required, each pass perpendicular to previous pass, reaching maximum refinement with each pass before proceeding.
5. Apply stain and wear protection and allow it to dry in accordance with the manufacturer's recommendations before proceeding.
6. Burnish concrete in one direction with 800 grit diamond impregnated pad and make as many sequential passes as required, each pass perpendicular to previous pass. Burnish to uniform reflective sheen matching approved field mock-up.

3.6 FIELD QUALITY CONTROL

A. Field Testing: Installing contractor shall engage a qualified walkway auditor, under review of the Project Inspector, to perform field testing and submit reports for record to determine if polished concrete floor finish complies with the following:
1. ANSI B101.1 for specified static coefficient of friction.
2. ANSI B101.3 for specified dynamic coefficient of friction.

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3. ASTM D523 for specified gloss level (Reflective Sheen Reading).
4. ASTM D5767 for specified gloss level (Distinctness of Image Reading).

B. Vapor Testing Concrete Floors (prior to commencing work of this section):
1. Moisture Vapor Transmission Rate:
a. Test Method: Perform anhydrous calcium chloride test according to ASTM F 1869.
b. Acceptable Results: Not more than 5 pounds per 1000 square feet in 24 hours.

2. Relative Humidity:
a. Test Method: Perform relative humidity test using in situ probes according to ASTM F 2170.
b. Acceptable Results: Not more than 80 percent.

3.7 CLOSEOUT ACTIVITIES

A. Maintenance Training: CPC Craftsman shall train Owner's designated personnel in proper procedures for maintaining polished concrete floor.

3.8 PROTECTION

A. Covering: After completion of polishing, protect polished floors from subsequent construction activities with protective covering.

END OF SECTION 03 3540

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SECTION 05 4000 - COLD FORMED METAL FRAMING

PART 1 - GENERAL

1.1 SUMMARY

A. Provide load-bearing cold formed metal framing and exterior sheathing, including studs, tracks, runners, bracing, shoes, fastenings and other accessories necessary for a complete installation.

B. Related Sections:
1. Documents affecting work of this Section include, but are not necessarily limited to, General Conditions, Supplementary Conditions, and Sections in Division 1 of these Specifications.
2. Section 07 2100: Blanket insulation.

1.2 SUBMITTALS

A. General: Submit in accordance with Section 01 3300.
1. Product Data: Submit manufacturer's descriptive literature, code evaluation reports and product specifications for each product. Include data to indicate compliance with the specified requirements.
2. Installation Procedures: Submit manufacturer's recommended installation procedures.
3. Submit certificates of conformance or compliance attesting that materials meet requirements specified in this Section.

1.3 QUALITY ASSURANCE

A. Comply with the pertinent provisions of the following standards:
1. AISI S100-16, North American Specification for the Design of Cold-formed Steel Structural Members, 2016.
2. AISI S240-15, North American Standard for Cold-formed Steel Structural Framing.
3. AISI Sections 2211.1.1 through 2211.1.3, Cold-Formed Steel Light-Frame Construction.
4. AWS Publication D1.3-08 Structural Welding Code - Sheet Steel.
5. California Building Code, 2025 Edition.

B. Welding: Perform all welding in accordance with pertinent recommendations of the American Welding Society. **Welders shall be certified in accordance with AWS procedures.**

C. Wherever a fire-resistive classification is indicated for walls or partitions, provide studs and accessories of type tested and listed for construction indicated. Install in accordance with ASTM C754.

1.4 ADMINISTRATIVE REQUIREMENTS

A. Coordination: Coordinate work of this Section with work of other trades for proper time and sequence to avoid construction delays.

PART 2 - PRODUCTS

2.1 METAL STUDS

A. All members shall conform to the properties and standards listed in ICC ESR-3064P by “The Steel Stud Manufacturer’s Association”.

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B. All members shall be the size, spacing and gage shown on the drawings. The members shall provide the minimum section properties as shown on the drawings unless an alternative design is submitted for review and approved by the structural engineer and Division of the State Architect (DSA).

C. Steel Studs: Standard punched type, galvanized in accordance with ASTM C955.
   1. 16 gage (0.0538 in.) and Heavier: ASTM A653, G60 coating, SS Grade 50.
   2. 18 gage (0.0428 in.) and Lighter: ASTM A653, G60 coating, SS Grade 33.
   3. Studs: C-shaped with flat or formed webs with knurled faces, size as indicated on the Drawings.
   4. Runners: U-shaped, sized to match studs, 1-1/2" flange width, minimum steel thickness to match studs.

D. Slotted Top Track (Basis of Design): SLP-TRK slotted track by Sliptrack Systems, 888-475-7875; ICC-ESR-1042.
   1. 2-1/2" down standing legs with 1/4" wide by 1-1/2" high slots spaced at 1" on center.

E. Bypass Clips (Basis of Design): Simpson SCB or SSB by Simpson Strong-Tie Inc., IAPMO UES ER-238 or StiffClip LB or SLB by The Steel Network, Inc., 888-474-4876; ICC-ESR-1903.
   1. Bypass clips, capable of accommodating upward and downward vertical displacement of primary structure through positive mechanical attachment to stud web.
   2. Mechanical attachment to structure and screw attachment to stud web using step-bushings to permit frictionless vertical movement; 68 mils minimum thickness, size as required by structural design calculations.

2.2 OTHER MATERIALS

A. Sheet Metal Furring Channels: Hat-shaped with 2 equal legs and flanges, size as indicated on the drawings, 20 gage (0.0329 in.) minimum steel thickness, unless otherwise noted.

B. Bridging:
   1. Bridging Channel: C-shaped, 1-1/2" high, 1/2" flange width, 16 gage (0.0566 in.) minimum steel thickness.
   2. Bridging Clips: Simpson SUBH or MSUBH per IAPMO UES ER-124.

C. Fasteners: ASTM C1002 self-piercing tapping screws; bolts, nuts and washers; hot dip galvanized per ASTM A153.

D. Anchorage Devices: Powder actuated and drilled expansion bolts as indicated on the Drawings.

E. Insulation: R-19 thermal fiberglass batts: ASTM C665, Type I.

F. Provide other materials, not specifically described but required for a complete and proper installation, as selected by the Contractor subject to the approval of the Architect.

PART 3 - EXECUTION

3.1 SURFACE CONDITIONS

A. Examine the areas and conditions under which work of this Section will be performed. Correct conditions detrimental to timely and proper completion of the Work. Do not proceed until unsatisfactory conditions are corrected.

3.2 COORDINATION

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A. Coordinate as required with other trades to assure proper and adequate provision in the work of those trades for interface with the work of this Section.
   1. Space studs as required for compliance with pertinent regulations, to give proper support for the covering material, and as indicated on the Drawings.

   2. Coordinate and provide needed backing and other support for items to be mounted to the finished covering.
   3. Coordinate requirements for pipes and other items designed to be housed within the partition or wall system.

B. Coordinate special stud gage requirements for studs supporting plumbing and wall mounted fixtures.

C. Insulation Coordination: Install batt insulation, specified in Section 07 2100 in built-up exterior framing members, such as headers, sills, boxed joists, and multiple studs at openings, that are inaccessible on completion of framing work.

3.3 INSTALLATION

A. General: The work shall be built plumb and true, without waves or buckles, shall be rigid, and all members shall be fastened securely together and to walls, floors and other structural members. Install all work in accordance with the manufacturer's written recommendations.

B. Runners:
   1. Provide runners at top and bottom of the partitions, accurately aligned to ensure that partitions will be straight and plumb.
   2. Anchor runners to floor and structure above at a maximum spacing of 24" on center.
   3. At intersecting or abutting track joints, abutting pieces of track shall be securely anchored to a common structural element, or they shall be spliced together.

C. Slip Track: Install slotted tracks in strict accordance with manufacturer's instructions and referenced regulation requirements, to give proper support and to achieve the required fire rating.

D. Studs:
   1. Position studs vertically in the tracks and space them as indicated.
   2. Install studs in continuous lengths between tracks without splices.
   3. Provide doubled studs at jambs of doors and other large openings. Jack studs shall be installed below window sills, above window and door headers, and elsewhere to furnish structural support, and shall be securely attached to supporting members.
   4. Provide tripled studs at corners positioned to receive interior and exterior finishes.
   5. Fasten all studs to top and bottom runners.
   6. Use 16 gage studs at all wall supporting cabinets or fixtures.

E. Horizontal Stud Bracing: Provide horizontal bracing consisting of hot or cold rolled channels inserted through cut outs in the web of each stud and secured to each stud.

F. Blocking and Reinforcing for Wall Hung Items:
   1. Provide cut sections or runner channel, zinc coated steel backing plates, doubled and nested studs or other items as indicated for the support of wall hung fixtures, shelving, cabinets, handrails, toilet accessories.
   2. Cut ends of runner and backing plates to each stud.
   3. Fasten studs carrying the weight of wall hung items to the bottom runner channel.

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G. Openings: At openings provide a minimum of 2 full length studs, back to back at each jamb.

H. Fasteners: Attachments for load bearing framing shall be done by welding, screws, or bolts as shown on the drawings unless alternative details are submitted to the Architect and Structural Engineer and approved by DSA.

I. Welds: Perform welding in accordance with AWS D1.3. Clean welds and coat with rust-inhibitive paint.

J. Sheet Metal Furring Channels:
   1. Attach furring channels by screws.
   2. Install channels horizontally starting 2" above the finished floor and vertically spaced not more than 12" on center.
   3. Splice by nesting channels not less than 8" and securely wire tie.
   4. Install resilient channels "free" edge up.

K. Insulation: Fill all cavities in headers and jamb studs with R-19 batt insulation.

3.4 ERECTION TOLERANCES

A. Erection Tolerances: Install metal framing level, plumb, and true to line to a maximum allowable tolerance variation of 1/8" in 10'-0" and as follows:
   1. Space individual framing members no more than plus or minus 1/8" from plan location.
   2. Cumulative error shall not exceed minimum fastening requirements of sheathing or other finishing materials.

END OF SECTION 05 4000

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SECTION 05 5000 - METAL FABRICATIONS

PART 1 - GENERAL

1.1 SUMMARY

A. Provide miscellaneous metal work shown on the Drawings, as specified herein, and as needed for a complete and proper installation.

B. Related Sections:
1. Documents affecting work of this Section include, but are not necessarily limited to, General Conditions, Supplementary Conditions, and Sections in Division l of these Specifications.
2. Section 09 9100: Field painting of steel members.

1.2 SUBMITTALS

A. General: Submit in accordance with Section 01 3300.
1. Product Data:
a. Submit manufacturer's descriptive literature and product specifications for each product. Include data to indicate compliance with the specified requirements.
b. Submit manufacturers recommended installation procedures.
2. Shop Drawings: Submit shop drawings in sufficient detail to show fabrication, installation, anchorage, and interface of the work of this Section with the work of adjacent trades.

1.3 QUALITY ASSURANCE

A. Perform shop and/or field welding required in connection with the work of this Section in strict accordance with pertinent recommendations of the American Welding Society.

B. Qualify welding processes and welding operators in accordance with AWS "Standard Qualification Procedures" and CBC Section 2204A.1.

C. Codes and Standards: Comply with provisions of the following: California Building Code, 2025 Edition.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Products specified are for establishing the type, design, and quality required. Products of equal or better type, design, and quality produced by other manufacturers will be considered provided the request for substitution is submitted in accordance with Section 01 2500.

B. Comply with following standards, as pertinent, unless otherwise noted in the documents.
1. Steel Sections: ASTM A36.
2. Steel Tubing: ASTM A500, Grade C cold-formed structural tubing.
3. Steel Pipe: ASTM A53, Type S, Grade B, standard weight or extra-strong as noted in the plans.
4. Bolts, Nuts, and Washers: ASTM A325, Type 1, galvanized to ASTM A153 where connecting galvanized components.
5. Welding Materials: AWS D1.1; type required for materials being welded.
6. Aluminum Sheet: ASTM B209, 5005-H32 minimum; alloy and temper recommended by aluminum producer and finisher for use and finish indicated.

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7. Galvanized Steel Sheet: ASTM A653; G90 coating.
8. Steel Sheet: ASTM A1008; uncoated, cold rolled commercial steel, exposed or ASTM A879 electrolytic zinc coating over ASTM A 1008, steel sheet substrate.
9. Stainless Steel Sheet: ASTM A666, Type 304; stretcher-leveled.

2.2 FASTENERS

A. General:
   1. For exterior use and where built into exterior walls, provide zinc-coated fasteners.
   2. Provide fasteners of type, grade, and class required for the particular use.

B. Bolts, Nuts, and Washers: ASTM A325, Type 1, galvanized to ASTM A153 where connecting galvanized components.

2.3 OTHER MATERIALS

A. Provide other materials, not specifically described but required for a complete and proper installation, as selected by the Contractor subject to the approval of the Architect.

2.4 FINISHES

A. Primer: 10-99 by Tnemec or No. 5269 by Rustoleum.

B. Provide zinc coating for those items indicated or specified to galvanized, as follows:
   1. ASTM A153 for galvanizing iron and steel hardware.
   2. ASTM A123 for galvanizing rolled, pressed and forged steel shapes, plates, bars and strips 1/8" thick and heavier.
   3. ASTM A386 for galvanizing assembled steel products.
   4. ASTM A535 for galvanizing sheet steel.

C. For repair of galvanizing, use a high zinc-dust content paint complying with MIL-P-21035.

2.5 FABRICATION

A. Except as otherwise shown on the Drawings or the approved Shop Drawings, use materials of size, thickness, and type required to produce reasonable strength and durability in the work of this Section.

B. In fabricating items which will be exposed to view, limit materials to those which are free from surface blemishes, pitting, rolled trade names, and roughness.

C. Fabricate with accurate angles and surfaces which are true to the required lines and levels, forming exposed connections with hairline joints, and using concealed fasteners wherever possible.

D. Provide for anchorage of type indicated, coordinated with supporting structure. Fabricate and space anchoring devices to provide adequate support for intended use. Cut, reinforce, drill, and tap miscellaneous metal work as required to receive finish hardware and similar items.

E. Weld corners and seams continuously, complying with AWS recommendations. At exposed connections, grind exposed welds smooth and flush to match and blend with adjoining surfaces.

F. Curved work shall be evenly sprung.

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2.6 FABRICATED ITEMS

A. Rough Hardware: Provide bent or otherwise custom fabricated bolts, plates, anchors, dowels, and other miscellaneous steel and iron shapes as required for framing and supporting work, and for anchoring or securing work to concrete or other structures.
   1. Provide galvanized rough hardware at exterior conditions.

B. Miscellaneous Framing and Supports: Provide miscellaneous framing and supports not a part of the structural steel framework, as required to complete the work.
   1. Fabricate miscellaneous units to shapes, sizes, and profiles indicated, or if not indicated, of required dimensions to receive adjacent work. Fabricate from structural steel shapes, plates, and steel bars of welded construction using mitered joints for field connection. Cut, drill, and tap units to receive hardware and similar items.
   2. Provide galvanized framing and supports at exterior conditions.

2.7 SHOP PAINTING

A. Surface Preparation: Prepare ferrous metal surfaces to comply with minimum requirements indicated below for SSPC surface preparation specifications and environmental exposure conditions of installed metal fabrications:
   1. Exteriors (SSPC Zone 1B): SSPC-SP6, Commercial Blast Cleaning.
   2. Interiors (SSPC Zone 1A): SSPC-SP3, Power Tool Cleaning.

B. Cleaning: Clean ferrous and galvanized metal surfaces with proper solvents to remove all grease and other foreign matter which will hinder and/or prevent proper finishing and installation.

C. Application: Apply 1 coat of shop primer to the dry film thickness recommended by the manufacturer to surfaces of metal fabrications except those which are indicated to be embedded in concrete or masonry and in compliance with requirements of SSPC-PA1, Paint Application Specification No. 1, for shop painting.

PART 3 - EXECUTION

3.1 SURFACE CONDITIONS

A. Examine the areas and conditions under which work of this Section will be performed. Correct conditions detrimental to timely and proper completion of the Work. Do not proceed until unsatisfactory conditions are corrected.

3.2 COORDINATION

A. Coordinate as required with other trades to assure proper and adequate provision in the work of those trades for interface with the work of this Section.

3.3 INSTALLATION

A. General:
   1. Set work accurately into position, plumb, level, true, and free from rack.
   2. Anchor firmly into position.
   3. Where field welding is required, comply with AWS recommended procedures of manual-shielded metal-arc welding for appearance and quality of weld and for methods to be used in correcting welding work.
   4. Grind exposed welds smooth, and touch up shop prime coats.

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5. Do not cut, weld, or abrade surfaces which have been hot-dip galvanized after fabrication and which are intended for bolted or screwed field connections.

B. Primer Repair: Immediately after erection, clean the field welds, bolted connections, and abraded areas of shop priming. Paint the exposed areas with same material used for shop priming.

C. Galvanizing Repair: Repair all damage to galvanizing as a result of fabrication, handling, and installation, with 2 coats of cold galvanizing paint in accordance with the manufacturer's written instructions.

D. Pipe Railings and Handrails: Unless otherwise indicated or approved by the Architect:
1. Secure to wall with approved fasteners into solid blocking.

2. Where on steel stud construction, provide backup plate within the studs and covering not less than three studs.

END OF SECTION 05 5000

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SECTION 06 4000 - ARCHITECTURAL WOODWORK

PART 1 - GENERAL

1.1 SUMMARY

A. Provide architectural woodwork where shown on the Drawings, as specified herein, and as needed for a complete and proper installation. Types of woodwork included are:

1. Plastic covered casework.
2. Wood casework.
3. Laminated plastic countertops and splashes.
4. Solid surface countertops and splashes.
5. Factory finished wood casework.
6. Standing and running wood trim.

B. Related Sections:
1. Documents affecting work of this Section include, but are not necessarily limited to, General Conditions, Supplementary Conditions, and Sections in Division l of these Specifications.
2. Section 09 9100: Finishing of wood trim and casework.
3. Section 22 0000: Plumbing brass for sinks specified in this Section.

1.2 SUBMITTALS

A. General: Submit in accordance with Section 01 3300.
1. Product Data: Submit manufacturer's descriptive literature and product specifications for each product. Include data to indicate compliance with the specified requirements.
2. Installation Procedures: Submit manufacturer's recommended installation procedures which, when approved by the Architect, will become the basis for accepting or rejecting actual installation procedures used on the Work.
3. Hardware Schedule: Submit schedule with product data sheets for each type of hardware used.
4. Shop Drawings: Submit shop drawings in conformance with *NAAWS* Section 1 - Submittals. For further information refer to www.woodworkinstitute.com.
    a. First page shall bear the *Woodwork Institute Certified Compliance Label*.
    b. Shop drawings shall be provided in sufficient details to show fabrication, installation, anchorage, colors, and interface of the work of this Section with the work of adjacent trades.
5. Samples: Submit four color chip samples of each proposed material in the correct color and finish.
6. Before delivery to the job-site, the woodwork supplier licensees of the Woodwork Institute shall issue a *Certified Compliance Certificate* with the original submittals indicating the woodwork products furnished for this project and certifying that these products and their installation will fully meet all the requirements of the *NAAWS* grade or grades specified and the Contract Documents.

B. Contract Closeout Submittals: Comply with requirements of Section 01 7700.
1. Manufacturer's recommended cleaning procedures.

1.3 REFERENCES

A. Minimum standards for work within this section shall be in conformance with the Woodwork Institute.

B. North American Architectural Woodwork Standards (NAAWS).

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1.4 QUALITY ASSURANCE

A. In addition to complying with pertinent codes and regulations of governmental agencies having jurisdiction, manufacture and install architectural woodwork in strict accordance with the *North American Architectural Woodwork Standards* for the grades specified. All woodwork shall be provided by a single source WI affiliate manufacturer that is able to provide a WI *Certified Compliance Certificate*. If provisions for the grade specified are in conflict with, or modified by the drawings and/or specifications, the modifications shall govern.

B. Woodwork Institute Cabinet Design Series (CDS): Refer to Appendix A of the *North American Architectural Woodwork Standards.*
   1. CDS numbers have been used to identify the intended design of individual cabinet units.
   2. Dimensions indicated are for nominal outside dimensions and fabricators are permitted a ½" tolerance in length; no tolerance is permitted for depth and height.
   3. Modifications to the Woodwork Institute Casework Design Series are denoted by the letter "M" following the design number.
   4. Apply finished end panels or integral members on exposed ends of cabinets. Close gaps at wall-to-wall installations by filler panels not to exceed 1-1/2" in width.

C. Coordinate the locations required for solid blocking or backing.

1.5 WOODWORK INSTITUTE CERTIFICATIONS

A. Woodwork Institute Certified Compliance Program (CCP):
   1. Before delivery to the job-site, the woodwork supplier licensees of the Woodwork Institute shall issue a *Certified Compliance Certificate* with the original submittals indicating the woodwork products furnished for this project and certifying that these products and their installation will fully meet all the requirements of the *NAAWS* grade or grades specified and the Contract Documents.
   2. Non-licensees of the Woodwork Institute shall provide WI *Certified Tracking Acknowledgment* with the original submittals, that they have arranged for inspection by a WI Inspector after completion of fabrication and installation. If all conditions are found to be compliant, the inspector will issue a *Certified Compliance Certificate*, indicating the millwork products furnished for this project, and certifying that these products and their installation fully meet all the requirements of the grade or grades specified and the Contract Documents.
   3. Each elevation of woodwork and countertop shall bear a certified compliance label.
   4. In addition to the CCP requirements, the millwork fabricator and/or installer shall allow field inspection by a WI Representative.

B. CCP Costs: The millwork fabricator and/or installer shall pay all costs for certified compliance. Issuance of a Certified Compliance Certificate is a prerequisite for final acceptance.

C. Owner reserves the right to request and pay for additional inspections by a representative of the Woodwork Institute to determine that the work of this Section has been performed in accordance with the specified standards. In the event such inspection determines that the work of this Section does not comply with the specified requirements, immediately remove all non-complying items and replace them with items complying with the specified requirements, all at no additional cost to the Owner, and reimburse the Owner for the cost of the additional inspections.

D. Woodwork and/or installation determined to be non-compliant (and not corrected) will be rejected.

1.6 QUALIFICATIONS:

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A. Contractors and their personnel engaged in the work shall be able to demonstrate successful experience with work of comparable extent, complexity and quality to that shown and specified.

B. Fabricator shall be a member/licensee in good standing of the Woodwork Institute.

C. Installer shall be a member/licensee in good standing of the Woodwork Institute.

1.7 DELIVERY, STORAGE, AND HANDLING

A. Comply with pertinent provisions of Section 01 6600 and Woodwork Institute *Architectural Woodwork Standards,* latest edition.

B. Deliver all materials only when the area of operation is enclosed and plaster and concrete work is dry, and area is broom clean.

C. Work area shall be well ventilated and protected from direct sunlight, excessive heat, rain or moisture. Temperature shall be maintained between 60̊ and 90̊ F and relative humidity between 45% and 65%. The HVAC system shall be on and functioning.

1.8 SEQUENCING AND SCHEDULING

A. Coordinate all fabrication, delivery and installation work with the general contractor and other applicable trades.

PART 2 - PRODUCTS

2.1 MATERIALS, GENERAL

A. Products specified are for establishing the type, design, and quality required. Products of equal or better type, design, and quality produced by other manufacturers will be considered provided the request for substitution is submitted in accordance with Section 01 2500.

2.2 PLASTIC COVERED CASEWORK

A. Construction: Comply with *Architectural Woodwork Standards Section 10 - Casework*.
   1. Grade: Custom.
   2. Construction Style: Style A Frameless.
   3. Construction Type: Type I - Multiple self-supporting units rigidly joined together or Type II - Single length sections to fit access openings at the Contractor’s option.
   4. Door and Drawer Front Style: Flush Overlay.
      a. Let in 1/8” reveals for all institution hinges specified, unless otherwise noted.
   5. Door and Drawer Edge Type:
      a. Type A for flush doors and drawers.
      b. Type E for glass doors.
   6. Accessible Sink Cabinet (WI #154): Provide 1" minimum support at bottom edge of sink skirt. Provide 3" base width at freestanding leg of cabinet (refer to detail on the Drawings).
   7. Provide fillers at the tops of uppers, wall hung cabinets and full height cabinets to fill the void between the casework and the wall.

B. Cladding Materials:
   1. General:

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a. Laminate cladding: High-pressure plastic laminate; NEMA LD 3.
b. Melamine overlay: Thermofused low-pressure melamine overlay.

2. Exposed Surfaces:
   a. Horizontal surfaces: 0.050" laminate cladding.
   b. Vertical surfaces: 0.028" laminate cladding.
   c. Shelf, drawer, door and cabinet box edging: 3 mm solid-color PVC edging.
3. Semi-Exposed Surfaces:
   a. Inside cabinet door surface: 0.028" laminate cladding.
   b. Inside cabinet backs and sides: Melamine overlay.
   c. Shelf tops and bottoms: Melamine overlay.
   d. Drawer interior surfaces: Melamine overlay.
   e. Shelf, drawer, door and cabinet box edging: 3 mm solid-color PVC edging.
   f. All other locations: 0.028" laminate cladding.
   g. Special Conditions: Clad backs and sides of cabinets in open knee spaces (i.e., handicap alcoves) with 0.028 laminate cladding to match exposed surface colors, unless noted otherwise.
4. Balance Sheets: Provide plastic laminate balance sheets of thickness required by manufacturer.
5. Colors:
   a. Laminate: As indicated on the drawings.
6. CBC Section 803.11: Laminated products factory-produced with a wood substrate shall comply with one of the following:
   a. The laminated product shall meet the criteria of CBC Section 803.1.1.1 when tested in accordance with NFPA 286 using the product mounting system, including adhesive, as described in Section 5.8 of NFPA 286.
   b. The laminated product shall have a Class A, B or C flame spread index and smoke-developed index, based on the requirements of CBC Table 803.13, in accordance with ASTM E84 or UL 723. Test specimen preparation and mountain shall be in accordance with ASTM E2579.
   c. Melamine: White.
   d. Shelf edging: Match shelf color for semi-exposed, match cabinet color for exposed.
   e. Door and drawer edging: Match plastic laminate color unless otherwise noted.
   f. Open bookcases: Match laminate on both exposed and semi-exposed surfaces.

2.3 LAMINATED PLASTIC COUNTERTOPS, SPLASHES

A. Grades: Comply with *North American Architectural Woodwork Standards Section 11 - Countertops*.
   1. Grade: Custom.

B. Cladding Materials: 0.050" horizontal high-pressure laminate; NEMA LD 3. If post formed laminate is used provide post form grade 0.42 laminate.
   1. CBC Section 803.11: Laminated products factory-produced with a wood substrate shall comply with one of the following:
      a. The laminated product shall meet the criteria of CBC Section 803.1.1.1 when tested in accordance with NFPA 286 using the product mounting system, including adhesive, as described in Section 5.8 of NFPA 286.
      b. The laminated product shall have a Class A, B or C flame spread index and smoke-developed index, based on the requirements of CBC Table 803.13, in accordance with ASTM E84 or UL 723. Test specimen preparation and mountain shall be in accordance with ASTM E2579.

C. Tops and Splashes:
   1. Construction: Fully formed

   2. Front edge:
      a. 180 degree wrap Full Round (3/4" radius).

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a. Hardwood bullnose (3/4" radius).
b. Exposed ends: Self-edge.

3. Backsplash:
   a. Type: Integral cove.
   b. Top edge: Waterfall. Self-edge ends.
   c. Height: Minimum 4" unless indicated otherwise on the drawings.
4. End Splash (where indicated):
   a. Type: Square butt joint.
   b. Top edge: Self-edge coped to backsplash with self-edge ends held short of front edge.
   c. No end splash is required when countertop abuts a plastic laminate cabinet side, provide matching color seam sealant at joint.
   d. End splash shall be installed on top of the countertop; butting the countertop to the end splash is not acceptable.
5. Splicing: Countertop splices shall be no closer than 48" from a sink.
6. Exposed Edges: All exposed edges including sink and utility cut-outs shall be sealed with an opaque waterproof sealant.

D. Colors: As indicated on the Drawings.

2.4 SOLID SURFACE COUNTERTOPS, SPLASHES, AND SINKS

A. Standards: Comply with *North American Architectural Woodwork Standards Section 11 - Countertops*.

B. Tops and Splashes:
1. Material Thickness: 3/4".
2. Front Edge:
   a. Type: Plain.
   b. Face height: 1-1/2".
3. Splash Height: Minimum 4" unless otherwise indicated on the drawings.
4. Color: As indicated on the Drawings.

C. Manufacturers: One Quartz by Daltile.

2.5 SHELVES

A. Shelf Thickness: Meet or exceed *North American Architectural Woodwork Standards Section 10 Material, Machining, and Assembly Rules:*
1. 50 psf load capacity for both fixed and adjustable shelves.
2. All shelve widths over 32” shall be constructed using 1” thick material.
3. Thickness of exposed shelves shall match the maximum required thickness of exposed shelves within the same room.

2.6 CABINET HARDWARE

A. Finish: US-26D finish where exposed unless otherwise specified.

B. Hardware Schedule:
1. Concealed European Cup Hinges: All-metal, nickel-plated, 35mm cup diameter, 110° opening angle, clip-on mounting plate with 3-way cam adjustment, and integrated soft-close dampening. Provide straight, half-crank, or full-crank arms as required to achieve specified full-overlay, half-overlay, or inset reveals.
2. Doors & drawer pulls: Hafele #491.41.936; oil-rubbed bronze.

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3. Drawer slides: Full extension 100# rated, integrated soft-close dampening, Accuride #3832EC.
4. Adjustable shelf clips: Hettich 016721 with locating pin, or Hafele 282.11.752 (with screw in each clip).

2.7 STANDING AND RUNNING TRIM

A. Standards: Comply with *North American Architectural Woodwork Standards Section 6 - Interior and Exterior Millwork.*

B. Interior Trim for Opaque Finish:
1. Grade: Custom.
2. Species: Maple or Birch.
3. Shapes: As indicated on the Drawings.
4. Finishes: As indicated on the Finish Schedule and as specified under Section 09 9100.

2.8 FABRICATION

A. Fabricate the work of this Section in strict accordance with the approved Shop Drawings and the WI construction requirements for the grade specified.

B. All toe space base boards shall be solid wood.

C. Construct bases with toe kicks as indicated on the Drawings at cabinet sides or ends.

PART 3 - EXECUTION

3.1 SURFACE CONDITIONS

A. Examine the areas and conditions under which work of this Section will be performed. Correct conditions detrimental to timely and proper completion of the Work. Do not proceed until unsatisfactory conditions are corrected.

B. Pre-installation Meeting: Meet at project site prior to delivery of architectural woodwork and review coordination and environmental controls required for proper installation and ambient conditioning in areas to receive work. Proceed with woodwork installation only when everyone concerned agrees that required ambient conditions can be maintained.

C. Verify adequacy and proper location of any required backing or support framing.

3.2 FIELD MEASUREMENTS

A. Take necessary measurements in the field to assure proper dimensions for the work of this Section.

3.3 INSTALLATION

A. Installation shall only occur after materials have been acclimatized for a minimum of 72 hours. NAAWS section 2.4.4.4.1 shall not apply.

B Install the work of this Section in strict accordance with the approved Shop Drawings and the referenced standards, anchoring all items firmly into position, as noted on Plans.

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C. Install woodwork plumb, level, true and straight with no distortions. Shim as required using concealed shims. Install to a tolerance of 1/8" in 8'-0" for plumb and level (including tops); and with no variations in flushness of adjoining surfaces.

D. Scribe and cut woodwork to fit adjoining work, and refinish cut surfaces or repair damaged finish at cuts.
   1. Edges of cut-outs subject to moisture shall be sealed with an opaque waterproof sealant, before trim, sink, etc. are installed.

E. Cabinets:
   1. Install without distortion so that doors and drawers fit openings properly and are accurately aligned.
   2. Adjust hardware to center doors and drawers in openings and to provide unencumbered operation. Complete the installation of hardware and accessory items as indicated.
   3. Maintain veneer sequence matching (if any) of cabinets.
   4. Provide felt silencers on backs of cabinet doors, minimum of 1 per door.
   5. Fill openings at tops of cabinets created by scribes and trim.

F. Tops:
   1. Anchor securely to base units and other support systems as indicated.
   2. **Laminate plastic countertop butt splices are critical. Use same production lots and prematch joints to minimize color variation.**

G. Standing and Running Trim:
   1. Install with minimum number of joints possible, using full length pieces from maximum length of lumber available.
   2. Stagger joints in adjacent and related members.
   3. Cope at returns, miter at corners, to produce tight fitting joints with full surface contact throughout length of joint.
   4. Scarf end-to-end joints.

3.4 INSPECTION

A. Schedule WI CCP Inspection with at least 7 days prior notice to planned installation start. Notify the Architect and Inspector of the day and time at least 48 hours prior to the inspection.

END OF SECTION 06 4000

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SECTION 07 2100 - BLANKET INSULATION

PART 1 - GENERAL

1.1 SUMMARY

A. Provide building insulation where shown on the Drawings, as specified herein, and as needed for a complete and proper installation.

B. Related Sections:
1. Documents affecting work of this Section include, but are not necessarily limited to, General Conditions, Supplementary Conditions, and Sections in Division l of these Specifications.
2. Section 05 4000: Cold formed metal framing.
3. Section 07 2110: Continuous insulation.

1.2 SUBMITTALS

A. Submit in accordance with Section 01 3300.
1. Product Data: Submit manufacturer's descriptive literature and product specifications for each product. Include data to indicate compliance with the specified requirements.
2. Installation Procedures: Submit manufacturers recommended installation procedures.

PART 2 - PRODUCTS

2.1 BUILDING INSULATION MATERIALS

A. Fiberglass Insulation: Inorganic (non-asbestos) fibers formed with binders into resilient flexible blankets or semi-rigid batts; manufacturer's standard lengths and widths as required to coordinate with spaces to be insulated.

B. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products which may be incorporated in the work include, but are not limited to, the following:
1. Certain-teed Products Corp.
2. Johns Manville
3. Owens-corning Fiberglass Corp.
4. United States Gypsum Co.
5. FiberTek Insulation.
6. Substitutions: Products specified are for establishing the type, design, and quality required. Products of equal or better type, design, and quality produced by other manufacturers will be considered provided the request for substitution is submitted in accordance with Section 01 2500.

C. Batt Width: Provide widths as required for flanged staple supported, nominal 16" or 24" for wood studs, or friction fit full 16" or 24" for metal studs, or cut to fit as required in other widths.

D. Support: Provide manufacturers recommended supporting systems as required for each installation. All insulation shall be continuously supported in a manner to permanently hold the insulation in place.
1. Wood framing shall be friction fit supported.
2. Metal framing shall be friction fit supported.
3. Support with RSA polypropylene biaxially oriented netting, 2-1/4" x 1-1/8" mesh.

2.2 INSULATION TYPES

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A. Thermal Fiberglass Batts: ASTM C665, Type I.
   1. Exterior 6" metal stud walls concealed; R-19.
   2. Interior 4" metal stud wall furring concealed; R-13.
   2. Exterior roof/ceiling concealed; R-30.
   3. Flame spread - 25, smoke developed - 450; ASTM E84.
   4. Combustion Characteristics: Pass; ASTM E136.
   5. Recycled Content: Certified to contain minimum of 20% post-consumer and 5% pre-consumer recycled glass product, on average of manufacturer's products.

B. Sound Attenuation Fiberglass Batts: ASTM C665, Type I, full wall thickness.
   1. Interior wall stud cavities, friction fit.
   2. Flame spread - 25, smoke developed - 450; ASTM E84.
   3. Combustion Characteristics: Pass; ASTM E136.
   4. Recycled Content: Certified to contain minimum of 20% post-consumer and 5% pre-consumer recycled glass product, on average of manufacturer's products.

C. Rigid Insulation: Extruded polystyrene foam insulation, ASTM C578, R-value of 5.0 per inch, thickness as indicated on the Drawings.

2.3 ACCESSORIES

A. Provide other materials, not specifically described but required for a complete and proper installation, as selected by the Contractor subject to the approval of the Architect.

B. Nails or Staples: Steel wire; electroplated or galvanized; type and size to suit application.

C. Impaling Clips: Galvanized steel clips with washer retainer and clips, length to suit insulation thickness and substrate, capable of securely and rigidly fastening insulation in place.

D. Scrim: Black, polypropylene, scrim, kraft paper by Lamtec Corporation "WMP-10 Black". Meets ASTM C1136, Type II and IV.
   1. Surface Burning Characteristics: Film side flame spread 10, smoke developed 10; Kraft side flame spread 15, smoke developed 5; ASTM E84.

PART 3 - EXECUTION

3.1 SURFACE CONDITIONS

A. Examine the areas and conditions under which work of this Section will be performed. Correct conditions detrimental to timely and proper completion of the Work. Do not proceed until unsatisfactory conditions are corrected.

B. Remove, or protect against, projections in construction framing which may damage or prevent proper insulation.

3.2 INSTALLATION

A. Install the work of this Section in strict accordance with the manufacturer's recommended installation procedures as approved by the Architect, anchoring all components firmly into position.

B. Between Studs:

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1. Install insulation tight in spaces and tight to exterior side of mechanical and electrical services with the plane of the insulation.
2. Leave no gaps or voids.
3. Trim insulation neatly to fit spaces.
4. Use wire or metal straps to hold insulation in place.

C. Between Wood Roof Rafters:
1. Install insulation tight in spaces and tight to exterior side of mechanical and electrical services with the plane of the insulation.
2. Leave no gaps or voids.
3. Trim insulation neatly to fit spaces.
4. Use wire or metal straps to hold insulation in place.

D. Between Wood I Joists: Wire up insulation under roof decks by running 16 or 18 gauge wire diagonally or perpendicular to the insulation every 18" to 24".

E. Within steel stud cavities:
1. Mineral wool insulation shall be placed into built-up and/or enclosed members prior to their installation.
2. This includes but is not limited to box headers, jamb studs and at stud wall intersections.

F. Underside of Roof Deck:
1. Retain insulation batts in place with impaling clips at 12" on center. Secure impaling clips as recommended by manufacturer.
2. Tightly abut adjacent insulation.

G. Scrim:
1. Lap material by 4” minimum.
2. Leave no gaps or voids.
3. Trim scrim material neatly to fit spaces and tight to penetrations.
4. Staple in place to roof structure at 12” on center.

END OF SECTION 07 2100

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SECTION 07 2110 - CONTINUOUS INSULATION

PART 1 - GENERAL

1.1 SUMMARY

A. Provide stone fiber board continuous insulation and related anchoring devices at exterior metal stud walls where shown on the Drawings, as specified herein, and as needed for a complete and proper installation.

B. Related Sections:
1. Documents affecting work of this Section include, but are not necessarily limited to, General Conditions, Supplementary Conditions, and Sections in Division 1 of these Specifications.
2. Section 07 4210: Metal wall panels.
3. Section 07 6200: Flashing and sheet metal.

1.2 INSTALLER REQUIREMENTS

A. The work of this Section 07 2110 - Continuous Insulation and the work of Section 07 2710 - Air Barrier System shall be provided by the same installing subcontractor.

1.3 SUBMITTALS

A. Submit in accordance with Section 01 3300.
1. Product Data: Submit manufacturer's descriptive literature and product specifications for each product. Include data to indicate compliance with the specified requirements.
2. Installation Procedures: Submit manufacturer's recommended installation procedures which, when approved by the Architect, will become the basis for accepting or rejecting actual installation procedures used on the Work.
3. Samples:
   a. Submit three 4" x 4" minimum samples of insulation in thickness used on Project.
   b. Submit three samples of insulation fastener.
4. Test Reports: Submit evaluation service reports or other independent testing agency reports showing compliance with specified performance characteristics and physical properties.
5. Field Reports: Submit manufacturer’s field reports within 3 days of each manufacturer representative’s site visit and inspection.

1.4 QUALITY ASSURANCE

A. Source Limitations: Obtain insulation from a single manufacturer.

1.5 ADMINISTRATIVE REQUIREMENTS

A. Coordination: Coordinate work of this Section with metal stud framing, exterior sheathing, air barrier, roofing, metal wall panels, and cement plaster, and with work of other trades for proper time and sequence to avoid construction delays.

PART 2 - PRODUCTS

2.1 CONTINUOUS INSULATION

A. Non-combustible, non-combustible, high density, stone wool insulation board; ASTM C612 Type IVB.

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B. Acceptable Products:
   1. ComfortBoard 110 by Rockwool Inc., 800-265-6878, www.rockwool.com.
   2. CladStone Water & Fire Block 110 by Johns Manville, 800-654-3103, www.jm.com.
   2. Substitutions: Products specified are for establishing the type, design, and quality required. Products of equal or better type, design, and quality produced by other manufacturers will be considered provided the request for substitution is submitted in accordance with Section 01 2500.

C. Performance Criteria:
   1. Fire performance: Flame spread 0, smoke developed 0; ASTM E84.
   2. Thermal resistance: R value of 4.2 per inch at 75 ºF/Btu; ASTM C518.
   3. Compressive Strength: ASTM C165.
      a. At 10%: 584 psf minimum.
      b. At 25%: 1479 psf minimum.
   4. Density: 11.0 pcf; ASTM C612-00.
   5. Reaction to Moisture:
      a. Moisture Sorption: 0.28% maximum; ASTM C1104.
      b. Water Vapor Permeance: 35 perm; ASTM E96 or 50 perm; ASTM C 1104.
      c. Water Absorption: 1.2%; ASTM C209 or 0.11%; ASTM C1104.
      d. Fungi Resistance: Pass; ASTM C1338.
   6. Corrosion Resistance:
      a. Steel: ASTM C665 Pass.
      b. Stainless Steel: ASTM C795 Conforms.
      c. Aluminum: ASTM C665 Pass.

2.2 ACCESSORIES

A. Fasteners: Provide insulation manufacturer's recommended polymer or other corrosion protective coated steel screw fasteners for anchoring insulation to metal wall framing through the sheathing board. Fastener size and spacing as indicated in the plans.

B. Plastic Washers:
   1. Wind-lock Corporation "ci-Lock Steel Series Selection" with 1-3/4" diameter high-grade plastic washers.
   2. Rodenhouse, Inc. 1-3/4" diameter "Plasti-Grip CBW" plastic washers.

PART 3 - EXECUTION

3.1 SURFACE CONDITIONS

A. Examine the areas and conditions under which work of this Section will be performed. Correct conditions detrimental to timely and proper completion of the Work. Do not proceed until unsatisfactory conditions are corrected.

B. Remove, or protect against, projections in construction framing which may damage or prevent proper insulation.

3.2 INSULATION INSTALLATION

A. Install insulation in accordance with manufacturer's recommendations.
   1. Fasten to exterior face of exterior metal stud wall framing using sheathing manufacturer's recommended type and length screw fasteners with washers.

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2. Abut panels tightly together and around openings and penetrations.
3. Install insulation to maintain continuity of thermal protection to building elements and spaces.
4. Fit insulation closely around electrical boxes, pipes, ducts, frames and other objects in or passing through insulation.

B. Use maximum lengths to minimize number of joints. Locate edge joints parallel to and on framing. Center end joints over supports and stagger in each course. Provide additional framing wherever panel joints do not bear against framing, plates or sill members.

C. Fasten insulation boards to supports with a minimum of five fasteners for each board. Drive fasteners to bear tight and flush with surface of insulation; do not countersink.

3.3 PROTECTION

A. Protect installed products and accessories from damage during construction.

B. Repair damage to adjacent materials caused by insulation installation.

END OF SECTION 07 2110

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SECTION 07 4210 - METAL WALL PANELS

PART 1 - GENERAL

1.1 SUMMARY

A. Provide manufactured metal panels for walls and soffits where shown on the Drawings, as specified herein, and as needed for a complete and proper installation, with related flashings and accessory components. Types of metal panels required include, but are not limited to:
   1. Factory formed wall panels.
   2. Factory formed corrugated panels.
   3. Fascia, trim, closure strips and associated flashing at perimeters and penetrations.

B. Related Sections:
   1. Documents affecting work of this Section include, but are not necessarily limited to, General Conditions, Supplementary Conditions, and Sections in Division 1 of these Specifications.
   2. Section 07 2110: Continuous insulation.
   3. Section 07 6200: Flashing and sheet metal.
   4. Section 07 9210: Elastomeric joint sealants.

1.2 SUBMITTALS

A. Submit in accordance with Section 01 3300.
   1. Product Data: Submit manufacturer's descriptive literature, product specifications, and independent laboratory test reports for each product indicating compliance with the requirements of this Section. Include data to indicate compliance with the specified requirements.
   2. Installation Procedures: Submit manufacturers recommended installation procedures.
   3. Shop Drawings:
      a. Show wall panels with flashings and accessories in elevations, sections and details.
      b. Indicate metal thickness and finishes, panel lengths, joining details, anchorage details, flashings and special fabrication provisions for termination and penetrations. Indicate relationships with adjacent and interfacing work.
      c. Indicate fastener types and spacing; and provide fastener pullout values.
   4. Samples: Submit 3 samples of each type of panel, each approximately 12" square, in colors specified.

1.3 QUALITY ASSURANCE

A. Source Limitations: Obtain all components of metal wall and soffit panel system from a single manufacturer, including roll goods materials if required. Secondary products that are required shall be recommended and approved in writing by the roofing system Manufacturer.

C. Colors: Provide finish selections indicated in the Finish Schedule.
   1. Acceptable Manufacturers: Products and manufacturers specified in the Finish Schedule are for purposes of color matching only. Refer to this Specification Section for additional manufacturers.
   2. Manufacturer’s Standard Colors and Finishes: Where the Finish Schedule specifies a manufacturer’s standard color or finish, the Architect makes no guarantee that matching colors or finishes are available as manufacturer’s standard from the listing of acceptable manufacturers. The Contractor shall be responsible for providing matching colors.
   3. Custom Colors: Where the Finish Schedule specifies custom colors, provide matching colors from the listing of acceptable manufacturers.

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1.4 ADMINISTRATIVE REQUIREMENTS

A. Coordination: Coordinate work of this Section with exterior sheathing, air barrier, roofing, metal wall panels, and cement plaster, and with work of other trades for proper time and sequence to avoid construction delays.

1.5 SPECIAL WARRANTY

A. PVDF (Polyvinylidene Fluoride) Coating Warranty: In addition to the warranty requirements of the Contract Documents, submit 2 original copies of coating applicator's **20-year** extended warranty. Warrant coating against peeling, blistering, chipping, checking, chalking in excess of a numerical rating of 8 when measured in accordance with ASTM D659, and fading and color change in excess of 5 NBS units when measured in accordance with ASTM D2244.

B. Installer's Warranty: In addition to the warranty requirements of the Contract Documents, submit 2 original copies of the roofing installer's **2-year** extended warranty covering roof system installation and water-tightness.
   1. Warranty shall include repair or replacement of damaged finishes, furnishings and equipment due to defective roof materials or workmanship and return building to its original condition.
   2. Installer shall make repairs without reference to or consideration of the cause or nature of such leaks or defects within 24 hours after receipt of notice from the Owner by telephone, telegram, or letter.
   3. Repairs required within the warranty period shall be provided without cost to the Owner; except that repairs required consequent to an act of God, abuse, alterations, or failure of the substrata or the supporting structure (other than caused by defects in the work of this Section) will be paid for by the Owner promptly upon completion of the repair in each instance.
   4. Repairs completed at Owner's cost shall be invoiced to the Owner at prevailing rates, and shall include an itemized breakdown of quantities plus unit cost for labor and materials, and shall include not more than 15% markup for overhead and profit.
   5. This warranty shall be in addition to the warranty requirements of the Contract Documents and the enforcement of its provisions shall not deprive the Owner of any action, right, or remedy otherwise available to him.

PART 2 - PRODUCTS

2.1 PANEL MATERIALS

A. Painted Steel Sheet: Restricted flatness steel sheet metallic coated by the hot-dip process and prepainted by the coil-coating process to comply with ASTM A755/A755M.
   1. Recycled Content: Provide steel sheet with average recycled content such that postconsumer recycled content plus one-half of preconsumer recycled content is at least 70 percent.
   2. 24 gage, zinc-coated (galvanized) steel sheet; ASTM A653: G90 coating designation; structural quality, grade 40 ksi.

B. Texture: Smooth surface.

C. Factory Finish PVDF (Polyvinylidene Fluoride) Coating: Superior Performance Organic Finish, AAMA 2605; multiple coat, thermally cured fluoropolymer finish system; 70% Kynar 500 resin or Hylar 5000 resin.
   1. 2-Coat Finish: Dry Film Thickness, ASTM D1400; 0.30 mil primer coat plus 0.70 mil color coat, 1.0 mil total minimum thickness.
   3. Color: As selected by Architect from the manufacturer’s standard colors.
   4. Provide factory applied strippable plastic film for protection during fabrication and installation.

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5. Interior Panel Finish: Inhibitive thermo-cured primer, 0.15 mil minimum dry film thickness with off-white wash coat, 0.35 mil minimum dry film thickness.

2.2 METAL PANEL

A. Basis of Design PBR Wall Panel by ASC Building Products, 800-404-7443.
   1. Other Acceptable Products: PBR panel by AEP Span, (800) 733-4955.

B. Panel Configuration: Factory-formed 26 gauge vertical metal wall panels designed to be field assembled by lapping panels and incorporating exposed fasteners.
   1. PBR, Purlin Bearing Rib Panel.
   2. Panel Depth (rib depth): 1.25" at 12” o.c.
   3. Panel Width: 36" net coverage.
   4. Full length without joints to the extent as is practical.
   5. Panels shall have smooth face.
   6. All panels shall be solid (non-vented).

C. Fasteners:
   1. Concealed Fasteners: Corrosion resistant self-drilling, self-tapping screws. Size and spacing as indicated in the plans.
   2. Exposed fasteners: Series 410 stainless steel self-drilling, self-tapping screws or 1/8" inch diameter stainless steel waterproof rivets. All exposed fasteners shall be factory painted to match the color of the soffit panels.

2.5 ACCESSORIES

A. Fasteners:
   1. Anchor Fasteners (panels to substrate): As described above.
   2. Exposed Trim Fasteners (trim to panel): #6 x ½” SS410 Tek 1 Round washer head, painted to match panel color. Fastener material shall be stainless steel washer head.

B. Closure Strips: Factory precut closed cell foam; ASTM D1056 and/or D3574.
   1. Provide closure strips at inside corners, outside corners, door and window jambs, and batten reveal termination.
   2. Provide continuous closure strips preformed to fit panel profile.
   3. Closure strips shall be provided for both inside and outside panel profile.

C. Sealant:
   1. Sealant Tape: Non-curing, 100 percent solids, polyisobutylene compound sealant tape with release-paper backing. Provide permanently elastic, nonsag, nontoxic, nonstaining tape 1" wide and 1/16" thick.
   2. Exposed Sealant: ASTM C920; elastomeric tripolymer, polyurethane, as recommended in writing by metal wall panel manufacturer.
   3. Concealed Sealant: ASTM C1311, butyl-based, solvent-release, 1 part sealant.

D. Membrane Underlayment: WrapShield SA Self-Adhered Water-Resistive Vapor Permeable Air Barrier Sheet by VaproShield; fully self-adhered air barrier sheet membrane; 22 mils thickness, or approved equal.
   1. Air leakage: <0.00002 cfm/sf at 1.57 lbs/sf; ASTM E2178.
   2. Water Vapor Permeance: 50 perms; ASTM E96, Method B.
   3. Surface Burning Characteristics: Class A, ASTM E84; flame spread index of 5, smoke development classification of 15.
   4. Breaking strength and Elongation: 88 lbf, machine direction; 83 lbf cross-machine direction; ASTM D 5034.

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5. Water Resistance: 550 mm hydrostatic head for 5 hours, no leakage; AATCC 127.
6. Transition and Flashing Membrane: VaproFlashing SA by VaproShield; fully self-transition and flashing pre-cut flashing membrane for window jambs, headers, door openings, inside and outside corners, and other transitions.

E. Provide all miscellaneous accessories for complete installation.

2.6 FABRICATION

A. Fabricate and finish metal wall panels and accessories at the factory to greatest extent possible, by manufacturer's standard procedures and processes and as necessary to fulfill indicated performance requirements. Comply with indicated profiles and with dimensional requirements.

B. Provide panel profile, including major ribs and intermediate stiffening ribs, if any, for full length of panel.

C. Form flashing components from full single width sheet in minimum 10'-0" (3m) sections. Provide mitered trim corners, joined using closed end pop rivets and butyl-based, solvent released one-part sealant.

D. Sheet Metal Accessories: Fabricate flashing and trim to comply with recommendations in SMACNA's "Architectural Sheet Metal Manual" that apply to the design, dimensions, metal, and other characteristics of item indicated.

E. Form exposed sheet metal accessories that are without excessive oil canning, buckling, and tool marks and that are true to line and levels indicated, with exposed edges folded back to form hems.

F. Sealed Joints: Form nonexpanding but moveable joints in metal to accommodate butyl-based sealant to comply with SMACNA standards.

G. Conceal fasteners and expansion provisions where possible. Exposed fasteners are not allowed on faces of accessories exposed to view.

H. Fabricate cleats and attachment devices of size and metal thickness recommended by SMACNA's "Architectural Sheet Metal Manual" or by metal wall panel manufacturer for application, but not less than thickness of metal being secured.

I. Factory Mitered Corners: Provide factory mitered inside corners and outside corners, permanently joined from prefinished materials.

PART 3 - EXECUTION

3.1 SURFACE CONDITIONS

A. Examine the areas and conditions under which work of this Section will be performed. Correct conditions detrimental to timely and proper completion of the Work. Do not proceed until unsatisfactory conditions are corrected.

B. Verify that substrate is sound, dry, properly sloped for drainage, and completely secured in position.

C. Capture all drilling debris on a cloth placed roofing panels.

B. Remove and replace all damaged material

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3.3 WALL AND SOFFIT PANEL INSTALLATION

A. Install wall and soffit panel systems in accordance with the Contract Documents and the manufacturer's shop drawings and product data, within specified erection tolerances.

B. Isolate dissimilar metals and masonry or concrete from metals with bituminous coating. Use gasketed fasteners where required to prevent corrosive action between fastener, substrate, and panels.

C. Limit exposed fasteners to extent indicated on shop drawings.

D. Anchorage shall allow for temperature expansion/contraction movement without stress or elongation of panels, clips, or anchors. Attach clips to substrate using fasteners of size and spacing as determined by manufacturer's design analysis to resist specified wind pressure and thermal movement forces.

E. Seal laps and joints in accordance with manufacturer's product data.

F. Coordinate flashing and sheet metal work to provide weather-tight conditions at wall panel terminations. Fabricate and install in accordance with standards of SMACNA Manual.

G. Provide for temperature expansion/contraction movement of panels at wall panel penetrations and wall panel mounted equipment, in accordance with system manufacturer's product data and design calculations.

H. Installed system shall be true to line and plane and free of dents, and physical defects. In light gauge panels with wide flat surfaces, some oil canning may be present. Oil canning does not affect the finish or structural integrity of the panel and is therefore not cause for rejection.

I. Form joints in linear sheet metal to allow for 1/4" minimum expansion at 20'-0" on center maximum and 8'-0" from corners.

J. At joints in linear sheet metal items, set sheet metal items in two 1/4" wide beads of butyl sealant. Extend sealant over all metal surfaces. Mate components for positive seal. Allow no sealant to migrate onto exposed surfaces.

3.4 ERECTION TOLERANCES

A. Installation Tolerances: Shim and align metal wall panel units within installed tolerance of 3/4" in 20'-0" at location lines as indicated and within 1/8" offset of adjoining faces and of alignment of matching profiles.

3.5 CLEANING

A. Clean installed work in accordance with the manufacturer's instructions.

B. Replace damaged work than cannot be restored by normal cleaning methods.

END OF SECTION 07 4210

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SECTION 07 6120 - LAP SEAM METAL ROOFING

PART 1 - GENERAL

1.1 SUMMARY

A. Provide the work of this Section as indicated and specified. Extent of metal roofing and siding is indicated. Types of metal panels required include, but are not limited to:
   1. Factory formed lap seam roofing panels.
   2. Fascia, trim, and associated metal flashing at perimeters, penetrations.
   3. Prefabricated metal roof curbs for all roof penetrations including but not limited to HVAC units, skylights, duct openings, and exhaust fans.

B. Related Sections:
   1. Documents affecting work of this Section include, but are not necessarily limited to, General Conditions, Supplementary Conditions, and Sections in Division l of these Specifications.
   2. Section 07 6200: Sheet metal flashing and trim.
   3. Section 07 9210: Sealants and caulking.

1.2 PERFORMANCE REQUIREMENTS

A. Provide metal roofing system which has been tested and certified by the manufacturer to furnish the following resistance after metal roofing installation:
   1. ASTM E1592 for negative loading. Capacity for gage, span, or loading other than those tested may be determined by interpolating between test values only.
   2. Metal roof panel systems shall have a maximum air infiltration rate of 0.007 cfm/ft2 at a pressure differential of 6.24 psf. when tested in accordance with ASTM E1680-95.
   3. Metal roof panel systems shall have no uncontrollable water leakage at a pressure differential of 2.86 psf. when tested in accordance with ASTM E1646.
   4. Class ‘A’ UL Fire Classification, Per ASTM E84.

1.3 SUBMITTALS

A. Submit in accordance with Section 01 3300.
   1. Product Data: Submit manufacturer's descriptive literature and product specifications for each product. Include data to indicate compliance with the specified requirements.
   2. Installation Procedures: Submit manufacturer's recommended installation procedures which, when approved by the Architect, will become the basis for accepting or rejecting actual installation procedures used on the Work.
   3. Shop Drawings: Indicate typical layout including dimensions. Submit detailed drawings of all profiles, joints, connections, edge conditions, valleys, roof curbs, vents, supports, anchorages, trim, flashings, closures, and interfaces with other materials. Submit detailed drawings of special accessory components not included in manufacturer's product data and provisions for expansion and contraction.
   4. Test Reports: Submit copies of test reports indicating compliance with ASTM E1592, UL 2218 Class 4 hail rating, and UL 580 Class 90.
   5. Samples: Submit 3 samples, each approximately 12" square, in colors specified.

1.4 QUALITY ASSURANCE

A. Installer Qualifications:

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1. A single installer (roofer) shall perform the work of this section; and shall be a firm with not less than 5 years of successful experience in installation of preformed metal roofing/siding similar to those in size and complexity for this project and which is acceptable to or licensed by manufacturer of the primary roofing materials.
2. Installer shall have received training and licensing from the manufacturer for installation of the specified metal roofing system.
3. Panels and flashings specified in this section shall be radius formed by a manufacturer authorized contractor using only manufacturer authorized and inspected equipment.

B. Colors: Provide finish selections indicated in the Finish Schedule.
1. Acceptable Manufacturers: The products and manufacturers specified in the Finish Schedule are for purposes of establishing color and quality. Refer to each Specification Section for additional manufacturers and Section 01 2500 for substitution requirements.
2. Manufacturer's Standard Colors and Finishes: Where the Finish Schedule specifies a manufacturer's standard color or finish, the Architect makes no guarantee that matching colors or finishes are available as other manufacturer's "standard colors" from the listing of acceptable manufacturers. The Contractor shall be responsible for providing colors matching those indicated on the Drawings.
3. Custom Colors: Where the Finish Schedule indicates a specific manufacturer's colors, other acceptable manufacturers shall provide matching custom colors where a standard color is not acceptable.

1.5 PRE-ROOFING MEETING

A. Not less than three nor more than 10 calendar days prior to scheduled start of roofing installation, conduct a roofing substrata inspection and pre-roofing meeting at the job site. Review methods and procedures related to roofing system including, but not limited to, the following:
1. Meet with Owner, Architect, Inspector, roofing Installer, and installers whose work interfaces with or affects roofing including installers of roof accessories and roof-mounted equipment.
2. Discuss proposed schedule for installation of the roofing, and reach agreement as to dates of start and finish of installation of the roofing.
3. Discuss product submittals and warranties.
4. Review methods and procedures related to roofing installation, including manufacturer's written instructions.
5. Discuss interface with the work of other trades.
6. Discuss proposed methods for installation of the roofing, and equipment and personnel to be used.
7. Discuss inspection methods to be used.
8. Visually inspect all substrata upon which roofing is scheduled to be applied for compliance with requirements, including flatness and fastening.
    a. Determine general acceptability, and determine areas requiring further preparation.
    b. Determine acceptable remedies for unacceptable areas.
9. Review flashings, special roofing details, roof drainage, roof penetrations, equipment curbs, and condition of other construction that will affect roofing system.

1.6 SPECIAL WARRANTY

A. PVDF (Polyvinylidene Fluoride) Coating Warranty: In addition to the warranty requirements of the Contract Documents, submit 2 original copies of coating applicator's **20-year** extended warranty. Warrant coating against peeling, blistering, chipping, checking, chalking in excess of a numerical rating of 8 when measured in accordance with ASTM D659, and fading and color change in excess of 5 NBS units when measured in accordance with ASTM D2244.

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B. Installer's Warranty: In addition to the warranty requirements of the Contract Documents, submit 2 original copies of the roofing installer's **2-year** extended warranty covering roof system installation and water-tightness.
   1. Warranty shall include repair or replacement of damaged finishes, furnishings and equipment due to defective roof materials or workmanship and return building to its original condition.
   2. Installer shall make repairs without reference to or consideration of the cause or nature of such leaks or defects within 24 hours after receipt of notice from the Owner by telephone, telegram, or letter.
   3. Repairs required within the warranty period shall be provided without cost to the Owner; except that repairs required consequent to an act of God, abuse, alterations, or failure of the substrata or the supporting structure (other than caused by defects in the work of this Section) will be paid for by the Owner promptly upon completion of the repair in each instance.
   4. Repairs completed at Owner's cost shall be invoiced to the Owner at prevailing rates, and shall include an itemized breakdown of quantities plus unit cost for labor and materials, and shall include not more than 15% markup for overhead and profit.
   5. This warranty shall be in addition to the warranty requirements of the Contract Documents and the enforcement of its provisions shall not deprive the Owner of any action, right, or remedy otherwise available to him.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Products specified are for establishing the type, design, and quality required. Products of equal or better type, design, and quality produced by other manufacturers will be considered provided the request for substitution is submitted in accordance with Section 01620.

B. Galvalume(R): ASTMA 792; Bethlehem Steel Corporation cold-rolled steel sheet to which corrosion-resistant aluminum-zinc alloy coating is factory-applied.

C. Factory Finish PVDF (Polyvinylidene Fluoride) Coating: Superior Performance Organic Finish, AAMA 2605; multiple coat, thermally cured fluoropolymer finish system; 70% Kynar 500 resin or Hylar 5000 resin.
   1. 2-Coat Finish: Dry Film Thickness, ASTM D1400; 0.15 mil primer coat plus 0.70 mil color coat, 0.85 mil total minimum thickness.
   2. Color: Match existing roofing / trim color.
   3. Provide factory applied strippable plastic film for protection during fabrication and installation.
   4. Interior Panel Finish: Inhibitive thermo-cured primer, 0.15 mil minimum dry film thickness with off-white wash coat, 0.35 mil minimum dry film thickness.

2.2 METAL ROOFING PANELS

A. Acceptable Products: Borga Super Panel by Borga Steel Inc.

B. Configuration: 36" wide panel with factory-formed ribs at a nominal spacing of 12" on center; exposed fasteners.

2.3 ACCESSORIES

A. Exposed Fasteners: EPDM gasketed heads with color to match exterior panel color.

B. Closures: Manufacturer's standard, weatherproof, tightly fitted to panel configuration.

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C. Sealant:
   1. Concealed sealants: Manufacturer's recommended sealant.
   2. Tape sealants: Butyl.

D. Flashings and Trim: Material, thickness, and finish to match roof panels.

2.4 UNDERLAYMENT

A. Membrane Underlayment: SlopeShield Plus SA by VaproShield, 20 mils thickness, or approved equal.
   1. Air Permeance: 0.00086 cfm/sf at 1.57 lbs/sf; ASTM E2178.
   2. Water Vapor Permeance: 30 perms; ASTM E96.
   3. Surface Burning Characteristics: Class A, ASTM E84; flame spread rating of 5 and smoke development classification of 45.
   4. Tensile Strength: 16 lbF/in MD and 8 lbF/in XMD; ASTM D2523.

2.5 FABRICATION

A. Roof Panel Fabrication:
   1. Fabricate panels in continuous 1-piece lengths and flashings in longest practical lengths.
   2. Factory form panels and flashings. Field formed panels and flashings will not be acceptable.

B. Flashing Fabrication:
   1. Fabricate in accordance with the SMACNA Architectural Sheet Metal Manual.
      a. Form sheet metal accurately and to the dimensions and shapes required, finishing molded and broken surfaces with true, sharp, and straight lines and angles and, where intercepting other members, coping to an accurate fit and soldering securely.
      b. Unless otherwise specifically permitted by the Architect, turn exposed edges back 1/2".
      c. Shop fabricate work to the greatest extent possible.
   2. Fabricate, and form work to fit substrates. Form exposed sheet metal work without excessive oil-canning, buckling and tool marks, true to line and levels indicated, with exposed edges folded back to form hems.
   3. Fabricate to shapes indicated in 10'-0" lengths except where shorter lengths are required by construction or sheet size.
   4. Corners: Shop prefabricate interior and exterior turns, and other changes in direction using epoxy seam sealer and rivets to rigidly secure the assembly and render watertight.
   5. Fabricate curved flashings to radius indicated on the drawings by means of a curving mill provided by the metal roofing manufacturer. Other means of curving roof panels will not be acceptable.

PART 3 - EXECUTION

3.1 SURFACE CONDITIONS

A. Examine the areas and conditions under which work of this Section will be performed. Correct conditions detrimental to timely and proper completion of the Work. Do not proceed until unsatisfactory conditions are corrected.

B. Verify that substrate is sound, dry, properly sloped for drainage, and completely secured in position.

C. Verify that provision has been made for roof drains, scuppers, flashings, and all other interface items attaching to or penetrating through the work of this Section.

D. Beginning installation constitutes acceptance of the substrate and responsibility for proper performance.

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3.2 INSTALLATION, GENERAL

A. Do not allow the installed work of this Section to be used as a storage space for other materials.

B. Do not permit unnecessary walking on the finished roof. Require all personnel to wear clean, soft-soled work shoes that will not pick up stones or other abrasive material which could cause damage and/or discoloration when installing or walking on the finished roof.

C. Remove and replace all damaged material.

3.3 UNDERLAYMENT INSTALLATION

A. Membrane Underlayment: Install shingle fashion in strict accordance with the manufacturer's written instructions in valleys, continuous at roof ridge and eaves, at all roof penetrations (HVAC, plumbing, electrical), and other locations indicated. Install per manufacturers recommendations

3.4 ROOF CURB INSTALLATION

A. Comply with roof curb manufacturer’s written instructions, providing watertight seal between curb flanges and metal roofing panels.

3.5 ROOF PANEL INSTALLATION

A. Install the work of this Section in strict accordance with the manufacturer's recommendations as approved by the Architect, anchoring all components firmly into position as a completely watertight and weather-tight installation. Install all work with concealed fasteners, clips, and cleats typically.

B. Roof Panels: Follow roof panel manufacturer's written instructions. Install panel seams vertically.
   1. Lap panels away from prevailing wind direction.
   2. Do not stretch or compress panel side-lap interlocks.
   3. Secure panel without warp or deflection.
   4. Fully engage battens.
   5. Remove strippable protective film, if used, **immediately preceding** panel installation.
   6. Space and anchor seam fastener clips in accordance with the manufacturer's recommendations for the performance and design requirements specified, 24" maximum spacing.

C. Allowable Erection Tolerance: Maximum alignment variation shall not exceed 1/4" in 40'-0".

D. Flashing: Follow manufacturer’s directions and approved shop drawings. Install flashings to allow for thermal movement.

E. Cutting and Fitting: Neat, square and true. Torch cutting is prohibited. Openings 6" and larger in any direction: Shop fabricate and reinforce to maintain original load capacity. Where necessary to saw panels, debur and treat with galvanic paint.

F. Joint Sealers: Install gaskets, joint fillers, and sealants where indicated and where required for weatherproof performance of panel system. Provide types of gaskets, sealants, and fillers indicated or, if not otherwise indicated, types recommended by panel manufacturer.
   1. Provide weatherseal under ridge cap. Flash and seal roof panels at eave and rake with rubber, neoprene, or other closures to exclude weather.

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G. Sealant: Field apply sealant to penetrations, transitions, and other locations necessary for an waterproof installation.

3.6 CLEAN UP

A. Touch up damaged paint surfaces with air dry touch up paint provided by manufacturer. Follow directions carefully to minimize color irregularities. Small brush application only - **do not spray touch up paint**.

B. At completion of each day's work and at Work Completion, sweep panels, flashing and gutters clean. Do not allow fasteners, cuttings, filings or scraps to accumulate. Remove debris from project site upon completion of each phase/building of work.

END OF SECTION 07 6120

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SECTION 07 6200 - SHEET METAL FLASHING AND TRIM

PART 1 - GENERAL

1.1 SUMMARY

A. Provide flashing and sheet metal not specifically described in other Sections of these Specifications but required to prevent penetration of water through the exterior shell of the building.

1. The work includes patching of existing work.
2. The work includes tying in of new work to existing work.

B. Types of flashing and sheet metal work include, but are not limited to:
1. Metal wall and counter-flashings.
2. Metal trim/fascia units.
3. Miscellaneous sheet metal accessories.
4. Termite shields.

C. Related Sections:
1. Documents affecting work of this Section include, but are not necessarily limited to, General Conditions, Supplementary Conditions, and Sections in Division l of these Specifications.
2. Section 07 4210: Metal Wall Panels.
3. Section 07 9210: Elastomeric joint sealants.

1.2 SUBMITTALS

A. General: Submit in accordance with Section 01 3300.
1. Shop Drawings: Submit detailed drawings of layout, joining, profiles, terminations, and anchorages of fabricated work. Submit detailed drawings of special accessory components.
2. Samples: Submit 3 samples, each approximately 12" square, in colors specified.

1.3 QUALITY ASSURANCE

A. In addition to complying with pertinent codes and regulations, comply with pertinent recommendations contained in current edition of "Architectural Sheet Metal Manual" published by the Sheet Metal and Air-Conditioning Contractors National Association (SMACNA).

B. Standard commercial items may be used for flashing, trim, reglets and similar purposes provided such items meet or exceed the quality standards specified.

C. Colors: Provide finish selections indicated in the Finish Schedule.
1. Acceptable Manufacturers: The products and manufacturers specified in the Finish Schedule are for purposes of establishing color and quality. Refer to each Specification Section for additional manufacturers and Section 01 2500 for substitution requirements.
2. Manufacturer’s Standard Colors and Finishes: Where the Finish Schedule specifies a manufacturer’s standard color or finish, the Architect makes no guarantee that matching colors or finishes are available as other manufacturer’s “standard colors” from the listing of acceptable manufacturers. The Contractor shall be responsible for providing colors matching those indicated on the Drawings.
3. Custom Colors: Where the Finish Schedule indicates a specific manufacturer’s colors, other acceptable manufacturers shall provide matching custom colors where a standard color is not acceptable.

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1.4 SPECIAL WARRANTY

A. PVDF (Polyvinylidene Fluoride) Coating Warranty: In addition to the warranty requirements of the Contract Documents, submit 2 original copies of coating applicator's 20-Year warranty. Warrant coating against peeling, blistering, chipping, checking, chalking in excess of a numerical rating of 8 when measured in accordance with ASTM D659, and fading and color change in excess of 5 NBS units when measured in accordance with ASTM D2244.2.

B. Special Project Warranty: Upon completion of the Work and as a condition of its acceptance, deliver to the Architect two original copies of the following Special Warranty, signed by the Contractor and the roofing subcontractor:
   1. The undersigned hereby propose, and upon execution of this document by the Owner, agree for a period of 2 years after Substantial Completion of the Work to make immediate repairs as required to stop leaks or correct defects in the work of this Section, within 24 hours after receipt of notice from the Owner by telephone, telegram, or letter; and further agree to make such repairs without reference to or consideration of the cause or nature of such leaks or defects.
   2. As a further condition of this 2-year Special Warranty, the undersigned hereby agree to repair or replace any other damaged products and finishes, to return the building to its original condition, and to notify the roof system manufacturer in writing within 30 days that such repairs were made.
   3. Repairs required within the stated period will be provided without cost to the Owner; except that repairs required consequent to an act of God, abuse, alterations, or failure of the substrata or the supporting structure (other than caused by defects in the work of this Section) will be paid for by the Owner promptly upon completion of the repair in each instance.
   4. Repairs completed at Owner's cost shall be invoiced to the Owner at prevailing rates, and shall include an itemized breakdown of quantities plus unit cost for labor and materials, and shall include not more than 15% markup for overhead and profit.
   5. This Special Warranty shall be in addition to the warranty requirements of the Contract Documents and the enforcement of its provisions shall not deprive the Owner of any action, right, or remedy otherwise available to him.

PART 2 - PRODUCTS

2.1 FLASHING MATERIALS

A. Products specified are for establishing the type, design, and quality required. Products of equal or better type, design, and quality produced by other manufacturers will be considered provided the request for substitution is submitted in accordance with Section 01 2500.

B. Materials and Gauges: Where sheet metal is required, and no material or gauge is indicated on the Drawings, provide highest quality and gauge commensurate with the referenced standards. In no case shall sheet metal be less than 24 gauge.

C. Galvanized Steel Sheet Materials: ASTM A653, with G90 zinc coating; minimum 24 gauge except as otherwise indicated.

D. Metal Accessories: Provide sheet metal clips, straps, anchoring devices and similar accessory units as required for installation of work, matching or compatible with material being installed, noncorrosive, size and gauge required for performance.

2.2 PREMANUFACTURED REGLET ASSEMBLIES

A. Reglet Manufacturer: Subject to compliance with requirements, provide products by:

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1. Springlock Flashing and Reglets by Fry Reglet Corp.
2. Snap-Tite System by Mm Systems Corp.
3. Products specified are for establishing the type, design, and quality required. Products of equal or better type, design, and quality produced by other manufacturers will be considered provided the request for substitution is submitted in accordance with Section 01620.

B. Materials:
1. Reglet: 24 gauge galavanized steel; ASTM A653 with G90 zinc coating.
2. Counter Flashing: 24 gauge galavanized steel; ASTM A653 with G90 zinc coating; factory prefinished.
3. Provide prefabricated prefinished inside and outside corners, sealed watertight.

2.3 FABRICATED FLASHINGS

A. Stepped Flashing: 24 gauge minimum thickness.
1. Fabricate as indicated similar to SMACNA Figure 4-22A.

B. Crickets: 22 gauge minimum thickness.
1. Fabricate as indicated similar to SMACNA Figure 4-18, Detail 2.

C. Drip Edges: Fabricate as indicated, 24 gauge minimum thickness.

D. Termite Shields:
1. Fabricate as indicated similar to SMACNA Figure 4-24.
2. Install as detailed and set in continuous bead of liquid nails to concrete or masonry.
3. Lap joints shall be a minimum of 6" with a double row of continuous sealant.

2.4 FINISHES

A. Factory Finish PVDF (Polyvinylidene Fluoride) Coating: Superior Performance Organic Finish, AAMA 2605; multiple coat, thermally cured fluoropolymer finish system; 70% Kynar 500 resin or Hylar 5000 resin.

1. 2-Coat Finish: Dry Film Thickness, ASTM D1400; 0.15 mil primer coat plus 0.70 mil color coat, 0.85 mil total minimum thickness.
2. Color: As selected by Architect from the manufacturer’s standard colors.
3. Provide factory applied strippable plastic film for protection during fabrication and installation.

2.5 MISCELLANEOUS MATERIALS

A. Nails, Rivets, and Fasteners: Same metal as flashing/sheet metal or other noncorrosive metal as recommended by sheet manufacturer. Match finish of exposed heads with material being fastened.

B. Mastic Sealant: Polyisobutylene; nonhardening, nonskinning, nondrying, nonmigrating sealant.

C. Adhesives: Type recommended by flashing sheet manufacturer for waterproof/weather-resistant seaming and adhesive application of flashing sheet

D. Roofing Cement: ASTM D 2822, asphaltic.

E. Epoxy Seam Sealer: 2-part noncorrosive metal seam cementing compound, recommended by metal manufacturer for exterior/interior non-moving joints including riveted joints.

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F. Solder: For use with steel provide 50-50 tin/lead solder (ASTM B32), with rosin flux.

G. Provide other materials, not specifically described but required for a complete and proper installation, as selected by the Contractor subject to the approval of the Architect.

2.6 FABRICATION

A. General: Fabricate in accordance with the SMACNA Architectural Sheet Metal Manual.
   1. Form sheet metal accurately and to the dimensions and shapes required, finishing molded and broken surfaces with true, sharp, and straight lines and angles and, where intercepting other members, coping to an accurate fit and soldering securely.
   2. Unless otherwise specifically permitted by the Architect, turn exposed edges back 1/2".
   3. Shop fabricate work to the greatest extent possible.

B. Fabricate and form work to fit substrates. Form exposed sheet metal work without excessive oil-canning, buckling and tool marks, true to line and levels indicated, with exposed edges folded back to form hems.

C. Fabricate to shapes indicated in 10'-0" lengths except where shorter lengths are required by construction or sheet size.

D. Corners: Shop prefabricate interior and exterior turns, and other changes in direction using epoxy seam sealer and rivets to rigidly secure the assembly and render watertight.

PART 3 - EXECUTION

3.1 SURFACE CONDITIONS

A. Examine the areas and conditions under which work of this Section will be performed. Correct conditions detrimental to timely and proper completion of the Work. Do not proceed until unsatisfactory conditions are corrected.

3.2 WORKMANSHIP

A. General: Comply with manufacturer's written instructions and with SMACNA Architectural Sheet Metal Manual, 2003 Edition. Anchor units securely in place by methods indicated, providing for expansion of metal units; conceal fasteners where possible; and set units true to line and level. Install work with laps, joints, and seams which will be permanently watertight and weatherproof.
   1. Where lap seams are indicated, lap according to pitch, but not less than 3".
   2. Make flat and lap seams in the direction of flow.

B. Joints:
   1. Join parts with rivets or sheet metal screws where necessary for strength and stiffness.
   2. Provide suitable watertight expansion joints for runs of more than 40'-0", except where closer spacing is indicated on the Drawings or required for proper installation.

C. Separations:
   1. Provide for separation of metal from noncompatible metal or corrosive substrates by coating concealed surfaces at locations of contact with bituminous coating or other permanent separation as recommended by manufacturer/fabricator.

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2. Where sheet metal work will be in contact with masonry, concrete, or stone, evenly coat contact surfaces with non-sagging mastic. Where sheet metal work will be embedded in mortar joints, evenly coat both sides with non-sagging mastic.

D. Embedment: Embed metal in connection with roofs in a solid bed of sealant, using materials and methods described in Section 07 9210 of these Specifications or other materials and methods approved by the Architect.

3.4 CLEANUP

A. After completion, clean all exposed work of scraps, stains, and dirt. After cleaning, wash with clean water and wipe dry.

END OF SECTION 07 6200

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SECTION 07 9210 - JOINT SEALANTS

PART 1 - GENERAL

1.1 SUMMARY

A. Throughout the Work, seal and caulk joints where shown on the Drawings and elsewhere as needed to provide a positive barrier against passage of moisture and air.

B. Related Sections:
1. Documents affecting work of this Section include, but are not necessarily limited to, General Conditions, Supplementary Conditions, and Sections in Division l of these Specifications.
2. Section 03 3000: Cast-In-Place Concrete.
3. Section 09 9100: Painting.

1.2 SUBMITTALS

A. Submit in accordance with Section 01 3300.
1. Product Data: Submit manufacturer's descriptive literature and product specifications for each product. Include data to indicate compliance with the specified requirements.
2. Installation Procedures: Submit manufacturers recommended installation procedures.
3. Samples: Submit samples of each sealant, each backing material, each primer, and each bond breaker proposed to be used. Provide minimum of 4 samples of each manufacturers standard color for each application. Provide sample of each installation type for Architect approval prior to beginning installation. Repeat samples until acceptable installation is approved by the Architect.

1.3 QUALITY ASSURANCE

A. Rejection of Installed Caulking and Sealants: Indication of lack of skill on the part of installers shall be sufficient grounds for rejection of installed caulking and to require its immediate removal and complete re-caulking at no additional cost to the Owner.

1.4 DELIVERY, STORAGE, AND HANDLING

A. Comply with pertinent provisions of Section 01 6600.

B. Do not retain at the job site material which has exceeded the shelf life recommended by its manufacturer.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Products specified are for establishing the type, design, and quality required. Products of equal or better type, design, and quality produced by other manufacturers will be considered provided the request for substitution is submitted in accordance with Section 01 2500.

B. Comply with VOC requirements of California Green Building Standards Code, Sections 5.504.4.1 and 5.504.4.2.

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2.2 SEALANTS AND CAULKING

A. Silicone Sealant:
1. White Mildew Resistant: 786 White by Dow Corning, Sanitary 1700 White by General Electric, 863 White by Pecora.
2. General Exterior: 791 by Dow Corning, Silpruf by General Electric, 864 by Pecora, Spectrum 2 by Tremco.

B. Polyurethane Sealant:
1. General Use: DynaTrol II by Pecora, Dymeric by Tremco, Sikaflex-2c,NS/SL by SIKA.
2. Self-leveling Type: NR-201 by Pecora, Sonalastic SL1 by Sonneborn, Sikaflex 1cSL by Sika.

C. Acrylic Latex Sealant: AC-20+ Silicone by Pecora, Sonolac by Sonneborn.

D. Colors: Colors for each sealant installation will be selected by the Architect from standard colors normally available from the specified manufacturer.
1. In concealed installations use standard gray or black sealant.
2. Provide black sealant at glazing pockets.

2.3 ACCESSORY MATERIALS

A. Primers: Non-staining type, recommended by manufacturer to suit application.

B. Back-up Materials: Non-absorbent, non-staining, and specifically recommended for application by sealant manufacturer.

C. Bond Preventative Materials: Pressure sensitive tape recommended by sealant manufacturer to suit application.

D. Masking Materials: Appropriate masking tape which will effectively prevent application of sealant on surfaces not scheduled to receive it, removable without damage to substrate or staining.

E. Joint Cleaner: Non-corrosive, non-staining type recommended by sealant manufacturer; compatible with joint forming materials.

PART 3 - EXECUTION

3.1 SURFACE CONDITIONS

A. Examine the areas and conditions under which work will be performed. Do not proceed until unsatisfactory conditions are corrected.

3.2 PREPARATION

A. Prepare all surfaces to receive sealants and caulking in strict accordance with the manufacturer's written requirements. Use solvents and primers where recommended by the manufacturer.

B. Clean all concrete joints, full depth free of debris and dust.

3.3 INSTALLATION

A. Install joint backing to achieve a neck dimension of no greater than 1/3 the joint width. Install in strict

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accordance with the manufacturer's written instructions.

B. Install bond breaker where joint backing is not used.

C. Mask adjacent surfaces to prevent contact of sealant with adjoining surfaces which would be stained or damaged by such contact or by cleaning methods required to remove sealant smears. Remove tape after tooling without disturbing joint seal.

D. Install sealant to manufacturer’s instructions.

E. Measure joint dimensions and size materials to achieve required width/depth ratios.

3.4 PRODUCT USAGE BY LOCATION

A. Where more than 1 type of sealant is listed, the Contractor may use either listed product that is best suited in accordance with the sealant manufacturer's written recommendations for the joint location and type and the surfaces to be sealed with particular attention given to prevent staining. Provide sealants and caulking as follows:
   1. Exterior, general use: Polyurethane or Silicone.
   2. Interior, wet areas: Mildew Resistant Silicone.
   3. Interior, general use and painting: Acrylic latex.
   4. Expansion and control joints, vertical and overhead surfaces: Polyurethane or Silicone.
   5. Expansion and control joints, horizontal surfaces: Self-leveling Polyurethane.
   6. Interior concrete slab (where slab is finished floor, fill all crack control joints): Polyurethane.
   7. Exterior concrete walks and courts (where indicated on the plans): Polyurethane.
   8. Horizontal surfaces, traffic: Self-leveling Polyurethane.
   9. Glazed tile and/or masonry: Polyurethane or Silicone.
   10. Plumbing fixtures: Mildew Resistant Silicone.
   11. Glazing to metal frame: Black Silicone.

3.5 CLEANING AND REPAIRING

A. Clean adjacent soiled surfaces.

B. Repair or replace defaced or disfigured finishes caused by sealant work.

END OF SECTION 07 9210

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SECTION 08 1110 - HOLLOW METAL DOORS AND FRAMES

PART 1 - GENERAL

1.1 SUMMARY

A. Provide hollow metal doors, and hollow metal door and window frames, where shown on the Drawings, as specified herein, and as needed for a complete and proper installation.

B. Related Sections:
1. Documents affecting work of this Section include, but are not necessarily limited to, General Conditions, Supplementary Conditions, and Sections in Division 1 of these Specifications.
2. Section 08 7100: Hardware requirements and templates.
3. Section 08 8100: Glass for vision panels, sidelights, and windows.
4. Section 09 9100: Field Painting

1.2 SUBMITTALS

A. General: Submit in accordance with Section 01 3300.
1. Product Data: Submit manufacturer's descriptive literature and product specifications for each product. Include data to indicate compliance with the specified requirements.
2. Installation Procedures: Submit manufacturers recommended installation procedures.
3. Shop Drawings: Submit details of each frame type, elevations of door designs, details of openings, and details of construction, installation, and anchorage.

1.3 QUALITY ASSURANCE

A. Provide all products of this Section from a single manufacturer.

B. Comply with ANSI/SDI A250.8-2003 and HMMA 861-14.

1.4 FIRE AND SMOKE RATINGS

A. Fire and Smoke Rated Door Assemblies: Where fire-rated or smoke-rated assemblies are indicated or required, provide door and frame assemblies that have been tested, listed, and labeled by a nationally recognized independent testing and inspection agency acceptable to authorities having jurisdiction.
1. Side-hinged or Pivoted Swinging Doors: UL 10C.
2. Doors in Fire-rated Corridors and Smoke Barriers: 20 minute fire protection rating; UL 10C without hose stream test.
3. Door in Exit Enclosures and Exit Passageways: UL 10C; maximum transmitted temperature end point of not more than 450̊F above ambient at end of 30 minutes of standard fire test exposure.
4. Smoke and Draft Control Doors: UL 10C and UL 1784.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Acceptable Manufacturers:
1. Steelcraft, (805) 837-4111.
2. Stiles Custom Metal, Inc., (209) 538-3667.

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3. Ceco Door Products, (510) 489-1700.
4. Curries, (559) 432-5537.
5. Security Metal Products, (310) 641-6690.
6. Metal Manufacturing Co., (916) 922-3484.
7. Products specified are for establishing the type, design, and quality required. Products of equal or better type, design, and quality produced by other manufacturers will be considered provided the request for substitution is submitted in accordance with Section 01 2500.

2.2 METAL DOORS

A. Exterior Flush Doors:
   1. ANSI/SDI A250.8, Level 3, Model 2 (seamless), minimum 16 gauge (0.067") faces.
   2. Top Closure: 16 gauge flush end channel closure with seal against moisture entry.
   3. Bottom Closure: 16 gauge recessed end channel with drainage openings.
   4. Galvanizing: Hot-dipped zinc coating; ASTM A653 with A60 or G60 coating.
   5. Reinforce doors internally with 18 gauge steel hat section ribs.
      a. Weld reinforcing to each door face with spot welds to faces spaced 4" on center.
      b. Ends of ribs welded together full width of the supporting web span.
      c. Insulate space between ribs with 2 lb. density polyurethane bonded to both faces; ASTM C591.
   6. Reinforce for finish hardware provided under Section 08 7000; ANSI/SDI A250.8.

B. Exterior Stile-and-Rail Doors: Unitized, true tube type construction with joints continuously welded and ground smooth.
   1. ANSI/SDI A250.8, Level 3, Model 3, minimum 16 gauge (0.067") faces.
   2. Core: 2 lb. density polyurethane bonded to both faces; ASTM C591, U-factor of 0.10.
   3. Top Closure: Flush end channel closure with seal against moisture entry.
   4. Bottom Closure: Recessed end channel with drainage openings.
   5. Galvanizing: Hot-dipped zinc coating; ASTM A653 with A60 or G60 coating.
   6. Reinforce for finish hardware provided under Section 08 7000; ANSI/SDI A250.8.

C. Interior Doors: Full flush or stile-and-rail design as indicated.
   1. ANSI/SDI A250.8, Level 3, Model 2 (seamless), minimum 16 gauge (0.053") faces.
   2. Core: 2 lb. density polyurethane bonded to both faces; ASTM C591, U-factor of 0.10.
   3. Galvanizing: Hot-dipped zinc coating; ASTM A653 with A60 or G60 coating.
   4. Reinforce for finish hardware provided under Section 08 7000; ANSI/SDI A250.8.

D. Finish:
   1. After fabrication, fill all tool marks and surface imperfections, sand and dress smooth.
   2. Grind, fill, and dress all weld joints.
   3. Coat surface with factory primer for field finishing; ANSI/SDI A250.10.

2.3 METAL FRAMES

A. Type and Design:
   1. Provide frames in the dimensions and types shown on the Drawings, non-labeled or labeled as indicated, in 16 gauge (0.053") for interior frames and 14 gauge (0.067") for exterior frames.
   2. Galvanizing: Hot-dipped zinc coating; ASTM A653 with A60 or G60 coating.
   3. **Face welded construction.**
   4. Door Silencers: Except on weatherstripped frames, drill stops to receive 3 silencers on strike jambs of single-swing frames and 2 silencers on heads of double-swing frames.
   5. Reinforce for finish hardware provided under Section 08 7000; ANSI/SDI A250.8.
   6. Frames Wider than 48": Reinforce with steel channel fitted tightly into frame head, flush with top.

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7. Frames Installed Back-to-Back: Reinforce with steel channels anchored to floor and overhead structure.

B. Finish:
1. After fabrication, fill all tool marks and surface imperfections, sand and dress smooth.
2. Grind, fill, and dress all weld joints.
3. Coat surface with factory primer for field finishing; ANSI/SDI A250.10.
4. Remove all areas of rust to bare metal; reprime prior to finish paint.

C. Frame Anchors:
1. Wood Stud Anchor: 18 gauge galvannealed steel, "lock-in" type.
2. Closed Metal Stud Wall Anchor: 18 gauge galvannealed steel, "lock-in" or factory welded type.
3. Wire Masonry Anchors: 3/16" diameter wire, "lock-in" type.
4. Masonry T-Anchors: 18 gauge galvannealed steel, "lock-in" type.
5. Existing Wall Anchor: 18 gauge galvannealed steel, "lock-in" or factory welded type.
6. Base Anchor: 16 gauge galvannealed steel, welded-in or adjustable; provide a minimum of 2 fasteners in each anchor.
7. Mullion Base Anchor: 16 gauge galvannealed steel, mullion slides over; provide a minimum of 2 fasteners in each anchor.
8. Corner Post Base Anchors: 12 gauge galvannealed steel, corner post slides over; provide a minimum of 2 fasteners in each anchor.

2.4 FINISH HARDWARE

A. Coordinate anchorage hardware and secure templates from the finish hardware supplier.

2.5 ACCESSORIES

A. Removable Glazing Stops (at window frames only):
1. Formed 20 gauge (0.032") sheet steel, butted corners; secured to frame with countersunk #6 zinc-coated tamper-proof screws.
2. Chemically treat and paint with a rust inhibitive primer all metal surfaces to which glazing stops are secured and the inside of the glazing stops to installation.

B. Glazed Light Frames:
1. 20 gauge (0.042") cold rolled steel frame, tightly mitered corners. At exterior locations, provide galvanized frames. Locate screws on room side.
2. Provide labeled frames at fire rated assemblies.
3. Finish: Factory baked enamel; custom color as selected by the Architect.
4. Model LoPro (LoPro-IS where required due to glazing thickness) by Anemostat or approved equal.

2.6 PREPARATION FOR HARDWARE

A. Coordinate anchorage hardware and secure templates from the finish hardware supplier.

B. Reinforcement: Reinforce components for hardware installation in accordance with ANSI/SDI A250.8 except where more stringent requirements are called for within this specification.
1. Provide box or channel type lock and closer reinforcements, continuous from top to bottom of door and welded to face sheets.

C. Punch single leaf frames to receive 3 silencers; provide one silencer per leaf at the head of double leaf frames unless gasketing is specified for that specific opening.

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D. Factory prepare hardware locations in accordance with Section 08 7100.

E. Plaster Guards: 26 gauge galvanized steel plaster/dust guards, welded to frame at finish hardware cutouts where mortar, plaster, dust or other materials might obstruct hardware operation and to close off interior of openings.

PART 3 - EXECUTION

3.1 SURFACE CONDITIONS

A. Examine the areas and conditions under which work of this Section will be performed. Correct conditions detrimental to timely and proper completion of the Work. Do not proceed until unsatisfactory conditions are corrected.

3.2 FIRE RATED ASSEMBLIES

A. Install fire-rated doors and frames in accordance with their listings and NFPA 80.
   1. Install smoke and draft control doors in accordance with NFPA 105.

3.3 FRAME INSTALLATION

A. Install frames and doors in accordance with the manufacturer's written recommendations and ANSI/SDI A250.8.

B. Set welded frames in position prior to beginning metal stud partition work; brace frames until permanent anchors are set.

C. Set anchors for frames as work progresses. Install anchors at hinge and strike levels. Place frames prior to construction of enclosing walls and ceilings; provide minimum 3 anchors per jamb at hinge and strike locations.
   1. Where indicated in the plans, secure frames in place with screw fasteners at frame anchors to wall framing or post-installed expansion anchors at masonry and concrete. Countersink fasteners, fill with body putty, sand smooth and flush with no voids or ridges. Conceal installed fasteners so as to be invisible at exposed faces.

D. Set frames accurately into position, plumbed (within 1/8" in 10'), aligned, and braced securely until permanent anchors are set.
   1. Use temporary setting spreaders at all locations. Use intermediate spreaders to assure proper door clearances and header braces for grouted frames.

3.4 DOOR INSTALLATION

A. Install doors per manufacturer's recommendation.

B. Install hollow metal doors in frames using hardware specified in Section 08710 Finish Hardware.

C. Clearances at edge of doors.
   1. Between door and frame at head and jambs: 1/8".
   2. At meeting edges pairs of doors and at mullions: 1/8".
   3. At sills without thresholds: 5/8" maximum above finish floor.
   4. At sills with thresholds: 1/8" above threshold.

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3.5 ADJUST AND CLEAN

A. Remove dirt and excess sealants, mortar or glazing compounds from exposed surfaces.

B. Final Adjustments: Adjust moving parts for smooth operation.
   1. Check and readjust operating finish hardware items in hollow metal work just prior to final inspection.
   2. Leave work in complete and proper operating condition.
   3. Remove defective work and replace with work complying with the specified requirements.

C. Immediately after erection, sand smooth all rusted and damaged areas of prime coat, and apply touchup of compatible air-drying primer submitted by the manufacturer.

D. Fill all dents, holes, etc. with metal filler, sand smooth and flush with adjacent surfaces - reprise and paint to match specified finish.

END OF SECTION 08 1110

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SECTION 08 1400 - WOOD DOORS

PART 1 - GENERAL

1.1 SUMMARY

A. Provide wood doors where shown on the Drawings, as specified herein, and as needed for a complete and proper installation.

B. Related Sections:
1. Documents affecting work of this Section include, but are not necessarily limited to, General Conditions, Supplementary Conditions, and Sections in Division 1 of these Specifications
2. Section 08 1110: Hollow metal doors and frames.
3. Section 08 7100: Hardware requirements.
4. Section 08 8000: Glazing for vision panels.
5. Section 09 9100: Field finishing of wood doors and metal vision panel frames and door louvers.

1.2 SUBMITTALS

A. General: Submit in accordance with Section 01 3300.
1. Product Data: Submit manufacturer's descriptive literature and product specifications for each product. Include data to indicate compliance with the specified requirements.
2. Installation Procedures: Submit manufacturers recommended installation procedures.
3. Submit door manufacturer's technical data for each type of door, including details of core and edge construction, trim for openings and louvers, and factory-finishing specifications.
4. Samples: Submit 12 samples, (6 to be submitted to painter for finish samples), approximately 8" x 8" in size, of each of the proposed door face materials representing typical range of color and grain for each species of veneer required.

1.3 QUALITY ASSURANCE

A. In addition to complying with pertinent codes and regulations of governmental agencies having jurisdiction, comply with:
1. "Manual of Millwork" of the Woodwork Institute, for the grade or grades specified.

B. Manufacturer: Obtain doors from a single manufacturer.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Comply with pertinent provisions of Section 01 6600.

B. Delivery:
1. Deliver doors to the job site after plaster and cement are dry, and after the building has reached average prevailing humidity of its locality.
2. Deliver prefinished doors in manufacturer's original containers, clearly marked with manufacturer's name, brand name, size, thickness, and identifying symbol on the covering.
3. Seal all four edges of unfinished doors when delivered to the job site.

C. Storage:
1. Stack flat on 2" x 4" lumber, laid 12" from ends and across center.
2. Under bottom door and over top and sides of stack, provide plywood or corrugated cardboard to protect

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door surfaces.

3. Store doors in area where there will be no great variations in heat, dryness, and humidity.

D. Do not drag doors across one another; lift doors and carry them into position.

1.6 SPECIAL WARRANTY

A. In addition to the warranty requirements of the Contract Documents, provide 2 original copies the manufacturer's written **Lifetime Warranty.**

PART 2 - PRODUCTS

2.1 GENERAL

A. Products specified are for establishing the type, design, and quality required. Products of equal or better type, design, and quality produced by other manufacturers will be considered provided the request for substitution is submitted in accordance with Section 01 2500.

B. Provide flush wood doors of the types, designs, and thicknesses shown on the Door Schedule in the Drawings, labeled or non-labeled as indicated and required, and in solid core or hollow core as shown on the Door Schedule.

C. Grade: Except as may be shown otherwise on the Drawings, fabricate the work of this Section to "PREMIUM GRADE" standards of the referenced WI, Door Face Characteristics.

2.2 INTERIOR WOOD DOORS

A. Non-Rated Solid Core Doors: Flush, 5-ply, 1-3/4" thick, 1-1/4" laminated hardwood stiles, 1-1/4" softwood rails and lock blocks, crossbanded 1/16" thick minimum, with particleboard core complying with ANSI A208.1, Grade LD-2.
   1. Architectural Solid Core (APC-3) by Haley.
   2. Particleboard Door by Eggers Industries.
   3. Particleboard Core Door (DPC-1) by Weyerhaeuser.
   4. Particleboard Door by Pacific Architectural Wood Products.
   5. Flush Wood Veneer Doors (PC-5 or SCLC) by VT Industries.
   6. GPD-PC Architectural Door by Graham Wood Doors.

2.3 VISION PANEL OPENINGS

A. Wood Beads:
   1. Non-rated Doors: Hardwood bead matching species of face veneer.
   2. Fire-rated Doors: Manufacturer's standard fire-rated wood-veneer beads matching species of face veneer.
   4. Model BFL-123 by Anemostat or approved equal.

2.5 FABRICATION

A. Openings: Cut and trim openings through doors to comply with applicable requirements.

B. Provide proper blocking for every surface applied piece of hardware. No sex bolt or through bolt application of hardware will be allowed.

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PART 3 - EXECUTION

3.1 SURFACE CONDITIONS

A. Examine the areas and conditions under which work of this Section will be performed. Correct conditions detrimental to timely and proper completion of the Work. Do not proceed until unsatisfactory conditions are corrected.

3.2 INSTALLATION

A. Fitting and Machining:
   1. Unless doors are completely fitted and machined at the mill, fit them for width by planing and fit them for height by sawing:
      a. Bottom: 1/2" clearance maximum.
      b. Top: 1/8" clearance maximum.
      c. Lock edge and hinge edge: Bevel 1/8" in 2" maximum.
   2. Machine doors for hardware in accordance with recommendations of the hardware manufacturers, as those recommendations have been approved by the Architect.
   3. Seal cut surfaces after fitting and machining.

B. Install doors to comply with manufacturer's written instructions and referenced WIC standards.

C. Replace or rehang doors which are hinge bound and do not swing or operate freely.

3.3 COMPLIANCE

A. The Owner reserves the right to request and pay for an inspection by a representative of the referenced organization to determine that the work of this Section has been performed in accordance with the specified standards.

B. In the event such inspection determines the work of this Section does not comply with the specified requirements, immediately remove the non-complying items and replace them with items complying with the specified requirements, all at no additional cost to the Owner, and reimburse the Owner for the cost of the inspection.

END OF SECTION 08 1400

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SECTION 08 3100 - ACCESS DOORS

PART 1 - GENERAL

1.1 SUMMARY

A. Provide ceiling and soffit access door where shown on the Drawings, as specified herein, and as needed for a complete and proper installation.

B. Related Sections: Documents affecting work of this Section include, but are not necessarily limited to, General Conditions, Supplementary Conditions, and Sections in Division l of these Specifications.

1.2 SUBMITTALS

A. General: Submit in accordance with Section 01 3300.
   1. Product Data: Submit manufacturer's descriptive literature and product specifications for each product. Include data to indicate compliance with the specified requirements.
   2. Installation Procedures: Submit manufacturer's recommended installation procedures.

1.3 EXTRA MATERIALS

A. Keys: Provide for the Owner's use, 1 complete set of all tools and keys for each door that come packaged with the doors. Provide identification tag with each door key indicating key location.

B. Deliver keys to the Inspector of Record. Obtain and forward to the Architect, a signed receipt from the Inspector accepting delivery.

PART 2 - PRODUCTS

2.1 MATERIALS, GENERAL

A. Products specified are for establishing the type, design, and quality required. Products of equal or better type, design, and quality produced by other manufacturers will be considered provided the request for substitution is submitted in accordance with Section 01 2500.

2.3 WALL ACCESS DOORS:

A. Provide wall access doors where needed for access to mechanical and electrical installations, and where indicated on the drawings.

B. Non-Rated Flush Wall Access: Access units with flanged frame flush with gypsum board or plaster assemblies.
   1. Rating: Provide access doors having the same fire rating as the surface being pierced.
   2. Construction: 14 gage steel door and frame, with self-closing and latching spring closer.
   3. Finish:
      a. For gypsum board and plaster surfaces, factory primed for painting on the job site.
      b. For tile surfaces and toilet rooms, stainless steel with satin finish.
   4. Locking: Provide each unit with cylinder locks and two keys per unit.
   5. Size: As required, 12"x12" minimum.
   6. Acceptable products:
      a. Model TM by J.L. Industries.
      b. Model DSC-214M by Karp Associates.
      c. Model L-MPG by Larsen's Manufacturing.

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d. Style M by Milcor.
e. Model NT by Nystrom.
f. UF-5000 by Acudor Access Doors.

PART 3 - EXECUTION

3.1 SURFACE CONDITIONS

A. Examine the areas and conditions under which work of this Section will be performed. Correct conditions detrimental to timely and proper completion of the Work. Do not proceed until unsatisfactory conditions are corrected.

3.2 INSTALLATION

A. Coordinate as necessary with other trades to assure proper and adequate provision in the work of those trades for interface with the work of this Section.

B. Install the work of this Section in strict accordance with the manufacturers' recommendations as approved by the Architect, anchoring all items firmly into position for long life under hard use.

C. Put operating components through at least five complete operating cycles, adjusting as required and achieving optimum ease of operation.

END OF SECTION 08 3100

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SECTION 08 71 00 - DOOR HARDWARE

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. This Section includes 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.

B. Related Sections: The following sections are noted as containing requirements that relate to this Section, but may not be limited to this listing.
1. Division 08: Section - Hollow Metal Doors and Frames.
2. Division 08: Section - Wood Doors and Frames.

1.3 REFERENCES

A. 2025 California Building Code, CCR Title 24, Part 2

B. BHMA - Builders' Hardware Manufacturers Association

C. DHI - Door and Hardware Institute

D. NFPA - National Fire Protection Association.
1. NFPA 80 - Fire Doors and Other Opening Protectives
2. NFPA 105 - Smoke and Draft Control Door Assemblies

E. UL - Underwriters Laboratories.
1. UL 10C - Fire Tests of Door Assemblies
2. UL 305 - Panic Hardware

F. WHI - Warnock Hersey Incorporated

G. SDI - Steel Door Institute

1.4 SUBMITTALS & SUBSTITUTIONS

A. General: Submit in accordance with Conditions of the Contract and Division 01 Specification sections.

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 electronic PDF copies of schedule organized vertically into “Hardware Sets” with index of doors and headings, indicating complete designations of every item required for each door or opening. Include following information:

1. Include a Cover Sheet with:
   a. Job Name, location, telephone number.
   b. Architects name, location and telephone number.
   c. Contractors name, location, telephone number and job number.
   d. Suppliers name, location, telephone number and job number.
   e. Hardware consultant's name, location and telephone number.
2. Job Index information included:
   a. Numerical door number index including; door number, hardware heading number and page number.
   b. Complete keying information (referred to DHI hand-book "Keying Systems and Nomenclature"). Provision should be made in the schedule to provide keying information when available; if it is not available at the time the preliminary schedule is submitted.
   c. Manufacturers' names and abbreviations for all materials.
   d. Explanation of abbreviations, symbols, and codes used in the schedule.
   e. Mounting locations for hardware.
   f. Clarification statements or questions.
   g. Catalog cuts and manufacturer’s technical data and instructions.
3. Vertical schedule format sample:

Heading Number 1 (Hardware group or set number - HW Group #1)				
(a) 1 Single - Door #101 - Corridor 101 to Exterior			(b) 90°	(c) RH
(d) 3'-0" x 7'-0" x 1-3/4" - Wood Door x Hollow Metal Frame - 20 Minute				
(e) 1.	(f) 3 ea	(g) Hinges - (h) 5BB1 4.5 x 4.5 NRP (i) 1/2 TMS	(j) 630	(k) IVE
2.	1 ea	Lockset - ND80P6D x RHO x RH x 10-025 x JTMS	626	SCH
3.	1 ea	Closer - 4040XP x EDA x TBSRT	689	LCN

(a) Single or pair of doors with opening number and location.
(b) Degree of opening.
(c) Hand of door(s).
(d) Door/frame dimensions and material; Label requirements, if any.
(e) Hardware item line # (Optional).
(f) Quantity.
(g) Product description.
(h) Product part number.
(i) Fastenings and other pertinent information.
(j) Hardware finish codes per ANSI/BHMA A156.18.
(k) Manufacturer abbreviation.

D. Make substitution requests in accordance with Division 01. Substitution requests must be made prior to bid date. Include product data and indicate benefit to the project. Furnish samples of any proposed substitution.

E. Keying Schedule: Submit separate detailed schedule indicating clearly how the District's final instructions on keying of locks has been fulfilled.

F. 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.

G. Furnish as-built/as-installed schedule with close-out documents, including keying schedule and transcript, wiring/riser diagrams, manufacturers' installation and adjustment and maintenance information.

H. Fire Door Assembly Testing: Submit a written record of each fire door assembly to the District to be made available to the Authority Having Jurisdiction (AHJ) for future building inspections.

1.5 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 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. Product packaging to be labelled in compliance with CA Prop 65, Safe Drinking Water and Toxic Enforcement Act of 1986.

1.6 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. Contractor to inventory door hardware jointly with representatives of hardware supplier and hardware installer until each all are satisfied that count is correct.

1.7 WARRANTY

A. Provide warranties of respective manufacturers' regular terms of sale from day of final acceptance as follows:
1. Locksets: Ten (10) years.
2. Exit Devices: Ten (10) years.
3. Door Closers: Thirty (30) years.
4. Electronic: Three (3) years.
5. All other hardware: Two (2) years.

1.8 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.

1.9 PRE-INSTALLATION CONFERENCE

A. Convene a pre-installation conference at least one week prior to beginning work of this section.

B. Attendance: Architect, Construction Manager, Contractor, Security Contractor, Hardware Supplier, Installer, Key District's Personnel, and Project Inspector.

C. Agenda: Review hardware schedule, products, installation procedures and coordination required with related work. Review District's keying standards.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

Item	Manufacturer	Acceptable Substitutes
Hinges	Ives	Hager, Stanley, McKinney
Locks, Latches & Cylinders	Schlage	None – District Standard
Exit Devices	Von Duprin	None – District Standard
Door Closers	Norton	None – District Standard
Push, Pulls & Protection Plates	Ives	Trimco
Flush Bolts & Coordinators	Ives	Trimco
Door Stops	Ives	Trimco
Overhead Stops	Glynn-Johnson	Or Approved Equal
Seals, Bottoms & Thresholds	Zero	Pemko, NGP

2.2 MATERIALS

A. Hinges:
1. Provide hinges conforming to ANSI/BHMA A156.1.

2. Hinges shall be sized in accordance with the following:
   a. Height:
      1) Doors up to 42" wide: 4-1/2 inches.
      2) Doors 43" to 48" wide: 5 inches.
   b. Width: Sufficient to clear frame and trim when door swings 180 degrees.
   c. Number of Hinges: Provide 3 hinges per leaf to 7'-5" in height. Add one for each additional 2 feet in height.
3. Exterior out-swinging hinges shall be non-ferrous material and shall have stainless steel hinge pins. All doors to have non-rising pins.
4. Furnish non-removable pins (NRP) at all exterior out-swing doors and interior key lock doors with reverse bevels.

B. Continuous Hinges:
1. Provide aluminum geared continuous hinges fabricated from 6063-T6 aluminum conforming to ANSI/BHMA A156.26, Grade 1.
2. Provide split nylon bearings at each hinge knuckle for quiet, smooth, self-lubricating operation.
3. Provide continuous hinges capable of supporting door weights up to 450 pounds, and successfully tested for 1,500,000 cycles.
4. Provide continuous hinges 1” shorter in length than nominal height of door, unless otherwise noted, with symmetrical hole pattern.
5. Install continuous hinges with fasteners supplied by manufacturer.

C. Heavy Duty Cylindrical Locks and Latches: Schlage "ND" Series as scheduled with "Rhodes" lever design.
1. Provide cylindrical locks conforming to ANSI/BHMA A156.2 Series 4000, Grade 1, and UL Listed for 3 hour fire doors.
2. Provide cylindrical locksets exceeding the ANSI/BHMA A156.2 Grade 1 performance standards for strength, security, and durability in the categories below:
   a. Abusive locked lever torque – minimum 3,100 inch-pounds without gaining access.
   b. Offset lever pull – minimum 1,600 foot pounds without gaining access.
   c. Vertical lever impact – minimum 100 impacts without gaining access.
   d. Cycle Test – tested to minimum 16 million cycles with no visible lever sag; without the use of performance aids such as set screws or spacers.
3. Cylinders: Refer to “KEYING” article, herein.
4. Provide locks with standard 2-3/4” backset, unless noted otherwise, with 1/2” latch throw. Provide proper latch throw for UL listing at pairs.
5. Provide locksets with separate solid steel anti-rotation thru-bolts, and no exposed screws.
6. Provide independently operating levers with two external return spring cassettes mounted under roses to prevent lever sag.
7. Provide standard ASA strikes unless extended lip strikes are necessary to protect trim.
8. Lever Trim: Solid cast levers without plastic inserts and wrought roses on both sides.
9. Provide levers with vandal resistant technology as scheduled for use at abusive applications.
10. Indicators: Where specified, provide visual lock status indicators built-into lockset rose escutcheon.

D. Door Closers:
1. Provide door closers conforming to ANSI/BHMA A156.4 Grade 1 requirements by BHMA certified independent testing laboratory. ISO 9000 certify closers. Stamp units with date of manufacture code.
2. Provide door closers with fully hydraulic, full rack and pinion action with cast aluminum cylinder.
3. Cylinder Body: 1-1/2” diameter with 5/8” diameter double heat-treated pinion journal.
4. Hydraulic Fluid: Fireproof, passing requirements of UL10C, and requiring no seasonal closer adjustment for temperatures ranging from 120° F to -30° F.

5. Spring Power: Continuously adjustable over full range of closer sizes, and providing reduced opening force as required by accessibility codes and standards.
6. Hydraulic Regulation: By tamper-proof, non-critical valves, with separate adjustment for latch speed, general speed, and backcheck.
7. Provide closers with solid forged steel main arms and factory assembled heavy-duty forged forearms for parallel arm closers.
8. Provide door closers powder coated to match balance of door hardware. Powder coating finish shall be certified to exceed 100 hours salt spray testing as described in ANSI/BHMA A156.4 and ASTM B117.
9. Provide corrosion resistant model (SS) where noted in hardware sets.
10. Provide special templates, drop plates, mounting brackets, or adapters for arms as required for details, overhead stops, and other door hardware items interfering with closer mounting.

E. Flush Bolts & Dust Proof Strikes:
1. Automatic flush bolts shall be of the low operating force design.
2. Provide top bolt only model for interior doors where applicable and as permitted by testing procedures.
3. Provide dust proof strikes at openings using bottom bolts.
4. Manual flush bolts shall only be permitted on storage or mechanical openings, as scheduled.

F. Door Stops:
1. Unless otherwise noted in hardware sets, provide wall or floor type with appropriate fasteners. Where neither wall or floor type can be used, provide overhead type.
2. Do not install floor stops more than four (4) inches from the face of the wall or partition (CBC Section 11B-307).
3. Provide backing plate at wall framing behind wall type.
4. 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. Stop-only function shall be provided at fire-rated openings.

G. Protection Plates:
1. Provide kick, mop, and/or armor plates minimum of 0.050” thick, with four beveled edges. Furnish with sheet metal or wood screws, finished to match plates.
2. Kick plates shall be sized 10" high and 2" less door width (LDW) at single doors and 10” high and 1” LDW at pairs or doors.
3. Provide mop and armor plates with sizes as scheduled in hardware sets.

H. Thresholds: As scheduled and per details.
1. Thresholds shall not exceed 1/2" in height, with a beveled surface of 1:2 maximum slope. Thresholds shall comply with CBC Section 11B-404.2.5.
2. Set thresholds in a full bed of butyl-rubber or polyisobutylene mastic sealant complying with requirements in Division 07 “Thermal and Moisture Protection”.
3. Use 1/4” fasteners, red-head flat-head sleeve anchors (SS/FHSL).

I. Seals: Provide silicone gasket at all rated and exterior doors.
1. Smoke & Draft Control Doors: Provide UL10C Classified gasketing that complies with NFPA 80 & NFPA 252 for use on “S” labeled Positive Pressure door assemblies.

J. Silencers: Furnish silencers for interior hollow metal frames, 3 for single doors, 2 for pairs of doors. Omit where gasketing seals occur, or at fire-resistive-rated door assemblies.

2.3 KEYING

A. Furnish a proprietary Schlage masterkey system as directed by the District to match existing building standard. Key system to be designated and combinated by the Schlage Master Key Department even if pinned by an Authorized Key Center, Authorized Security Center or a local authorized commercial dealer.

B. A detailed keying schedule is to be prepared by the District lock shop in consultation with a representative of Allegion or an Authorized Key Center or Authorized Security Center. Each keyed cylinder on every keyed lock is to be listed separately showing the door #, key group (in BHMA terminology), cylinder type, finish and location on the door.

C. Furnish all cylinders in the Schlage conventional style except the exit device and removable mullion cylinders which shall be supplied in Schlage Full Size Interchangeable Core (FSIC) style. Pack change keys independently (PKI). Verify Schlage keyway with the District lock shop.

D. Furnish construction keying for doors requiring locking during construction.

E. Furnish all keys with visual key control (VKC).
1. Stamp key “Do Not Duplicate”.
2. Stamp (BHMA) key symbol on key.
3. Stamp unique owner identifier from the key bow.

F. Furnish mechanical keys as follows:
1. Furnish 2 cut change keys for each different change key code.
2. Furnish 1 uncut key blank for each change key code.
3. Furnish 6 cut masterkeys for each different masterkey set.
4. Furnish 3 uncut key blanks for each masterkey set.
5. Furnish 2 cut control keys cut to the top masterkey for permanent I/C cylinders.
6. Furnish 1 cut control key cut to each SKD combination.

2.4 FINISHES

A. Generally to be oil rubbed bronze US10B (613 on brass/bronze and 640 on steel) unless otherwise noted.

B. Door closers shall be powder-coated to match other hardware, unless otherwise noted.

C. Aluminum items to be finished anodized aluminum except thresholds which can be furnished as standard mill finish.

2.5 FASTENERS

A. Screws for strikes, face plates 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

3.1 INSPECTION

A. Verify that doors and frames are square and plumb and ready to receive work and dimensions are as instructed by the manufacturer.

B. Beginning of installation means acceptance of existing conditions.

3.2 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 hardware shall be as recommended by DHI. Operating hardware shall be located between 34" and 44" above finish floor to comply with CBC Section 11B-404.2.7.

D. Door Closers:
1. Place closers on the inside of the building, stairwell, and non-public side of the room. Closers shall be installed to permit doors to swing 180 degrees or maximum allowable by conditions.
2. Opening force for pushing or pulling open a door shall be 5 lbs. maximum. At required fire doors, closers shall be adjusted to the minimum opening force allowable by the appropriate administrative authority, not to exceed 15 lbs. These forces do not apply to the force required to retract latch bolts or disengage other devices that hold the door in a closed position.
3. Compensating devices or automatic door operators may be utilized to meet the above standards.
4. Per CBC Section 11B-404.2.8.1, doors shall take minimum of 5 seconds to move from an open position of 90 degrees to 12 degrees to the latch jamb.

E. Set units level, plumb and true to line and location. Adjust and reinforce the attachment substrate as necessary for proper installation and operation.

F. Drill and countersink units that are not factory-prepared for anchorage fasteners. Space fasteners and anchors in accordance with industry standards.

G. Set thresholds for exterior doors in full bed of butyl-rubber sealant.

H. If hand of door is changed during construction, make necessary changes in hardware at no additional cost.

3.3 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, return to that work area 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.

3.4 HARDWARE LOCATIONS

A. Conform to CCR, Title 24, Part 2; and ADA Standards; and the drawings for access-compliant positioning requirements for the disabled.

3.5 FIELD QUALITY CONTROL

A. Contractor is responsible for providing the services of an Architectural Hardware Consultant (AHC) or a proprietary product technician to inspect installation and certify that hardware and its installation have been furnished and installed in accordance with manufacturers' instructions and as specified herein.

3.6 HARDWARE SCHEDULE

A. The items listed in the following schedule shall conform to the requirements of the foregoing specifications.

B. While the hardware schedule is intended to cover all doors, and other movable parts of the building, and establish type and standard of quality, the contractor is responsible for examining the Plans and Specifications and furnishing proper hardware for all openings whether listed or not. If there are any omissions in hardware groups in regard to regular doors they shall be called to the attention of the Architect prior to bid opening for instruction; otherwise, list will be considered Complete. No extras will be allowed for omissions.

C. The Door Schedule on the Drawings indicates which hardware set is used with each door.

MANUFACTURERS ABBREVIATIONS

GLY	=	Glynn-Johnson	Overhead Stops
IVE	=	Ives	Hinges, Push/Pull Plates, Lock Guards, Door Stops, Kick Plates & Silencers
NOR	=	Norton	Door Closers
SCH	=	Schlage Lock	Locks, Latches & Cylinders
VON	=	Von Duprin	Exit Devices
ZER	=	Zero International	Gasketing, Door Bottoms & Thresholds

HW GROUP NO. 01

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
3	EA	HINGE	5BB1HW 4.5 X 4.5 NRP	630	IVE
1	EA	VANDL CLASSROOM SECURITY LOCK	ND98P6D RHO	626	SCH
1	EA	LOCK GUARD	LG12	630	IVE
1	EA	SURFACE CLOSER	CPS7500	689	NOR
1	EA	GASKETING	488SBR PSA	BR	ZER
1	EA	DOOR SWEEP	39A	A	ZER
1	EA	THRESHOLD	548A	A	ZER

HW GROUP NO. 02

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
3	EA	HINGE	5BB1 4.5 X 4.5	640	IVE
1	EA	ENTRANCE/OFFICE LOCK	ND50P6D RHO	613	SCH
1	EA	WALL STOP	WS401/402CCV	613	IVE
1	EA	GASKETING	488SBR PSA	BR	ZER

HW GROUP NO. 03

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
3	EA	HINGE	5BB1 4.5 X 4.5	640	IVE
1	EA	PRIVACY LOCK W/ INDICATOR	ND40S RHO OS-OCC	613	SCH
1	EA	WALL STOP	WS401/402CCV	613	IVE
1	EA	GASKETING	488SBR PSA	BR	ZER

HW GROUP NO. 04

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
3	EA	HINGE	5BB1 4.5 X 4.5	640	IVE
1	EA	PUSH PLATE	8200 4" X 16"	613	IVE
1	EA	PULL PLATE	8302 10" 4" X 16"	613	IVE
1	EA	SURFACE CLOSER	7500	695	NOR
1	EA	KICK PLATE	8400 10" X 2" LDW B-CS	613	IVE
1	EA	WALL STOP	WS401/402CCV	613	IVE
1	EA	THRESHOLD	544A	A	ZER
3	EA	SILENCER	SR65/SR66	GRY	IVE

HW GROUP NO. 05

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
3	EA	HINGE	5BB1 4.5 X 4.5	640	IVE
1	EA	STOREROOM LOCK	ND80P6D RHO	613	SCH
1	EA	WALL STOP	WS401/402CCV	613	IVE
1	EA	THRESHOLD	544A	A	ZER
3	EA	SILENCER	SR65/SR66	GRY	IVE

HW GROUP NO. 06

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
3	EA	HINGE	5BB1 4.5 X 4.5	640	IVE
1	EA	STOREROOM LOCK	ND80P6D RHO	613	SCH
1	EA	OVERHEAD STOP	450S	695	GLY
1	EA	THRESHOLD	544A	A	ZER
3	EA	SILENCER	SR65/SR66	GRY	IVE

END OF SECTION

SECTION 08 8100 - GLASS GLAZING

PART 1 - GENERAL

1.1 SUMMARY

A. Provide glazing and glazing accessories where shown on the Drawings, as specified herein, and as needed for a complete and proper installation.

B. Related Sections:
1. Documents affecting work of this Section include, but are not necessarily limited to, General Conditions, Supplementary Conditions, and Sections in Division l of these Specifications.
2. Section 07 9210: Sealants and caulking.
3. Section 08 1400: Glazing for vision panels in wood doors is specified in this Section.
4. Section 08 5120: Glazing for steel windows is specified in this Section.
5. Section 08 8300: Mirror glass.
6. Section 09 9100: Field painting of metal panels.

1.2 SUBMITTALS

A. General: Submit in accordance with Section 01 3300.
1. Product Data: Submit manufacturer's descriptive literature and product specifications for each product. Include data to indicate compliance with the specified requirements.
2. Installation Procedures: Submit manufacturer's recommended installation.
3. Samples: Submit 2 samples, 4" x 4" in size, of each type of glass and gasket proposed for use.

B. Contract Closeout Submittals: Comply with requirements of Section 01 7700.
1. Manufacturer's recommended cleaning procedures for each type of glazing panel.

1.3 QUALITY ASSURANCE

A. In addition to complying with pertinent codes and regulations of governmental agencies having jurisdiction, comply with pertinent recommendations contained in:
1. Flat Glass Marketing Association:
a. "Glazing Sealing Systems Manual";
b. "Glazing Manual".

B. Identification of Safety Glazing:
1. Identify each light of safety glass material installed in hazardous locations as defined in CBC 2406.3 by a label that complies with CBC 2403.1 and which will specify the labeler, whether manufacturer or installer, and state that safety glazing material has been utilized in such installations.
2. The label shall be legible and visible from the inside of the building after installation and shall be acid etched, sand blasted, ceramic fired laser etched, or embossed.

C. Provide tinted or coated glazing panels by one and the same manufacturer.

1.4 DELIVERY, STORAGE, AND HANDLING

A. Comply with pertinent provisions of Section 01 6600.

B. During storage and handling of glass, provide cushions at edges to prevent impact damage.

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1.5 SPECIAL WARRANTY

A. In addition to the warranty requirements of the Contract Documents, submit 2 original copies of glazing manufacturer's written warranty, countersigned by the glazing subcontractor and the Contractor, covering warranties listed below and including removal of the failed or deteriorated glazing, furnishing the matching replacement glazing, and properly installing the matching replacement glazing.

1. Coated Single Pane Glass: Warranty glass for **10 years** against coating deterioration.
2. Sealed Insulating Glass Units: Warranty units for **5 years** against seal failure, interpane dusting or misting.
3. Laminated Glass: Warranty glass for **5 years** against failure of lamination. Failure of lamination shall include, but shall not be limited to, evidence of delamination, loss of transparancy, change in color, change in light transmittance, deterioration of concealed glass coating or plastic sheet coating if provided, loss of acoustic rating, and other forms of deterioration due to defective materials or workmanship.

PART 2 - PRODUCTS

2.1 MATERIALS, GENERAL

A. Products specified are for establishing the type, design, and quality required. Products of equal or better type, design, and quality produced by other manufacturers will be considered provided the request for substitution is submitted in accordance with Section 01 2500.

2.2 GLASS

A. General:
1. For all glass, provide the type and thickness shown on the Drawings or specified herein.
2. Where type or thickness, or both, are not shown on the Drawings or specified herein, provide type and thickness directed by the Architect.

B. Primary Glass:
1. Provide primary glass complying with ASTM C1036.
2. Clear Float Glass: Type I, class 1 (transparent), quality q3 (glazing select).
3. Tinted Float Glass: Type I, class 2 (heat absorbing and light reducing), quality q3 (glazing select), of tint as indicated or specified.

C. Tempered Glass: Grade B (fully tempered), style I (uncoated surfaces), type I (float), class 1 (transparent), quality q3 (glazing select). All tempered glass is to be safety glass and meet human impact loads indicated below.
1. Tints: Tints as indicated or specified.
2. Sizes and Cutting:
   a. Prior to tempering, cut glass to required sizes as determined by accurate measurements of the openings to be glazed, making allowances for required edge clearances.
   b. Cut and process edges in accordance with the glass manufacturer's recommendations.
   c. Do not cut or treat edges in the field.

D. Human Impact Loads: Individual glazed areas, including glass mirrors, in hazardous locations as defined by CBC Section 2406.4 shall comply with CBC Sections 2406.1 through 2406.5.

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2.3 OTHER MATERIALS

A. Provide other materials, including but not limited to shims, setting blocks, glazing tape, etc., not specifically described but required for a complete and proper installation, as recommended by the manufacturer.

2.4 EXTERIOR GLAZING ASSEMBLIES

A. Air and Vapor Seals: Provide completed assemblies that maintain continuity of building enclosure air barrier:
   1. In conjunction with joint sealer materials described in other sections.
   2. To utilize the inner pane of multiple pane sealed units for the continuity of the air barrier seal.
   3. To maintain a continuous air barrier throughout the glazed assembly from glass pane to heel bead of glazing sealant.

2.5 GLAZING PANEL TYPES

A. **Type A:** 1/4" thick, clear, fully tempered glass.

B. **Type B:** 1" thick tinted insulating glass unit; fully tempered.
   1. Outdoor Lite: 1/4" fully tempered glass with Graylite II tint with PPG Solarban 60 Low-E coating inside facing surface.
   2. Air Space: 1/2" air space filled with gas (90% Argon, 10% air).
   3. Indoor Lite: 1/4" clear fully tempered glass.
   4. NFRC U-Value: 0.24 BTU/hr ft^2 ^oF (winter nighttime).
   5. Solar Heat Gain Coefficient: 0.13.
   6. Light to Solar Gain: 0.46.
   7. Durability: Certified by an independent testing agency to comply with ASTM E2190.
   8. Edge Spacers: Aluminum, bent and soldered corners; color as selected by Architect.
   9. Edge Seal: Glass to elastomer with supplementary silicone sealant.
   10. Purge interpane space with dry hermetic air.

PART 3 - EXECUTION

3.1 SURFACE CONDITIONS

A. Examine the areas and conditions under which work of this Section will be performed. Correct conditions detrimental to timely and proper completion of the Work. Do not proceed until unsatisfactory conditions are corrected.

B. Clean glazing channels, stops, and rabbets to receive the glazing materials, making free from obstructions and deleterious substances which might impair the work.
   1. Remove protective coatings which might fail in adhesion or interfere with bond of sealants.
   2. Comply with manufacturers' instructions for final wiping of surfaces immediately prior to application of primer and glazing compounds or tapes.
   3. Prime surfaces to receive glazing compounds in accordance with manufacturers' recommendations.

3.2 INSTALLATION

A. Inspect each piece of glass immediately prior to start of installation.
   1. Do not install items which are improperly sized, have damaged edges, or are scratched, abraded, or damaged in any other manner.
   2. Do not remove labels from glass until so directed by the Architect.
   3. Install glass so distortion waves, if present, run in the horizontal direction.

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B. Locate setting blocks at sills one quarter of the width of the glass in from each end of the glass, unless otherwise recommended by the glass manufacturer.
   1. Use blocks of proper size to support the glass in accordance with the manufacturer's recommendations.
   2. Provide spacers for all glass sizes larger than 50 united inches, to separate glass from stops; except where continuous glazing gaskets or felts are provided.
      a. Locate spacers no more than 24" apart, and no closer than 12" to a corner.
      b. Place spacers opposite one another.
      c. Make bite of spacer on glass 1/4" or more.

C. Set glass in a manner which produces the greatest possible degree of uniformity in appearance.

D. Do not use two different glazing materials in the same joint system unless the joint use is approved by the Architect.

E. Mask, or otherwise protect, surfaces adjacent to installation of sealants. Provide black continuous caulking sealant bead at all glass to metal frame joints, over exposed edge of tape, interior and exterior.

F. Miter-cut and seal the joints of glazing gaskets in accordance with the manufacturer's recommendations, to provide watertight and airtight seal at corners and other locations where joints are required.

3.3 PROTECTION

A. Protect glass from breakage after installation by promptly installing streamers or ribbons, suitably attached to the framing and held free from glass. Do not apply warning markings, streamers, ribbons, or other items directly to the glass except as specifically directed by the Architect.

3.4 CLEAN-UP

A. Clean glass thoroughly prior to final acceptance. Take special care not to remove materials which may scratch glass. **Scratched glass will be rejected and replaced prior to acceptance.**

END OF SECTION 08 8100

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SECTION 08 8300 - MIRRORS

PART 1 - GENERAL

1.1 SUMMARY

A. Provide glass mirrors and related accessories where shown on the Drawings, as specified herein, and as needed for a complete and proper installation.

B. Related Sections:
1. Documents affecting work of this Section include, but are not necessarily limited to, General Conditions, Supplementary Conditions, and Sections in Division l of these Specifications.
2. Section 08 8100: Glass glazing.
3. Section 10 2810: Toilet accessories.

1.2 SUBMITTALS

A. General: Submit in accordance with Section 01 3300.
1. Product Data: Submit manufacturer's descriptive literature and product specifications for each product. Include data to indicate compliance with the specified requirements.
2. Installation Procedures: Submit manufacturer's recommended installation.
3. Samples: Submit 2 samples, 4" x 4" in size, of each type of mirror proposed for use.

B. Contract Closeout Submittals: Comply with requirements of Section 01 7700.
1. Manufacturer's recommended cleaning procedures for each type of mirror.

1.3 QUALITY ASSURANCE

A. In addition to complying with pertinent codes and regulations of governmental agencies having jurisdiction, comply with pertinent recommendations contained in:
1. ANSI Z97.1 - American National Standard for Safety Glazing Materials Used in Buildings, Safety Performance Specifications and Methods of Test; 2014.
2. ASTM C1503 - Standard Specification for Silvered Flat Glass Mirror.
3. GANA - Mirrors Handle with Extreme Care.

1.4 DELIVERY, STORAGE, AND HANDLING

A. Comply with pertinent provisions of Section 01 6600.

B. During storage and handling of mirrors, provide cushions at edges to prevent impact damage.

A. Fabricate, store, transport, receive, install, and clean mirrors in accordance with recommendations of GANA "Mirrors Handle with Extreme Care: Tips For the Professional on the Care and Handling of Mirrors."

1.5 SPECIAL WARRANTY

A. In addition to the warranty requirements of the Contract Documents, submit 2 original copies of glazing manufacturer's written warranty, countersigned by the glazing subcontractor and the Contractor, covering warranties listed below and including removal of the deteriorated glazing, furnishing the matching replacement glazing, and properly installing the matching replacement glazing.

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1. Mirror Glass: Warranty mirror glass for **5 years** against silver spoilage, delamination, or deterioration in any manner.

PART 2 - PRODUCTS

2.1 MATERIALS, GENERAL

A. Products specified are for establishing the type, design, and quality required. Products of equal or better type, design, and quality produced by other manufacturers will be considered provided the request for substitution is submitted in accordance with Section 01 2500.

2.2 MIRROR MATERIALS

A. General: Select materials and/or provide supports as required to limit mirrored glass deflection to 1/200 or flexure limit of glass with full recovery of glazing materials, whichever is less.

B. Mirror Glass: Clear vinyl safety coated (category II) with copper and silver coating, 8 mm thick minimum.
1. Sizes noted on Drawings.
2. Color: Clear.
3. Edge Configuration:
a. Ground and polished perimeter edges.
b. Ground meeting edges for tight and seamless butt joint between mirrors that are butted together.

2.3 GLAZING ACCESSORIES

A. Glazing Clips: Manufacturer's standard type.

B. Mirror Attachment Accessories: Stainless steel bottom J-channel with matching top clips.

C. Mirror Adhesive: Chemically compatible with mirror coating and wall substrate.

PART 3 - EXECUTION

3.1 SURFACE CONDITIONS

A. Examine the areas and conditions under which work of this Section will be performed. Correct conditions detrimental to timely and proper completion of the Work. Do not proceed until unsatisfactory conditions are corrected.

3.2 INSTALLATION

A. Install mirrors in accordance with GANA recommendations.

B. Set mirrors plumb and level, free of optical distortion.

C. Set mirrors with edge clearance free of surrounding construction including countertops or backsplashes.

D. Frameless Mirrors: Set mirrors with clips. Anchor rigidly to wall construction.

3.3 CLEANING

A. Remove labels after work is complete.

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B. Clean mirrors and adjacent surfaces.

3.4 PROTECTION

A. After installation, mark pane with an 'X' by using removable plastic tape or paste.

END OF SECTION 08 8300

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SECTION 09 0175 - PREPARATION OF EXISTING SURFACES FOR PAINTING AND WALLCOVERING

PART 1 - GENERAL

1.1 SUMMARY

A. Clean, repair, and prepare existing surfaces scheduled for painting or wallcovering as specified below, as indicated on the Drawings, and as required by the finish material manufacturer.

B. Related Sections
1. Documents affecting work of this Section include, but are not necessarily limited to, General Conditions, Supplementary Conditions, and Sections in Division l of these Specifications.
2 Section 09 7200: Wall covering.
3 Section 09 9100: Painting.

1.2 SUBMITTALS

A. General: Submit in accordance with Section 01 3300.
1. Product Data: Submit manufacturer's descriptive literature and product specifications for each product. Include data to indicate compliance with the specified requirements.
2. Installation Procedures: Submit manufacturer's recommended installation procedures which, when approved by the Architect, will become the basis for accepting or rejecting actual installation procedures used on the Work.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Provide materials, not specifically described but required for a complete and proper installation, as selected by the Contractor subject to the approval of the Architect.

PART 3 - EXECUTION

3.1 SURFACE CONDITIONS

A. Examine the areas and conditions under which work of this Section will be performed. Correct conditions detrimental to timely and proper completion of the Work. Do not proceed until unsatisfactory conditions are corrected.

3.2 GENERAL REQUIREMENTS

A. Perform cleaning, repair, and preparation procedures in strict accordance with the finish material manufacturers' recommendations.

B. Remove removable items which are in place and are not scheduled to receive paint or which must be removed to be painted. Following completion of painting in each space or area, reinstall the removed items by using workmen who are skilled in the necessary trades.

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3.3 CLEANING

A. General Cleaning:
1. Clean each surface to be painted prior to applying paint or surface treatment.
2. Remove dirt and other foreign substances. Remove oil and grease with clean cloths and cleaning solvent of low toxicity and flash point in excess of 200 degrees F, prior to start of mechanical cleaning.
3. Schedule the cleaning so that dust and other contaminants from the cleaning process will not fall onto wet newly painted surfaces.

B. Exterior Cleaning and Pretreatment:
1. Clean all exterior surfaces thoroughly with an approved cleaner and water blasting equipment.
2. After water blasting, completely kill and remove mildew accumulation with a mildew stain remover such as X-14 by White Laboratories, or approved equal.

3.4 PREPARATION OF EXISTING SURFACES

A. Previously Painted Surfaces:
1. Prepare all existing surfaces for proper bond between new paint and existing surface, as recommended by the paint manufacturer.
2. Remove all blistered, peeling and scaling paint to a sound substrate and sand to produce a smooth transition from substrate to existing paint.
3. **Feather edge sand where existing finishes have been removed and the immediate adjacent area has sharp or raised edges.** Sand smooth all chips or runs (highs and lows) so that surface transitions are not visible from a distance of 5'-0".
4. Remove heavy chalk.
5. Sand all glossy areas and dust clean.
6. Clean and spot prime bare and repaired areas. Spot prime with manufacturer's recommended "stain killer" all marks which may bleed through surface finishes.
7. Remove invisible residue on protected areas such as eaves and ceilings using soap and water.
8. Seal all joints.

B. Gypsum Board:
1. Sand all joint compound surfaces smooth and flush with surface with fine grit sand paper.
2. Fill nicks, scratches, holes, and uneven spots with spackling compound and after dry, sand flush with surface.
3. Remove all sanding dust.
4. Where removal of existing wall coverings or other finishes damages the gypsum board substrate, repair damage by filling or floating surfaces to provide acceptable surface for new finishes.

C. Masonry and Cement Plaster:
1. Allow patched areas to dry at least 30 days prior to cleaning in preparation for painting.
2. Patch holes and cracks flush with surface.
3. Remove all loose plaster down to a solid surface. Coat all broken, cracked, damaged or areas where plaster has been removed with Weld-Crete by LARSEN PRODUCTS CORP. or approved equal, apply a cement plaster finish coat consisting of 1 part plastic cement to 3 parts sand to match the existing finish. "V" out, fill, and finish flush all cracks and texture to match adjoining surface.
4. Remove glaze, efflorescence, laitance, surface deposits, and other foreign matter.

D. Wood, Painted Finish:
1. Set all finish nails. Patch and fill all holes and surface imperfections.
2. Remove surface deposits of sap and pitch by scraping and cleaning with mineral spirits.
5. Fill cracks, holes, and scratches with suitable wood filler or spackling compound. When dry, sand flush

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with surface.

E. Wood, Stained Finish:
   1. Remove existing hardware, catalog, and store for reuse.
   2. Sand existing surfaces to remove existing finishes and prepare for new finishes.
   3. Sand smooth all wood surfaces exposed to view, using the proper sandpaper and remove dust. Where so required, use varying degrees of coarseness in sandpaper to produce a uniformly smooth and unmarred wood surface.

F. Metal:
   1. Thoroughly clean surfaces until free from dirt, oil, and grease. Remove all mill scale, rust formation, etc.
   2. On galvanized surfaces, use solvent for the initial cleaning, and then treat the surface thoroughly with phosphoric acid etch. Remove etching solution completely before proceeding.
   3. Allow to dry thoroughly before application of paint.

G. Concrete:
   1. Thoroughly clean surfaces.
   2. Fill cracks and void using approved methods.
   3. Fill all holes and cracks with an approved patching compound for the size of patch required. Provide Star Stucco patching compound or approved equal.
   4. Allow patched areas to dry at least 30 days prior to cleaning in preparation for painting.
   5. Prior to painting, the material shall be dry to the extent that a proper, long lasting, and non-blistering bond will be assured. Should the dryness of the substrate be in question, test the substrate in the presence of the paint manufacturer's representative. Do not paint substrate in question until dryness condition improves to meet the paint manufacturer's requirements.

H. Glazing Compounds: Remove all loose and deteriorated glazing compounds and repair with an approved glazing compound prior to painting.

END OF SECTION 09 0175

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SECTION 09 0560 - COMMON WORK RESULTS FOR FLOORING PREPARATION

PART 1 - GENERAL

1.1 SUMMARY

A. Provide floor preparation and moisture testing as specified herein and as needed for a complete and proper flooring installation. This section applies to all floors identified in the contract documents as to receive the following types of floor coverings:
   1. Broadloom carpet.

B. This Section includes:
   1. Preparation of new and existing concrete floor slabs for installation of floor coverings.
   2. Testing of concrete floor slabs for moisture and pH.
   3. Remediation of concrete floor slabs due to unsatisfactory moisture or pH conditions.
      a. Contractor shall perform all specified remediation of concrete floor slabs. If such remediation is indicated by testing agency's report and is due to a condition not under Contractor's control or could not have been predicted by examination prior to entering into the contract, a contract modification will be issued.

C. The Owner’s independent testing shall conduct the following tests:
   1. Vapor Emissions Testing.
   2. Relative Humidity Testing.
   3. Ph (Alkalinity) Testing.

D. Related Sections:
   1. Documents affecting work of this Section include, but are not necessarily limited to, General Conditions, Supplementary Conditions, and Sections in Division 1 of these Specifications.
   2. Section 01 2100: Cash allowances.
   3. Section 03 3300: Cast-in-place concrete floor slabs.
   4. Section 09 6110: Moisture control treatment for flooring (cash allowance).
   5. Section 09 6800: Carpeting.

1.3 CASH ALLOWANCE

A. Refer to Section 01 2100 for cash allowance requirements related to moisture control for flooring.

1.4 REFERENCES

A. All work shall be performed in accordance with the Drawings and Specifications, and with the following standards:
   1. ASTM C109 - Standard Test Method for Compressive Strength of Hydraulic Cement Mortars (Using 2-in. Cube Specimens); 2008.
   2. ASTM F710 - Standard Practice for Preparing Concrete Floors to Receive Resilient Flooring; 2008.
   3. ASTM F1869 - Standard Test Method for Measuring Moisture Vapor Emission Rate of Concrete Subfloor Using Anhydrous Calcium Chloride; 2010.
   4. ASTM F2170 - Standard Test Method for Determining Relative Humidity in Concrete Floor Slabs Using in situ Probes; 2009.
   5. RFCI (RWP) - Recommended Work Practices for Removal of Resilient Floor Coverings; Resilient Floor Covering Institute; May 2011.

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1.5 ADMINISTRATIVE REQUIREMENTS

A. Coordinate scheduling of cleaning and testing, so that preliminary cleaning has been completed for at least 24 hours prior to testing.

1.6 SUBMITTALS

A. Visual Observation Report: For existing floor coverings to be removed.

B. Floor Covering and Adhesive Manufacturers' Product Literature: For each specific combination of substrate, floor covering, and adhesive to be used; showing:
   1. Moisture and pH limits and test methods.
   2. Manufacturer's required bond/compatibility test procedure.

C. Testing Agency's Report: Include:
   1. Description of areas tested; include floor plans and photographs if helpful.
   2. Summary of conditions encountered.
   3. Moisture and pH test reports.
   4. Copies of specified test methods.
   5. Recommendations for remediation of unsatisfactory surfaces.
   6. Submit report to Architect.
   7. Submit report not more than two business days after conclusion of testing.

D. Adhesive Bond and Compatibility Test Report.

E. Copy of RFCI Recommended Work Practices for Removal of Resilient Floor Coverings.

1.7 QUALITY ASSURANCE

A. Moisture and pH testing will be performed by an independent testing agency employed and paid by Owner.

B. Contractor may perform adhesive and bond test with his own personnel or hire a testing agency.

C. Contractor's Responsibility Relating to Independent Agency Testing:
   1. Provide access for and cooperate with testing agency.
   2. Confirm date of start of testing at least 10 days prior to actual start.
   3. Allow at least 4 business days on site for testing agency activities.
   4. Achieve and maintain specified ambient conditions.
   5. Notify Architect when specified ambient conditions have been achieved and when testing will start.

1.8 FIELD CONDITIONS

A. Maintain ambient temperature in spaces where concrete testing is being performed, and for at least 48 hours prior to testing, at not less than 65 degrees F or more than 85 degrees F.

B. Maintain relative humidity in spaces where concrete testing is being performed, and for at least 48 hours prior to testing, at not less than 40 percent and not more than 60 percent.

PART 2 - PRODUCTS

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2.1 MATERIALS

A. Patching Compound: Floor covering manufacturer's recommended product, suitable for conditions, and compatible with adhesive and floor covering. In the absence of any recommendation from flooring manufacturer, provide a product with the following characteristics:
   1. Cementitious moisture-, mildew-, and alkali-resistant compound, compatible with floor, floor covering, and floor covering adhesive, and capable of being feathered to nothing at edges.
   2. Latex or polyvinyl acetate additions are permitted; gypsum content is prohibited.
   3. Compressive Strength: 3000 psi, minimum, after 28 days, when tested in accordance with ASTM C109/C109M or ASTM C472, whichever is appropriate.

B. Remedial Floor Coating: Coating intended by its manufacturer to resist water vapor transmission to degree sufficient to meet flooring manufacturer's emission limits, resistant to the level of pH found, and suitable for adhesion of flooring without further treatment or with only the addition of a skim coat of patching compound or adhesive, as specified in Section 09 6110.

PART 3 - EXECUTION

3.1 ORDER OF OPERATIONS

A. Perform following operations in the order indicated:
   1. Existing concrete slabs (on-grade and elevated) with existing floor coverings:
      a. Visual observation of existing floor covering, for adhesion, water damage, alkaline deposits, and other defects.
      b. Removal of existing floor covering.
   2. Existing concrete slabs with coatings or penetrating sealers/hardeners/dustproofers:
      a. Do not attempt to remove coating or penetrating material.
      b. Do not abrade surface.
   3. Preliminary cleaning.
   4. Moisture vapor emission tests.
   5. Internal relative humidity tests; in same locations as moisture vapor emission tests, unless otherwise indicated.
   6. pH tests; in same locations as moisture vapor emission tests, unless otherwise indicated.
   7. Specified remediation, if required.
   8. Patching, smoothing, and leveling, as required.
   9. Other preparation specified.
   10. Adhesive bond and compatibility test.
   11. Protection.

B. Remediations:
   1. Active Water Leaks or Continuing Moisture Migration to Surface of Slab: Correct this condition before doing any other remediation; re-test after correction.
   2. Excessive Moisture Emission or Relative Humidity: If an adhesive that is resistant to the level of moisture present is available and acceptable to flooring manufacturer, use that adhesive for installation of the flooring; if not, apply remedial floor coating over entire suspect floor area.
   3. Excessive pH: If remedial floor coating is necessary to address excessive moisture, no additional remediation is required; if not, if an adhesive that is resistant to the level present is available and acceptable to the flooring manufacturer, use that adhesive for installation of the flooring; otherwise, apply a skim coat of specified patching compound over entire suspect floor area.

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3.3 PRELIMINARY CLEANING

A. Clean floors of dust, solvents, paint, wax, oil, grease, asphalt, residual adhesive, adhesive removers, film-forming curing compounds, sealing compounds, alkaline salts, excessive laitance, mold, mildew, and other materials that might prevent adhesive bond.

B. Do not use solvents or other chemicals for cleaning.

3.4 MOISTURE VAPOR EMISSION TESTING

A. Where the floor covering manufacturer's requirements conflict with either the referenced test method or this specification, comply with the manufacturer's requirements.

B. Where this specification conflicts with the referenced test method, comply with the requirements of this section.

C. Test in accordance with ASTM F1869 and as follows:
   1. Place 3 tests in the first 1000 square feet and one test in each additional 1000 square feet, unless otherwise indicated or required by flooring manufacturer.

D. Plastic sheet test and mat bond test may not be substituted for the specified ASTM test method, as those methods do not quantify the moisture content sufficiently.

E. In the event that test values exceed floor covering manufacturer's limits, perform remediation as indicated. In the absence of manufacturer limits, perform remediation if test values exceed 3 pounds per 1000 square feet per 24 hours.

F. Report: Report the information required by the test method.

3.5 INTERNAL RELATIVE HUMIDITY TESTING

A. Where the floor covering manufacturer's requirements conflict with either the referenced test method or this specification, comply with the manufacturer's requirements.

B. Where this specification conflicts with the referenced test method, comply with the requirements of this section.

C. Test in accordance with ASTM F2170 Procedure A and as follows.

D. Testing with electrical impedance or resistance apparatus may not be substituted for the specified ASTM test method, as the values determined are not comparable to the ASTM test values and do not quantify the moisture content sufficiently.

E. In the event that test values exceed floor covering manufacturer's limits, perform remediation as indicated. In the absence of manufacturer limits, perform remediation if any test value exceeds 75 percent relative humidity.

F. Report: Report the information required by the test method.

3.6 pH TESTING

A. Where the floor covering manufacturer's requirements conflict with either the referenced test method or this specification, comply with the manufacturer's requirements. This procedure is the equivalent of that described in ASTM F710, repeated here for the Contractor's convenience.
   1. Use a wide range pH paper, its associated chart, and distilled or deionized water.

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2. Place several drops of water on a clean surface of concrete, forming a puddle approximately 1 inch in diameter. Allow the puddle to set for approximately 60 seconds, then dip the pH paper into the water, remove it, and compare immediately to chart to determine pH reading.
3. In the event that test values exceed floor covering manufacturer's limits, perform remediation as indicated. In the absence of manufacturer limits, perform remediation if any test value is over 10.

3.7 PREPARATION

A. See individual floor covering section(s) for additional requirements.

B. Comply with requirements and recommendations of floor covering manufacturer.

C. Concrete Subfloors:
1. Verify that substrate is smooth, level, at required finish elevation, and without more than 1/8" in 10'-0" variation from level or slopes shown on the Drawings.
2. Clean cracks, control joints, and other non-moving joints.
3. Broom clean or vacuum the surfaces to be covered, and inspect the subfloors.
3. Fill and smooth surface cracks, grooves, depressions, control joints and other non-moving joints, and other irregularities with patching compound.
4. Seal patching compound with sealer recommended by the manufacturer and compatible with the flooring products specified.
5. Do not fill expansion joints, isolation joints, or other moving joints.
6. Prohibit traffic until patching compound is cured and sealed.

3.8 ADHESIVE BOND AND COMPATIBILITY TESTING

A. Comply with requirements and recommendations of floor covering manufacturer.

3.9 APPLICATION OF REMEDIAL FLOOR COATING

A. Comply with requirements and recommendations of coating manufacturer.

3.10 PROTECTION

A. Cover prepared floors with building paper or other durable covering.

END OF SECTION 09 0560

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SECTION 09 2210 - NON-STRUCTURAL METAL FRAMING

PART 1 - GENERAL

1.1 SUMMARY

A. Provide interior non-load bearing metal framing and accessories where shown on the Drawings, as specified herein, and as needed for a complete and proper installation.

B. Related Sections:
1. Documents affecting work of this Section include, but are not necessarily limited to, General Conditions, Supplementary Conditions, and Sections in Division 1 of these Specifications.
2. Section 05 4000: Structural load bearing metal stud framing and exterior wall stud framing.
3. Section 05 5000: Metal fabrications attached to stud framing.
4. Section 06 1100: Wood blocking within stud framing.
5. Section 06 1640: Gypsum wall sheathing.
6. Section 07 2100: Acoustic insulation.
7. Section 07 2500: Weather barriers.
8. Section 09 2400: Portland cement plaster.
9. Section 09 2900: Gypsum board.

1.2 SUBMITTALS

A. General: Submit in accordance with Section 01 3300.
1. Product Data: Submit manufacturer's descriptive literature and product specifications for each product. Include data to indicate compliance with the specified requirements.
a. Provide data describing framing member materials and finish, product criteria, load charts, limitations.
b. Provide manufacturer's data on partition head to structure connectors, showing compliance with requirements.
2. Shop Drawings: Submit drawings indicating prefabricated work, component details, stud layout, framed openings, anchorage to structure, acoustic details, type and location of fasteners, accessories, items of other related work. Describe method for securing studs to tracks, splicing, and for blocking and reinforcement of framing connections.
3. Installation Procedures: Submit manufacturer's recommended installation procedures.

1.3 REFERENCES

A. All work shall be performed in accordance with the Drawings and Specifications, and with the following standards:
1. AISI S220, North American Standard for Cold-Formed Steel Framing – Nonstructural Members.
2. ASTM C645 - Standard Specification for Nonstructural Steel Framing Members.
3. ASTM C754 - Standard Specification for Installation of Steel Framing Members to Receive Screw-Attached Gypsum Panel Products.
4. 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.
5. ASTM E90 - Standard Test Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions and Elements; 2004.
6. SSPC-Paint 20 - Zinc-Rich Primers (Type I, "Inorganic," and Type II, "Organic"); Society for Protective Coatings.

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1.4 PROJECT CONDITIONS

A. Coordinate the placement of components to be installed within stud framing system.

PART 2 - PRODUCTS

2.1 FRAMING MATERIALS

A. Non-Loadbearing Framing System Components:
   1. Material: Cold-formed sheet steel, 33,000 psi minimum yield strength; ASTM C645 and C754.
   2. Finish: Zinc-coated; ASTM A653-G40 minimum.
   3. Size and Properties: Comply with ASTM C754 for the spacing indicated, with maximum deflection of wall framing of L/240 at 5 psf.

B. Studs: C-shaped with flat or formed webs with knurled faces, size as indicated on the Drawings, 1-1/4" flange width, 24 gage (0.0179 in.) minimum steel thickness.

C. Runners: U-shaped, sized to match studs, 1" flange width, minimum steel thickness to match studs.

D. Main Runner Channels: C-shaped, 1-1/2" high, 1/2" flange width, 0.414 lb/ft minimum, 16 gage (0.0566 in.) minimum steel thickness.

E. Furring Channels:
   1. Hat-shaped with 2 equal legs and flanges, size as indicated on the drawings, 24 gage (0.0179 in.) minimum steel thickness.
   2. Z-shaped, slotted or unslotted web, face flange of 1-1/4", wall attachment flange of 7/8", 24 gage (0.0179 in.) minimum steel thickness, depth required to fit insulation thickness indicated.

F. Bridging:
   1. Bridging Channel: C-shaped, 1-1/2" high, 1/2" flange width, 16 gage (0.0566 in.) minimum steel thickness.
   2. Bridging Clips: 2" by 2" by 16 gage (0.0566 in.) clip angle.

G. Resilient Channels: Single-leg type with screw flange, punched leg, and top flange, 1/2" high, 24 gage (0.0179 in.) minimum steel thickness.

H. Wire: Galvanized soft-annealed steel wire; ASTM A641.
   1. Hanger Wires: 8 gage (0.1620 in.) minimum steel thickness.
   2. Bracing Wires: 12 gage (0.1055 in.) minimum steel thickness.
   3. Tie Wires: 16 gage (0.0625 in.) minimum steel thickness.

I. Vertical Deflection Connection: VertiClip or VertiTrack by The Steel Network Inc., Shadowline by Fire Trak Corp., Slotted Slip Track by Metal-Lite, FAS Track by Cemco, or equal conforming to the following material properties and performance criteria:
   1. Code Criteria: Meet required head of wall connection criteria as required by CBC and as indicated in UL2079 for cyclic wall movement.
   2. Material Composition: ASTM A653, SS grade 50, class 1, 50-ksi minimum yield strength, 65-ksi minimum tensile strength, G-60 hot dipped galvanized coating.
   3. Material Thickness: 20 gage (0.0346 in.) minimum.
   4. Clips shall be designed for positive attachment to structure and stud web using step-bushing technology to provide frictionless vertical movement.
   5. Provide clips with attached bushing and screw of the series, size, and configuration as recommended by

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manufacturer.

6. Top track devices pre-assembled to top track assembly in standard· 12-foot lengths, with dips installed at spacing to coincide with stud spacing indicated on the Drawings may be used at Contractor's option.
7. Friction-fit deep-leg track assemblies and tracks relying on steel flexure to perform are unacceptable.

J. Fasteners: ASTM C1002 self-piercing tapping screws.

K. Sheet Metal Backing: 20 gage (0.0346 in.) minimum steel thickness.

L. Anchorage Devices: Power actuated.

2.2 OTHER MATERIALS

A. Touch-Up Primer for Galvanized Surfaces: SSPC-Paint 20, Type I - Inorganic.

B. Rigid Insulation: Extruded polystyrene foam insulation, ASTM C578, R-value of 5.0 per inch, thickness as indicated on the Drawings.

C. Acoustic Insulation: As specified in Section 07 2100.

D. Acoustic Sealant: As specified in Section 09 2900.

2.3 FABRICATION

A. Fabricate assemblies of framed sections to sizes and profiles required.

B. Fit, reinforce, and brace framing members to suit design requirements.

C. Fit and assemble in largest practical sections for delivery to site, ready for installation.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Verify existing conditions before starting work.

B. Verify that rough-in utilities are in proper location.

3.2 INSTALLATION OF STUD FRAMING

A. Comply with requirements of ASTM C754.

B. Extend partition framing to structure where indicated and to ceiling in other locations.

C. Align and secure top and bottom runners at 24" on center.

D. At partitions indicated with an acoustic rating:
E. Fit runners under and above openings; secure intermediate studs to same spacing as wall studs.
F. Install studs vertically at 16" on center.

G. Install studs vertically at spacing indicated on drawings.

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H. Align stud web openings horizontally.

I. Secure studs to tracks using crimping method. Do not weld.

J. Stud splicing is not permissible.

K. Fabricate corners using a minimum of three studs.

L. Double stud at wall openings, door and window jambs, not more than 2" from each side of openings.
1. Provide two 20 gage studs at each jamb.

M. Brace stud framing system rigid.

N. Coordinate erection of studs with requirements of door frames; install supports and attachments.

O. Coordinate installation of bucks, anchors, and blocking with electrical and mechanical work to be placed within or behind stud framing.

P. Blocking: Use wood blocking secured to studs. Provide blocking for support of plumbing fixtures.

Q. Use sheet metal backing for reinforcement of items indicated on the Drawings.

3.3 CEILING AND SOFFIT FRAMING

A. Comply with requirements of ASTM C754.

B. Install furring after work above ceiling or soffit is complete. Coordinate the location of hangers with other work.

C. Install furring independent of walls, columns, and above-ceiling work.

D. Securely anchor hangers to structural members or embed in structural slab. Space hangers as required to limit deflection to criteria indicated. Use rigid hangers at exterior soffits.

E. Space main carrying channels at maximum 72" on center, and not more than 6" from wall surfaces. Lap splice securely.

F. Securely fix carrying channels to hangers to prevent turning or twisting and to transmit full load to hangers.

G. Place furring channels perpendicular to carrying channels, not more than 2" from perimeter walls, and rigidly secure. Lap splices securely.

H. Reinforce openings in suspension system that interrupt main carrying channels or furring channels with lateral channel bracing. Extend bracing minimum 24" past each opening.

I. Laterally brace suspension system.

3.4 FURRING CHANNEL INSTALLATION

A. Attach sheet metal furring channels by screws, nails, or bolts as best suited for the type of stud.

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B. Install channels horizontally starting 2" above the finished floor and vertically spaced as recommended by the manufacturer for the total thickness of the surfacing, but not exceeding 16" on center. Splice by nesting channels not less than 8" and securely wire tie.

C. Install resilient channels "free" edge up.

3.5 Z-FURRING INSTALLATION

A. Erect insulation vertically and hold in place with Z-furring members spaced at 24" on center.

B. Except at exterior corners, attached narrow flange of furring members to wall with fasteners spaced at 24" on center.

C. At exterior corners, attach wide flange of furring members to wall with short flange extending beyond corner; on adjacent wall surface, screw-attach short flange of furring channel to web of attached channel.

D. At interior corners, space second member no more than 12" from corner and cut insulation to fit.

3.6 ERECTION TOLERANCES

A. Maximum Variation from True Position: 1/8 inch in 10 feet.

END OF SECTION 09 2210

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SECTION 09 2900 - GYPSUM BOARD

PART 1 - GENERAL

1.1 SUMMARY

A. Provide gypsum drywall and accessories where shown on the Drawings, as specified herein, and as needed for a complete and proper installation.

B. Section includes:
1. Gypsum wallboard and accessories.
2. Joint treatment and accessories.
3. Metal furring channels.

C. Related Sections:
1. Documents affecting work of this Section include, but are not necessarily limited to, General Conditions, Supplementary Conditions, and Sections in Division 1 of these Specifications.
2. Section 05 4000: Metal stud system.
3. Section 09 0175: Preparation of existing surfaces for painting and wall covering.
4. Section 09 2210: Non-loadbearing metal framing.
5. Section 09 2220: Gypsum wallboard ceiling suspension systems.

1.2 SUBMITTALS

A. General: Submit in accordance with Section 01 3300.
1. Product Data: Submit manufacturer's descriptive literature and product specifications for each product. Include data to indicate compliance with the specified requirements.
2. Installation Procedures: Submit manufacturer's recommended installation procedures.
3. Shop drawing indicating proposed control joint layout.

1.3 REFERENCES

A. All work shall be performed in accordance with the Drawings and Specifications, and with the following standards:
1. GA-214 - Recommended Levels of Gypsum Board Finish; Gypsum Association; 2007.
2. GA-216 - Application and Finishing of Gypsum Board; Gypsum Association; 2007.
3. GA-226 - Application of Gypsum Board to Form Curved Surfaces; Gypsum Association.
4. GA-600 - Fire Resistance Design Manual; Gypsum Association.

1.4 QUALITY ASSURANCE

A. Drywall installer shall coordinate with General Contractor to ensure that substrates at the ceiling line, base, and door/window frames are within a tolerance of straight, not-to-exceed 1/8" in 10', as indicated by a 10' straight edge. General Contractor shall shim as required prior to drywall installer accepting substrates. Failure to maintain the tolerances will require removal and reinstallation at no additional cost to the Owner.

B. Mock-Ups:
1. At a location on the site where approved by the Architect, provide a mock-up gypsum wallboard panel.
a. Make the panel approximately 2'-0" square.
b. Provide one mock-up panel for each gypsum wallboard finish used on the Work.
c. Revise as necessary to secure the Architect's approval.

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2. The mock-up panels, when approved by the Architect, will be used as datum points for comparison with the remainder of the work of this Section for the purpose of acceptance or rejection.

PART 2 - PRODUCTS

2.1 MATERIALS, GENERAL

A. Products specified are for establishing the type, design, and quality required. Products of equal or better type, design, and quality produced by other manufacturers will be considered provided the request for substitution is submitted in accordance with Section 01 2500.

2.2 GYPSUM WALLBOARD

A. Fire-Resistant Gypsum Wallboard: Paper-faced gypsum panels, ASTM C1396; sizes to minimize joints in place; edges tapered, ends square cut; Type X, 5/8" thick in all locations unless otherwise noted.

B. Water-Resistant, Fire-Resistant, Gypsum Wallboard: Water-resistant gypsum backing board, ASTM C1396; sizes to minimum joints in place; edges tapered, ends square cut; Type X, 5/8" thick, in widths and lengths as will result in a minimum of joints. Use at walls and ceilings of all restrooms, locker rooms, kitchens (and related food preparation and clean up rooms), unless otherwise note.

2.3 METAL ACCESSORIES

A. Finishing Accessories: ASTM C1047; galvanized steel or rolled zinc, unless otherwise indicated.

B. Casing Beads:
1. Provide channel shapes with an exposed wing, and with a concealed wing not less than 7/8" wide.
2. Provide bullnose shapes where shown on Drawings, as manufactured by Flannery, Inc., Clinch-On Corner Bead Co.

C. Corner Beads:
1. Provide angle shapes with wings not less than 7/8" wide and perforated for nailing and joint treatment at horizontal edges.
2. Provide bullnose shapes at vertical edges and where indicated on the Drawings.

D. Control Joints:
1. Provide with 1/4" wide center channel with removable tape strip and wings perforated for nailing and joint treatment at horizontal edges as manufactured by Clark Dietrich, 093 Vinc Control Joint (ZNCJ).

E. Edge Beads at Ceiling Perimeter:
1. Provide angle shapes with wings not less than 3/4" wide.
2. Provide concealed wing perforated for nailing, and exposed wing edge folded flat.
3. Exposed wing may be factory finished in white color.

F. Reveals: Extruded aluminum, alloy 6063-T5, with prepunched mounting flanges tapered to receive joint bedding, tape and top coat. Factory chromate conversion coating. As manufactured by Fry Reglet Corp., Gordon Inc., MM Systems Inc.

2.4 FASTENING DEVICES

A. Wood Framing: No. 6 Type W, bugle-head screws, length as required for single or multi-layer application; ASTM C1002.

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B. Metal Framing: No. 6 Type S, bugle-head screws, length as required for single or multi-layer application; ASTM C1002.

2.5 JOINTING SYSTEM

A. Provide a jointing system, including reinforcing tape and compound, designed as a system to be used together and as recommended for this use by the manufacturer of the gypsum wallboard approved for use on the Work. ASTM C 475.

B. Jointing compound may be used for finishing if so recommended by its manufacturer.

C. High Build Drywall Surfacer: Vinyl acrylic latex-based coating for spray application, designed to take the place of skim coating and separate paint primer in achieving Level 5 finish.

2.6 TEXTURE

A. Primer: Manufacturer’s recommended acrylic latex coating. Tuff Hide by USG.

B. Texture Material: Manufacturer’s recommended product for the finish texture specified.

2.9 SHEET METAL FURRING CHANNELS

A. Furring Channels:
1. Hat-shaped with 2 equal legs and flanges, size as indicated on the drawings, 24 gage (0.0179 in.) minimum steel thickness.
2. Z-shaped, slotted or unslotted web, face flange of 1-1/4", wall attachment flange of 7/8", 24 gage (0.0179 in.) minimum steel thickness, depth required to fit insulation thickness indicated.

B. Resilient Channels: Single-leg type with screw flange, punched leg, and top flange, 1/2" high, 24 gage (0.0179 in.) minimum steel thickness.

PART 3 - EXECUTION

3.1 SURFACE CONDITIONS

A. Examine the areas and conditions under which work of this Section will be performed. Correct conditions detrimental to timely and proper completion of the Work. Do not proceed until unsatisfactory conditions are corrected.

3.2 INSTALLATION

A. General:
1. Install gypsum wallboard in accordance with the Drawings and with separate boards in moderate contact but not forced in place.
2. At internal and external corners, conceal cut edges of the boards by overlapping covered edges of abutting boards.
3. Stagger boards so that corners of any four boards will not meet at a common point except in vertical corners.

B. Ceilings:

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1. Install gypsum wallboard to ceilings with the long dimension of the wallboard at right angles to the supporting members.
2. Maximum Fastener Spacing: 12" on center in field, 6” on center at the board perimeter edges.

C. Walls:
1. Install gypsum wallboard in vertical direction, plumb and square and in full height single piece sheets wherever possible.
   a. Gypsum wallboard may be installed in horizontal direction behind vinyl covered tackboard panels.
2. Make end joints, where required, over framing, furring members, or solid backing.
3. Butt factory edges together. Do not butt a factory edge with a cut edge.
4. Maximum Fastener Spacing: 16" on center in field, 8” on center at the board perimeter edges.

3.3. SHEET METAL FURRING

A. Hat Channels (Resilient Channels similar):
1. Attach sheet metal furring channels by screws, nails, or bolts as best suited for the type of stud.
2. Install channels horizontally starting 2" above the finished floor and vertically spaced as recommended by the manufacturer for the total thickness of the surfacing, but not exceeding 16" on center. Splice by nesting channels not less than 8" and securely wire tie.
3. Install resilient channels "free" edge up.

B. Z-Furring:
1. Erect insulation vertically and hold in place with Z-furring members spaced at 24" on center.
2. Except at exterior corners, attached narrow flange of furring members to wall with fasteners spaced at 24" on center.
3. At exterior corners, attach wide flange of furring members to wall with short flange extending beyond corner; on adjacent wall surface, screw-attach short flange of furring channel to web of attached channel.
4. At interior corners, space second member no more than 12" from corner and cut insulation to fit.

3.4 JOINT TREATMENT

A. General:
1. Inspect areas to be joint treated, verifying that the gypsum wallboard fits snugly against supporting framework.
2. Unless specified otherwise, treat all joints on gypsum face panels. Refer to level of finish required below.
3. In areas where joint treatment and compound finishing will be performed, maintain a temperature of not less than 55 degrees for 24 hours prior to commencing the treatment, and until joint and finishing compounds have dried.
4. Provide a minimum drying time of 24 hours between coats, with additional drying time in poorly ventilated areas.

B. Embedding Compounds:
1. Apply to gypsum wallboard joints and fastener heads in a thin uniform layer.
2. Spread the compound not less than 3" wide at joints, center the reinforcing tape in the joint, and embed the tape in the compound. Then spread a thin layer of compound over the tape.
3. After this treatment has dried, apply the number of coats of embedding compound to joints and fastener heads for the level of finish specified for the surface, spreading in a thin uniform coat to not less than 6" wide at joints, and feather edged.
4. Sand between coats as required.
5. When thoroughly dry, sandpaper to eliminate ridges and high points.

C. Finishing Compounds:

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1. After embedding compound is thoroughly dry and has been completely sanded, apply a coat of finishing compound to joints and fastener heads.
2. Feather the finishing compound to not less than 12" wide.
3. When thoroughly dry, sandpaper to obtain a uniformly smooth surface, taking care to not scuff the paper surface of the wallboard or raise the nap of the gypsum board paper facing.

E. Backing Board: 5/8" Type “X” gypsum board, unless otherwise noted.
1. Treat all joints behind fiberglass reinforced panels.
2. Joints behind vinyl covered tackable panels are not required to be treated.

F. Gypsum Board at Fire Rated Construction: Comply with UL fire listed assemblies, or other fire rated assemblies.

3.5 LEVELS OF FINISH

A. The following descriptions of levels of finish are in accordance with GA-214. Finish gypsum board and tackboard in accordance with the Gypsum Construction Handbook as published for the construction industry by United States Gypsum Company.

B. **Level 1:** Embed tape in joint compound at all joints and interior angles. Surface free of excess joint compound. Tool marks and ridges are acceptable.
1. Provide Level 1 finish on surfaces hidden above a ceiling or soffit at sound walls, fire-rated walls, and exterior walls.
2. Provide Level 1 finish on surfaces hidden behind tack board.

C. **Level 3:** Embed tape in joint compound, and provide one additional coat of compound, over all joints and interior angles. Provide two separate coats of compound over accessories and fasteners. All joint compound shall be smooth and free of tool marks and ridges.
1. Provide Level 3 finish on all exposed finished or unfinished gypsum board surfaces not specified to receive Level 4 or 5 finish.
2. Provide Level 3 finish behind fiberglass reinforced panels installed over gypsum backing board.

D. **Level 4:** Embed tape in joint compound, and provide two additional coats of compound, over all joints and interior angles. Provide three separate coats of compound over accessories and fasteners. All joint compound shall be smooth and free of tool marks and ridges. All joint compound shall be smooth and free of tool marks and ridges.
1. Provide Level 4 finish where vinyl wall covering or dry-erase wall covering is installed on gypsum board surfaces.

E. **Level 5:** Embed tape in joint compound, and provide two additional coats of compound, over all joints and interior angles. Provide three separate coats of compound over accessories and fasteners. All joint compound shall be smooth and free of tool marks and ridges. A thin skim coat of joint compound, or a material manufactured especially for this purpose, shall be applied to the entire surface. The surface shall be smooth and free of tool marks and ridges.
1. Provide Level 5 finish on all tackboard surfaces to receive field-applied vinyl wallcovering.

3.6 CORNER TREATMENT AND METAL ACCESSORIES

A. Internal Corners: Treat as specified for joints, except fold the reinforcing tape lengthwise through the middle and fit neatly into the corner.

B. External Corners:

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1. Install the specified corner bead, fitting neatly over the corner and securing with the same type fasteners used for installing the wallboard.
2. Space the fasteners approximately 6" on centers, and drive through the wallboard into the framing or furring member.
3. After the corner bead has been secured into position, treat the corner with joint compound and reinforcing tape as specified for level of finish specified for the surface, feathering the joint compound out from 8" to 10" on each side of the corner.

C. Control Joints:
1. Walls and ceilings: Install at 30’-0” o.c. maximum spacing in either direction when planes exceed 30’-0” in length.
2. Unless locations are specifically indicated on the Drawings, Contractor shall submit a control joint plan for the architect’s review.

3.7 OTHER METAL TRIM

A. General: The Drawings do not purport to show all locations and requirements for metal trim. Carefully study the Drawings and the installation, and provide all metal trim normally recommended by the manufacturer of the gypsum wallboard approved for use in this Work.

3.8 TEXTURE

A. Exposed Wall Surfaces for Paint: Provide fine orange peel finish approved by Architect on exposed gypsum board surfaces.

B. Exposed Ceiling and Soffit Surfaces for Paint: Provide fine orange peel finish approved by Architect on exposed gypsum board surfaces.

3.9 MARKING AND IDENTIFICATION (CBC 703.7)

A. At all accessible concealed floors, floor-ceilings and/or attic spaces with fire walls, fire barriers, fire partitions, smoke barriers and/or smoke partitions or any other wall required to have protected openings or penetrations provide signs or stencil as follows:
1. Located within 15 feet of the end of each wall and at intervals not exceeding 30 feet measured horizontally along the wall or partition.
2. Letting shall be not less than 3 inches in height with a minimum 3/8 inch stroke in contrasting color stating, “FIRE AND/OR SMOKE BARRIER – PROTECT ALL OPENINGS”.

3.10 CLEANING UP

A. In addition to other requirements for cleaning, use necessary care to prevent scattering gypsum wallboard scraps and dust, and to prevent tracking gypsum and joint finishing compound onto floor surfaces.

B. At completion of each segment of installation in a room or space, promptly pick up and remove from the working area all scrap, debris, and surplus material of this Section.

END OF SECTION 09 2900

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SECTION 09 3000 - TILING

PART 1 - GENERAL

1.1 SUMMARY

A. Provide tile where called for on the Drawings, as specified herein, and as needed for a complete and proper installation. Section includes:
   1. Tile for floor applications
   2. Tile for wall applications
   3. Tile wall base
   4. Tile for counters
   5. Trim, accessories and setting materials

B. Related Sections:
   1. Documents affecting work of this Section include, but are not necessarily limited to, General Conditions, Supplementary Conditions, and Sections in Division l of these Specifications.
   2. Section 07 1310: Sheet waterproofing.
   3. Section 07 9210: Sealing and caulking of expansion joints and other joints.

1.2 SUBMITTALS

A. General: Submit in accordance with Section 01 3300.
   1. Product Data: Submit manufacturer's descriptive literature and product specifications for each product. Include data to indicate compliance with the specified requirements.
   2. Installation Procedures: Submit manufacturers recommended installation procedures.
   3. Samples:
      a. Tile: Submit sufficient samples of each size, color, and texture to demonstrate the maximum range of sizes, colors, textures, and flatness. Tiles delivered to the job or installed in the Work, and which do not fall within the accepted range, shall be removed from the site and be replaced promptly with acceptable materials.
      b. Trim shapes and base: Review any unusual installation conditions with the Architect for approval prior to commencing the work.
   4. **Verify availability of all parts, in all colors required, at time of submittal.**

B. Contract Closeout Submittals: Submit in accordance with Section 01 7700.
   1. Manufacturer's recommended cleaning procedures.

1.3 QUALITY ASSURANCE

A. Applicable Standards: The following publications of the issues listed below, but referred to thereafter by basic designation only, form a part of this Specification to the extent they are specified herein. Unless otherwise specified, use the latest edition.
   1. ANSI A108/A118/A136.1 - American National Standard Specifications for the Installation of Ceramic Tile - Version; 2014.
   2. TCNA (HB) - Handbook for Ceramic, Glass, and Stone Tile Installation; 2025.
   3. Tile Council of America (TCA): Comply with the Handbook for Ceramic Tile Installation.

B. Colors: Provide finish selections indicated in the Finish Schedule.
   1. Acceptable Manufacturers: The products and manufacturers specified in the Finish Schedule are for purposes of establishing color and quality. Refer to each Specification Section for additional

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manufacturers and Section 01 2500 for substitution requirements.

2. Manufacturer's Standard Colors and Finishes: Where the Finish Schedule specifies a manufacturer's standard color or finish, the Architect makes no guarantee that matching colors or finishes are available as other manufacturer's "standard colors" from the listing of acceptable manufacturers. The Contractor shall be responsible for providing colors matching those indicated on the Drawings.
3. Custom Colors: Where the Finish Schedule indicates a specific manufacturer's colors, other acceptable manufacturers shall provide matching custom colors where a standard color is not acceptable.

C. Blending:
1. Require the tile manufacturer to blend tiles at the factory.
2. Provide additional blending at the job site as needed to secure the Architect's approval.
3. All materials of each specific type and color **shall be from the same dye-lot or run.**
4. Provide additional lighting if necessary prior to starting tile installations.

D. Provide only tile cartons which have been grade-sealed by the manufacturer in accordance with ANSI A137.1, and with grade-seals unbroken.

E. On manufactured grouts, provide labels certifying compliance with the referenced standards.

1.4 SITE CONDITIONS

A. Install mortar, and set and grout the tile, only when temperature is at least 50^{o} F and rising in the space.

B. Protection:
1. Protect adjacent surfaces during progress of the work of this Section.
2. Close rooms and spaces to traffic of all types until mortar and grout have set for 72 hours.

C. Illuminate the work area during installation, providing the same level and angle of illumination as will be available for final inspection.

1.5 EXTRA MATERIALS

A. Materials: Provide for the Owner's use, an extra stock of approximately 3% of each type, color, pattern, and size of material installed. Package each type of material separately, distinctly marked, and protected against deterioration and damage.

B. Deliver materials to the Inspector of Record along with an inventory list of items provided. Obtain and forward to the Architect, a signed receipt from the Inspector accepting delivery.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Products specified are for establishing the type, design, and quality required. Products of equal or better type, design, and quality produced by other manufacturers will be considered provided the request for substitution is submitted in accordance with Section 01620.

B. Manufacturers: As indicated on the Finish Schedule.

2.2 CERAMIC TILE

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A. Except as may be otherwise specified or approved by the Architect, provide floor tiles **with coefficient of friction of 0.42** or higher in accordance with pertinent provisions of ASTM C1028.

B. Ceramic Mosaic Floor Tile, Unglazed:
   1. Type: Ceramic Mosaic
   2. Size: 2"x 2"
   3. Catalog number and/or color: See Finish Schedule
   4. **Note:** Provide ceramic mosaic with 7.5% abrasive content at shower floors.

C. Interior Wall Tile, Glazed:
   1. Type: Glazed Ceramic
   2. Size: 3" x 6"
   3. Catalog number and/or color: See Finish Schedule

E. Provide standard trim shapes as required.
   1. Provide all bases, caps, stops, returns, trimmers, and other shapes indicated or required to produce a completely finished installation.
   2. Unless otherwise noted on the Drawings, provide color and finish matching the adjacent tile.
   3. **All interior and exterior wall corners shall be standard bullnose units** unless otherwise noted.
   4. Verify with Architect any conflicting conditions prior to installation.

2.4 INSTALLATION MATERIAL

A. All materials, including mortar bed, metal lath, membranes, bond coats, etc. shall be in strict compliance with the CTA Handbook for Ceramic Tile Installation.

B. Portland Cement Mortar Bed: Provide materials in accordance with ANSI A108.1 and the TCA setting method specified below.
   1. Membrane: 15 pound roofing felt or 4 mil polyethylene film (required in wet areas only)
   2. Portland Cement: ASTM C150, Part 1.
   3. Lime: ASTM C206, Type S or ASTM C207, Type S.
   4. Sand: ASTM C144.
   5. Water: Potable.

C. Bond Coat:
   1. Latex-Portland Cement Mortar: ANSI A118.4. Ardex X77 Microtec fiber reinforced tile and stone mortar by Ardex Americas, Super Flex by TEC, ReFlex by Bostik, 254/255 by Laticrete, or Kerabond/Keralastic by Mapei, with manufacturers recommended acrylic latex additive.
   2. Epoxy: 100% solids; chemical, stain, and shock resistant; ANSI A118.3. Ardex WA Epoxy adhesive and grout by Ardex Americas, AccuColor EFX Epoxy by TEC, ExPoxy Ezclean by Bostik, Latapoxy 300 by Laticrete International, or Kerapoxy by Mapei Corp.

D. Grout:
   1. Epoxy Grout: 100% solids; chemical, stain, and shock resistant; ANSI 118.3. Ardex WA Epoxy grout and adhesive by Ardex Americas, AccuColor EFX Epoxy by TEC, EzPoxy Exclean by Bostik, Latipoxy 300 by Laticrete, or Kerapoxy by Mapei.

2.5 METAL TRIM

A. Satin natural anodized extruded aluminum, style and dimensions to suit application, for setting using tile mortar or adhesive; by Schluter-Systems or Profilitec.
   1. Applications:

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a. Open edges of wall tile.
b. Open edges of floor tile.
c. Wall corners, inside and outside.
d. Transitions between floor finishes of different height.
e. Thresholds at door openings.
f. Borders and other trim as indicated on the Drawings.

2.6 CAULKING

A. Ceramic Tile Caulk:
1. Sanded: Polyblend Ceramic Tile Caulk by Custom Building Products, Ardex SX 100% Silicone sealant for tile and stone by Ardex Americas or approved equal.
2. Non-Sanded: Polyblend Ceramic Tile Caulk by Custom Building Products, Ardex SX 100% Silicone sealant for tile and stone by Ardex Americas or approved equal.

PART 3 - EXECUTION

3.1 SURFACE CONDITIONS

A. Examine the areas and conditions under which work of this Section will be performed. Correct conditions detrimental to timely and proper completion of the Work. **Do not proceed until unsatisfactory conditions are corrected.**

B. Coordinate with other trades as needed to assure that proper substrata are provided to receive the work of this Section.

C. Where a Portland cement mortar setting bed will be installed, do not commence installation of the setting bed until substrata are within the following tolerances:
1. Horizontal surfaces: Level within 1/4" in ten ft in all directions;
2. Vertical surfaces: Plumb within 1/4" in eight ft in all directions.

D. Where tile units will be thin-set directly to the substrata, do not commence installation of the tile units until substrata are within the following tolerances:
1. Horizontal surfaces: Level within 1/8" in 10'-0" in all directions;
2. Vertical surfaces: Plumb within 1/8" in 8'-0" in all directions.

E. Condition of surfaces to receive tile:
1. Verify that surfaces to receive mortar setting bed and tile are firm, dry, clean, and free from oily or waxy films and curing compounds.
2. Verify that grounds, anchors, plugs, recess frames, bucks, electrical work, mechanical work, and similar items in or behind the tile have been installed before proceeding with installation of mortar bed or tile.

F. Tile at Dissimilar Materials:
1. Where tile will be set over dissimilar substrates, i.e. wood and masonry in the same plane, provide and install Dal-Seal CIS - Crack isolation sheet membrane, or approved equal.
2. Provide for 1/4" full depth gap between tile and metal door frames. Fill with mildew resistant silicone sealant.
3. Provide for movement of dissimilar substrate materials by using mildew resistant silicone sealant at nearest grout joint.

3.2 SETTING METHOD

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A. Use setting method of the types indicated and required in accordance with TCA Handbook of Ceramic Tile Installation as specified below.

B. Interior Walls:
   1. **Wood or Metal Stud with Mortar Bed:** W231 with latex Portland cement bond coat on a cured mortar bed; membrane, plain lath, mortar bed and scratch coat - ANSI A108.1A, tile - ANSI A108.1B, and grout - ANSI A108.3. Provide expansion joints and cold joints at all interior and exterior corners in accordance with TCA Movement Joint Design Essentials EJ171.
   2. **Concrete or Masonry with Mortar Bed:** W221 with latex Portland cement bond coat on a cured mortar bed; membrane, plain lath, mortar bed and scratch coat - ANSI A108.1A, tile - ANSI A108.1B, and grout - ANSI A108.3. Provide expansion joints and cold joints at all interior and exterior corners in accordance with TCA Movement Joint Design Essentials EJ171.
   3. **Concrete or Masonry (Thin-set):** W202I with latex Portland cement bond coat; membrane – ANSI A118.10, bond coat - ANSI A108.4, tile - ANSI A108.1B, and grout - ANSI A108.3. Provide expansion joints and cold joints at all interior and exterior corners in accordance with TCA Movement Joint Design Essentials EJ171.

C. Interior Floors:
   1. **Concrete:** F112 with latex Portland cement mortar bond coat on a cured mortar bed; mortar bed bond coat, mortar bed - ANSI A108.1a, tile - ANSI A108.1B, and grout - ANSI A108.3.
   2. **Concrete (Thin-set):** F115 with epoxy cement bond coat; bond coat - ANSI A118.4, tile - ANSI A108.1B, and grout - ANSI A108.3. Provide expansion joints and cold joints at all interior and exterior corners in accordance with TCA Movement Joint Design Essentials EJ171.

D. Interior Base Only, No Wall Tile Above:
   1. **Studs and Gypsum Board:** W221 with latex Portland cement mortar bond coat on a cured mortar bed; membrane, self-furring metal lath, mortar bed with scratch coat - ANSI A108.1B, tile - ANSI A108.1B, and grout - ANSI A108.10.

3.3 TILE INSTALLATION

A. General:
   1. **Prior to installation, verify layout of patterns and transitions with the architect for approval.**
   2. Comply with pertinent provisions of the referenced standards and the product manufacturer's installation recommendations, except as otherwise directed by the Architect or specified herein.
   3. Maintain minimum temperature limits and installation practices recommended by materials manufacturers.
   4. Do not install tile floors over membrane until the membrane has been tested and accepted.
   5. Mix and use proprietary materials in strict accordance with the manufacturers' printed instructions.
   6. Prepare the surfaces, set, fit, grout, and clean the work of this Section in strict accordance with the referenced standards and the manufacturers' recommendations.
   7. Provide adequate lighting to assure workman visibility for uniform tile setting.

B. Install in accordance with pertinent provisions of the standards listed in 1.3 above, pressing and beating tile into place to obtain 100% coverage by mortar on back of each tile. Back-butter tiles if necessary to achieve 100% coverage.

C. Limits of Tile:
   1. Extend tile into recesses and under equipment and fixtures to form complete covering without interruptions.
   2. Terminate tile neatly at obstructions, edges, and corners, without disruption of pattern or joint alignment.

D. Joining Pattern:

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1. Lay tile in grid pattern unless otherwise indicated on the Drawings or directed by the Architect.
2. **Align joints** when adjoining tiles on floor, base, trim, and walls are the same size.
3. Layout tile work, and center the tile fields both directions in each space or on each wall area.
4. Adjust to minimize tile cutting.
5. Place tile joints uniform in width, subject to variance in tolerance allowed in tile size.
6. Make joints watertight, without voids, cracks, excess mortar, or excess grout.

E. Allowable Variations in Finished Work: Do not exceed the following deviations from level and plumb, and from elevations, locations, slopes, and alignments shown:
1. Horizontal surfaces: 1/8" in ten ft in all directions;
2. Vertical surfaces: 1/8" in eight ft in all directions;
3. Adjacent tiles flush.

3.4 THRESHOLDS

A. EDGE STRIPS: Install edge strips at openings where threshold has not been called for, but where tile floor abuts other flooring material at same level.

B. Where thresholds are detailed to be installed over tile, install with a full bedding of bonding mortar.

3.5 GROUTING

A. General:
1. Do not begin grouting floor tiles until they are firmly set and, in no case, in less than 48 hours after they have been installed.
2. Remove spacers, ropes, glue, and similar foreign matter prior to grouting.
3. When using proprietary grout, adhere strictly to the manufacturer's directions unless otherwise specified or approved by the Architect.

B. Installation:
1. Mix grout by hand or with a slow-speed drill motor not exceeding 300 rpm, achieving a stiff non-slumping, uniform consistency, and using the minimum amount of liquid to achieve a workable mix.
2. Force the maximum amount of the approved grout into joints in accordance with pertinent recommendations contained in ANSI standards specified.
3. Fill the joints of cushion-edge tile to depth of the cushion; fill joints of square-edge tile flush with the surface.
4. Fill all gaps and skips.
    a. Do not permit mortar or mounting mesh to show through grouted joints.
    b. Provide hard finished grout which is uniform in color, smooth, and without voids, pin holes, or low spots.
5. Leave tile clean.

3.6 CAULKING

A. Locations:
1. Caulk all tiled inside and outside corners with sanded caulking, color to match grout, in lieu of grout.
2. Caulk transition from wall tile to ceiling and wall with sanded caulking, color to match grout, in lieu of grout.
3. Caulk intersection of wall and ceiling tile to door and window frames with sanded caulking, color to match grout, in lieu of grout.

3.7 CURING

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A. Damp cure all tile installations, including portland cement grouts, for 72 hours minimum.
   1. Cover with 40 pound kraft paper.
   2. Do not use polyethylene sheets directly over tile on horizontal surfaces.

3.8 CLEANING AND POLISHING

A. After completion of setting and grouting, thoroughly clean and polish the tile.
   1. Do not use acid or acid cleaners to clean tile.
   2. When epoxy resin grout is thoroughly cured, steam clean paraffin coating per manufacturer's recommendations.
   3. When the tile is thoroughly clean and dry, polish glazed tile with clean dry cloths.

3.9 PROTECTION AND REPLACEMENT

A. Protect finished tile work while other work in the area is in progress. Do not permit traffic on tile floors for 7 days after laying tile. Protect tile floors from traffic with heavy, non-staining paper held in place with non-staining masking tape.

B. Replace cracked, chipped, broken, and otherwise defective tiles.

C. Remove work not complying with requirements of the Contract Documents or the referenced standards, and promptly replace with work which does comply.

END OF SECTION 09 3000

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SECTION 09 5100 - ACOUSTICAL CEILINGS

PART 1 - GENERAL

1.1 SUMMARY

A. Provide acoustical ceilings where shown on the Drawings, as specified herein, and as needed for a complete and proper installation.

B. Related Sections:
1. Documents affecting work of this Section include, but are not necessarily limited to, General Conditions, Supplementary Conditions, and Sections in Division l of these Specifications.
2. Section 01 3560: High Performance Criteria Summary
3. Section 09 2900: Gypsum Wallboard System

1.2 SUBMITTALS

A. General: Submit in accordance with Section 01 3300.
1. Product Data: Submit manufacturer's descriptive literature and product specifications for each product. Include data to indicate compliance with the specified requirements.
2. Installation Procedures: Submit manufacturers recommended installation procedures.
3. Samples: Submit four 4" x 4" samples of all acoustic ceiling tiles and/or panels specified. Submit two samples of all ceiling suspension system components. If other than components and manufacturer specified are submitted, provide four samples of each component system.

B. Contract Closeout Submittals: Comply with requirements of Section 01 7700.
1. Manufacturer's recommended cleaning procedures.

1.3 QUALITY ASSURANCE

A. Comply with ASTM C636 and E580, CBC Section 1616A1.21 and DSA IR 25-2.13.

B. Fire Performance Characteristics: Provide acoustical ceiling components identical to those tested for the following fire performance characteristics, according to ASTM test method indicated, by an independent testing and inspecting agency acceptable to authorities having jurisdiction. Identify acoustical ceiling components with appropriate marking of testing and inspection agency.
1. Surface Burning Characteristics:
a. Flame Spread: 0-25; ASTM E84.
b. Smoke Developed Index: 0-450; ASTM E84.

C. Colors: Provide finish selections indicated in the Finish Schedule.
1. Acceptable Manufacturers: The products and manufacturers specified in the Finish Schedule are for purposes of establishing color and quality. Refer to each Specification Section for additional manufacturers and Section 01 2500 for substitution requirements.
2. Manufacturer’s Standard Colors and Finishes: Where the Finish Schedule specifies a manufacturer’s standard color or finish, the Architect makes no guarantee that matching colors or finishes are available as other manufacturer’s “standard colors” from the listing of acceptable manufacturers. The Contractor shall be responsible for providing colors matching those indicated on the Drawings at no additional costs to the Owner.

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3. Custom Colors: Where the Finish Schedule indicates a specific manufacturer's colors, other acceptable manufacturers shall provide matching custom colors where a standard color is not acceptable at no additional costs to the Owner.

D. Ceiling grid installer shall coordinate with General Contractor to insure that substrates at the ceiling line are within a tolerance of straight, not-to-exceed 1/8" in 10', as indicated by a 10' straight edge. General Contractor shall shim as required prior to ceiling installer accepting substrates. Failure to maintain the tolerances will require removal and reinstallation at no additional cost to the Owner.

1.4 EXTRA MATERIALS

A. Materials: Provide for the Owner's use, an extra stock of 2 full boxes of each type, color, pattern, and size of material installed. Package each type of material separately, distinctly marked, and protected against deterioration and damage.

B. Deliver materials to the Inspector of Record along with an inventory list of items provided. Obtain and forward to the Architect, a signed receipt from the Inspector accepting delivery.

PART 2 - PRODUCTS

2.1 MATERIALS, GENERAL

A. Products specified are for establishing the type, design, and quality required. Products of equal or better type, design, and quality produced by other manufacturers will be considered provided the request for substitution is submitted in accordance with Section 01 2500.

2.2 SUSPENDED ACOUSTICAL CEILING SYSTEM

A. Suspension Systems: ASTM C635 and E580 Section 5; die cut and interlocking components, with stabilizer bars, clips, splices, perimeter moldings, and hold down clips as required for a complete suspension system.

B. Acceptable Suspension System Products:
1. Series 1250 heavy-duty by Chicago Metallic Corp., ESR-2631:
   a. Main runner: No. 270.
   b. Cross runner: No. 1254 or 1274.
   c. Perimeter clip: No. 1496.
2. Prelude XL Heavy-duty by Armstrong, ESR-1308:
   a. Main runner: No. 7301.
   b. Cross runner: No. XL-7342.
   c. Perimeter clip: BERC-2.

3. Color:
   a. White at 2' x 2' grid
   b. White at 2' x 4' grid

C. Acceptable Acoustical Ceiling Panel Products: ASTM E1264, Class A.
1. **Type "A":** Fissured - No. 896 by Armstrong; 24"x24"x5/8"; square edge lay-in; flame spread 0-25; color white.
2. **Type "B":** Fissured - No. 895 by Armstrong; 24"x48"x5/8"; square edge lay-in; flame spread 0-25; color white.
3. **All acoustical ceiling panels within the same room shall come from the same die lot.**

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2.5 ACCESSORIES

A. Provide other materials, not specifically described but required for a complete and proper installation, as selected by the Contractor subject to the approval of the Architect.

B. Adhesive: Titebond Acoustical Ceiling Tile Construction Adhesive or approved equivalent.

PART 3 - EXECUTION

3.1 SURFACE CONDITIONS

A. Examine the areas and conditions under which work of this Section will be performed. Correct conditions detrimental to timely and proper completion of the Work. Do not proceed until unsatisfactory conditions are corrected.

3.2 PREPARATION

A. Measure each ceiling area and establish layout of acoustical units to balance border widths at opposite edges of each ceiling. Avoid use of less-than-half width units at borders, and comply with reflected ceiling plans wherever possible.

3.3 SUSPENSION SYSTEM INSTALLATION

A. Except as modified by requirements of governmental agencies having jurisdiction, recommendations of the manufacturer as approved by the Architect, or specific directions of the Architect, install in accordance with ASTM C636 and E580 Section 5, CBC Section 808, and pertinent UL design requirements.

B. Hanger Wires:
1. Provide 12 gauge minimum hanger wires for up to and including 4'-0" x 4'-0" grid spacing along main runners. Splices are not permitted in any hanger wires unless specifically approved by DSA.
2. Provide 12 gauge hanger wires at ends of all main and cross runners within 8" from the support and within 1/4 of length of end tee, whichever is least, for perimeter of ceiling area. End connections for runners which are designed and detailed to resist the applied horizontal forces may be used in lieu of 12 gauge hanger wires, subject to DSA review and approval.
3. Provide trapeze or other supplementary support members at obstructions to main hanger spacing.
4. Provide additional hangers, struts or braces as required at all ceiling breaks, soffits or discontinuous areas.
5. Provide counter-sloping wires for hanger wires which are more than 1 in 6 out of plumb.

C. Perimeter Attachment:
1. Ceiling grid members may be attached to not more than two adjacent walls. Ceiling grid members shall be at least 3/4" free of other walls. If walls run diagonally to ceiling grid system runners, one end of main and cross runners shall be free and a minimum of 3/4" clear of wall.
2. At perimeter of ceiling area where main or cross runners are not connected to adjacent wall, provide interconnection between runners at free end to prevent lateral spreading.
    a. Metal strut or a 16 gauge wire with a positive mechanical connection to the runner may be used.
    b. Where the perpendicular distance from the wall to the first parallel runner is 12" or less, this interlock is not required.

D. Bracing Wires: Provide sets of four 12 gauge splayed bracing wires oriented 90 degrees from each other at following spacing:

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1. Provide sets of bracing wires at a spacing not more than 12'-0" x 12'-0" on center.
2. Provide bracing wires at locations not more than 6'-0" from each perimeter wall and at edge of vertical ceiling offsets.
3. Slope of splayed bracing wires shall not exceed 45 degrees from plane of ceiling and shall be taut without causing ceiling to lift. Splices in bracing wires shall not to be permitted without special DSA approval.
4. Fasten a strut to main runner at the convergence of the splayed wires, extended to and fastened to roof or floor structural members above or to such other framing deemed acceptable to enforcement agency.
    a. Place these vertical restraint points not more than 12'-0" x 12'-0" on center.
    b. Provide vertical struts at locations not more than 6'-0" from each perimeter wall and at the edge of vertical ceiling offsets.

E. Hanger and Bracing Wire Fastening:
1. Fasten hanger wires with not less than 3 tight turns.
2. Fasten bracing wires with 4 tight turns.
3. Make all tight turns within a distance of 1-1/2 inches.
4. Install hanger or bracing wire anchors to the structure in such a manner that the direction of the wire aligns as closely as possible with the direction of the forces acting on the wire.

F. Hanger and Bracing Wire Separation: Separate all ceiling hanging and bracing wires at least 6 inches from all unbraced ducts, pipes, conduit, etc. It is acceptable to attach lightweight items, such as single electrical conduit not exceeding 3/4 inches nominal diameter, to hanger wires using connectors acceptable to DSA.

G. Light Fixtures:
1. Attach all light fixtures to the ceiling grid runners to resist a horizontal force equal to the weight of the fixtures.
2. Flush or recessed light fixtures and air terminals or services weighing **less than 56 pounds** may be supported directly on the runners of heavy-duty grid system but, in addition, shall have a minimum of two 12 gauge slack safety wires attached to fixture at diagonal corners and anchored to structure above. All 4'-0" x 4'-0" light fixtures shall have slack safety wires at each corner.
3. All flush or recessed light fixtures and air terminals or services weighing **56 pounds or more** shall be independently supported by not less than 4 taut 12 gauge wires each attached to fixture and to structure above regardless of the type of ceiling grid system used. The four taut 12 gauge wires, including their attachment to the structure, above shall be capable of supporting four times weight of the unit.

H. Wall Angles:
1. Install wall angles and edge moldings of type indicated at perimeter of acoustical ceiling area and at locations where necessary to conceal edges of acoustical units.
2. Screw attach moldings to substrate at intervals not over 16" on center and not more than 3" from ends.
3. Leveling with ceiling suspension system to tolerance of 1/8" in 12'-0".
4. Miter corners accurately and connect securely.

3.6 ACOUSTICAL CEILING PANEL INSTALLATION

A. Arrange acoustical units and orient directionally-patterned units with pattern running in one direction.

3.8 CLEANING UP

A. In addition to other stipulated requirements for cleaning, completely remove finger prints and traces of soil from the surfaces of grid and acoustical materials, using only those cleaning materials recommended for the purpose by the manufacturer of the material being cleaned.

B. Remove and replace work which cannot be successfully cleaned and repaired to permanently eliminate evidence of damage.

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END OF SECTION 09 5100

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SECTION 09 6110 - MOISTURE CONTROL TREATMENT FOR FLOORING

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:
1. Under a cash allowance, provide moisture control treatment applied over new or existing interior concrete slabs where resilient flooring, carpeting, are indicated on the Drawings, as specified herein, and as needed for a complete and proper installation.
2. The Owner’s independent testing laboratory shall conduct vapor emission, relative humidity, and pH testing before application of the moisture control treatment as specified herein.

B. Related Sections:
1. Documents affecting work of this Section include, but are not necessarily limited to, General Conditions, Supplementary Conditions, and Sections in Division 1 of these Specifications.
2. Section 01 2100: Cash allowances.
3. Section 03 3300: Cast-in-place concrete floor slabs.
4. Section 09 0560: Common work results for flooring preparation; pH, relative humidity, and vapor emission testing.
5. Section 09 6800: Carpeting.

1.2 ALLOWANCES

A. Cash Allowance for Moisture Control for Flooring: The Work of this Section is included in the cost of the moisture control treatment cash allowance specified in Section 01 2100.

1.3 DEFINITIONS

A. As used in this Section, “pounds” shall be defined as “pounds of water per 1,000 square feet per 24 hour period” as described in ASTM E907 and F1869.

B. Alkalinity shall be expressed as a “pH range of 1-14” as described in ASTM F710.

1.4 SYSTEM DESCRIPTION

A. Moisture control treatment shall form adhesion to damp, dry and wet concrete surfaces to restrict water vapor emission levels to a maximum of 3.0 pounds and allow adhesion to alkaline environments.

B. Moisture control treatment shall be compatible with all types of floor covering products and systems.

C. Application includes:
1. Concrete preparation
2. Moisture control treatment, minimum of 2 coats.
3. Cementitious top coat under carpet and resilient flooring.

1.5 SUBMITTALS

A. General: Submit in accordance with Section 01 3300.
1. Product Data: Submit manufacturer's descriptive literature and product specifications for each product. Include data to indicate compliance with the specified requirements.

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2. Installation Procedures: Submit manufacturers recommended installation procedures.
3. Installer Certification: Submit wet signature certification from manufacturer certifying that Installer is approved by manufacturer for installation of specified system for this project and is certified to install each component of the specified system.
4. Certified Testing: Submit manufacturers ASTM performance testing completed within 3 years of project application per ASTM E96, ASTM D1308, and ASTM D4541.
5. Warranty: Submit a copy of the actual warranty which will be issued for the Work; a sample warranty will not be acceptable. Submit full disclosure of all warranty exclusions and conditions. When warranty exclusions and conditions are not written on the actual warranty document, submit separate endorsement.

B. Contract Closeout Submittals: Comply with requirements of Section 01 7700.
1. Special Warranty: In addition to the warranty requirements of the Contract Documents, provide manufacturer's 10-year labor and material warranty.
2. Installer Certification: Provide certification signed by the system installer and countersigned by the system manufacturer certifying that the moisture control treatment was installed in accordance with the Contract Documents and the manufacturer's written instructions.

1.6 QUALITY ASSURANCE

A. Manufacturer: Firm regularly engaged in manufacture of moisture control treatment.

B. Installer: Company specializing in application of moisture control treatment, trained by the manufacturer of the products, and certified to install each component of the specified system.
1. Provide references including project name and location, telephone number and name of Owner and General Contractor, size of project, and date of completion.
2. Evidence of success shall include project pictures and pH and calcium chloride test results performed by an independent testing laboratory after installation of the system.

C. Environmental Requirements: Material and equipment shall comply with current regulations of the California Air Resources Board (CARB) and the Environmental Protection Agency (EPA).

1.7 PREINSTALLATION MEETING

A. Conduct preinstallation meeting to verify project requirements, substrate conditions, manufacturer's installation instructions, and manufacturer's warranty requirements.

1.8 SPECIAL WARRANTY

A. In addition to the warranty requirements of the Contract Documents, provide a 10-year labor and material warranty, non-prorated.

B. Application of product shall yield water vapor emission, relative humidity, and an alkalinity rate less than flooring manufacturer tolerances during the warranty period.

C. The manufacturer shall warrant the moisture control treatment against failure due to alkalinity and/or moisture emanating from the concrete. Warranty shall cover labor and material for repair or replacement of treatment, floor coverings or resinous materials, adhesives and patching compounds damaged by moisture, alkalinity, or improper system application at no cost to Owner.

E. Warranty shall not exclude concrete shrinkage cracks after application, non-compatibility with specified admixtures, concrete silicates or resin treatments, or ACI 318 or ACI 201 limitations.

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F. Warranty shall be extended to future flooring updates or changes a cementitious topcoat is applied. Moisture control treatment manufacture shall provide written acceptance of the flooring change.

PART 2 - PRODUCTS

2.1 MOISTURE CONTROL TREATMENT

A. Moisture Control Treatment: Manufacturer's formulation of chemicals and resins mechanically restricting water vapor emission up to 95%, capillary action of up to 25.0 lbs., alkaline resistant; and capable of application on damp, dry and wet concrete substrates; crack treatment; minimum thickness recommended by the manufacturer.
1. Synthetic30fs by Synthetics International, (866) 646-0356.
2. Diamond-VRS by Diamond Stone Products, LLP, (888) 817-8663.
3. Vapor-Guard DC by Advanced Moisture Control, (949) 788-1490.
4. VAP I 2000 by Koester American Corporation, (757) 425-1206.
5. Substitutions: Products specified are for establishing the type, design, and quality required. Products of equal or better type, design, and quality produced by other manufacturers will be considered provided the request for substitution is submitted in accordance with Section 01 2500.

B. Physical Characteristics:
1. ASTM E96 Water Vapor Transmission, wet method: 0.60 US perms.
2. ASTM D4541 Concrete Adhesion: 600 psi (100% concrete cohesive failure).
3. ASTM D1308 Acid/Alkali Resistance: 14pH solution - 100% Resistant.
4. ASTM F1869 Calcium Chloride Testing: 3.0 pounds per 1,000 square feet or less.

2.2 CEMENTITIOUS TOP COAT

A. Self-leveling, Portland cement based coating, minimum 4,000 psi at 28 days, as recommended by moisture control treatment manufacturer to provide a smooth flooring substrate.

PART 3 - EXECUTION

3.1 VAPOR EMISSIONS, RELATIVE HUMIDITY, AND ALKALINITY PRE-TESTING

A. The Owner’s independent testing shall provide testing materials and conduct vapor emissions, relative humidity, and pH (alkalinity) testing in accordance with Section 09 0560.

B. On the basis of testing results, and at the Owner's direction, proceed with the work of this Section under Section 01 2100 - Cash Allowances.

3.2 SURFACE PREPARATION

A. Slab surfaces shall be solid, free from loose particles, cracks, pits rough projections, and foreign matter detrimental to the vapor emissions and alkalinity control system.

B. Cracks, joints, low spots, and high spots shall be prepared as recommended by the system manufacturer.

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C. Shot blast concrete surfaces to remove surface contaminates, curing products, and hard dense non-porous layers to an ICRI#3 (100 grit) texture. Grind near walls and edges by industrial grinder with vacuum connection. Vacuum and remove dust, sand and debris.

D. Vacuum, blow and remove dust, sand and debris from slab surface and joints.

3.3 MOISTURE CONTROL TREATEMENT INSTALLATION

A. Joint and Crack Treatment: Coat cracks and joints. Apply manufacturer approved crack and joint compound in accordance with manufacturer's installation instructions.

B. Apply moisture control treatment product over entire surface to produce maximum penetration, alkalinity resistance and specified vapor reduction level in accordance with the manufacturer's written instructions. Coverage rate shall be as recommended by the manufacturer.

C. Cementitious Topcoat: Apply at a rate of up to 1/8" thickness to promote flooring adhesion using a non-porous primer. Primer shall be capable of securing product to moisture control treatment surface.

3.4 FIELD QUALITY CONTROL

A. Manufacturer's Field Services: Manufacturer's representative shall visit the construction site for:
   1. Preinstallation meeting; and
   2. During installation to inspect product installation for compliance with the manufacturer's instructions.

3.5 PROTECTION

A. Protect the finished installation from damage.

B. Repair damage to moisture control treatment surfaces prior to installation of finished flooring.

END OF SECTION 09 6110

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SECTION 09680 - CARPETING

PART 1 - GENERAL

1.1 SUMMARY

A. Provide carpeting and carpet accessories as specified herein, and as needed for a complete and proper glue-down installation.

B. Related Sections: Documents affecting work of this Section include, but are not necessarily limited to, General Conditions, Supplementary Conditions, and Sections in Division l of these Specifications.

1. Section 09 0560: Floor preparation and moisture testing.
2. Section 09 6110: Moisture control treatment.

C. Special Coordination Requirements: Coordinate finish flooring manufacturer's concrete slab requirements with the work of Section 03 3000 - Cast-in-Place Concrete.

1.2 SUBMITTALS

A. General: Submit in accordance with Section 01 3300.
1. Product Data: Submit manufacturer's descriptive literature and product specifications for each product. Include data to indicate compliance with the specified requirements.
2. Submit 3 copies of flammability rating for each type of carpet used.
3. Installation Procedures: Submit manufacturer's recommended installation procedures.
4. Samples: Submit 4 samples (12" x 12" each) of the carpets specified on the Finish Schedule.
5. Shop Drawings: Submit shop drawings showing location of seams and locations and types of carpet metal and accessories for Architect's approval.

B. Contract Closeout Submittals: Comply with requirements of Section 01 7700.
1. Manufacturer's recommended cleaning procedures.

1.3 QUALITY ASSURANCE

A. Flammability Rating: CBC Section 804.
1. Carpet Wainscot shall have a flame spread of 25 or less, Class A.
2. Flooring Carpet shall have a flame spread of 75 or less, Class B.
3. Minimum Critical Radiant Flux: Class II.

B. Accessibility: Provide glue-down or firm cushion installation that complies with CBC Section 11B-302.2.
1. Level loop, textured loop, level-cut, or level-cut/uncut pile texture and maximum pile height of ½".
2. Carpet edges shall comply with CBC Section 11B-303.

C. Colors: Provide finish selections indicated in the Finish Schedule.
1. Acceptable Manufacturers: The products and manufacturers specified in the Finish Schedule are for purposes of establishing color and quality. Refer to each Specification Section for additional manufacturers and Section 01 2500 for substitution requirements.
2. Manufacturer’s Standard Colors and Finishes: Where the Finish Schedule specifies a manufacturer’s standard color or finish, Architect makes no guarantee that matching colors or finishes are available as other manufacturer’s “standard colors” from the listing of acceptable manufacturers. The Contractor shall be responsible for providing colors matching those indicated on the Drawings.

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3. Custom Colors: Where Finish Schedule indicates a specific manufacturer's colors, other acceptable manufacturers shall provide matching custom colors where a standard color is not acceptable.

1.4 SPECIAL WARRANTY

A. Wear Warranty: Submit 3 original copies of the manufacturer's **10-year** Edge Ravel and Delamination Warranty, **10-year** Color Fastness Warranty and Wear Warranty. The warranties shall be dated, referenced to this project, and directed to the subcontractor and Contractor. They shall be signed by the carpet manufacturer, territorial representative, and the technical department head.

B. Special Project Warranty: In addition to the warranty requirements of the Contract Documents, submit 3 original copies of a special project warranty signed by the subcontractor/installer and the Contractor providing an extended correction period of **2 years**.

1.5 EXTRA MATERIALS

A. Materials: Provide for the Owner's use, an extra stock of approximately 2% of each type, color, and pattern of material installed and in addition, allow Owner to inspect and select from scrap carpet pieces remaining after installation. Bundle and wrap in burlap all extra material and Owner selected scraps.

B. Deliver materials to the Inspector of Record along with an inventory list of items provided. Obtain and forward to the Architect, a signed receipt from the Inspector accepting delivery.

PART 2 - PRODUCTS

2.1 MATERIALS, GENERAL

A. Products specified are for establishing the type, design, and quality required. Products of equal or better type, design, and quality produced by other manufacturers will be considered provided the request for substitution is submitted in accordance with Section 01620.

2.2 CARPET

A. Provide carpets, colors as noted on Finish Schedule.

B. Provide all material from a single dye-lot.

2.3 RESILIENT ACCESSORIES

A. Resilient Base: ASTM F2169, Type TS rubber, vulcanized thermoset; by Roppe.
1. Size and color as shown on Drawings and Finish Schedule.
2. Provide longest lengths possible for minimum splicing. Provide premolded corners at outside square corners, including base cabinet alcoves and outside corners.
3. Provide continuous base around radius corners to a minimum of 6" before any splice.

B. Rubber Edge Guards and Reducers: ASTM F2169, Type TS rubber, vulcanized thermoset; by Roppe.
1. Provide edge or transition units in longest possible lengths.
2. Color and style from manufacturers standard selections to be selected by Architect unless shown in Drawings.

2.4 OTHER MATERIALS

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A. Adhesives: Provide waterproof and stabilized type adhesive as recommended by the manufacturer of the resilient materials; low-VOC.
   1. Allowable moisture limit of 90% internal relative humidity.
   2. Appropriate for the pH conditions of the substrate.

B. Provide seam adhesive as recommended by the manufacturer.

C. Provide other materials, not specifically described but required for a complete and proper installation, as selected by the Contractor subject to the approval of the Architect.

PART 3 - EXECUTION

3.1 SURFACE CONDITIONS

A. Examine the areas and conditions under which work of this Section will be performed. Correct conditions detrimental to timely and proper completion of the Work. Do not proceed until unsatisfactory conditions are corrected.

3.2 SURFACE PREPARATION

A. Prepare floor substrates for installation of flooring in accordance with Section 09 0560.

B. Prepare floor substrates as recommended by flooring and adhesive manufacturers.

C. Immediately prior to installation of the work of this Section, thoroughly clean substrata and remove oil, grease, paint, varnish, hardeners, and other items which would adversely affect the bond of adhesive.

D. Make substrata level and free from irregularities. Assure one constant floor height after carpet is installed, filling low spots and grinding high spots as required.

3.3 CARPET INSTALLATION

A. General:
   1. Glue directly to the floor, using no pads and no foam.
   2. Scribe the carpet accurately to vertical surfaces.
   3. Align the lines of carpet, as woven, using no fill strips, laying all carpet in the same direction unless specifically directed otherwise by the Architect.
   4. Where carpeting is used on the walls, install as directed by the manufacturer, and trim all edges with a silver cap approved by the Architect.

B. Seams:
   1. Locate seams only where shown on the approved Shop Drawings, or where specifically otherwise approved by the Architect.
   2. Locate seams to the maximum extent practicable out of the way of traffic.
   3. Fabricate seams by the compression method, using a butt joint, and properly bead and seal.
   4. Do not stretch seams.

C. In addition to the cleaning requirements stated elsewhere, thoroughly clean carpet and adjacent surfaces prior to final acceptance of the carpeted areas by the Owner.

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3.4 RUBBER BASE INSTALLATION

A. Install rubber base where indicated on drawings.

B. Use factory-preformed exterior corners at square vertical outside corners only and factory-preformed or job-mitered interior corners.

C. Apply adhesive to insure contact not more than 1/4" from top of base.

3.6 PROTECTION

A. Provide a heavy non-staining paper or plastic walkway as required over carpeting in direction of traffic, maintaining intact until carpeted space is accepted by the Owner.

END OF SECTION 09 6800

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SECTION 09 7730 - FIBERGLASS REINFORCED PANELS

PART 1 - GENERAL

1.1 SUMMARY

A. Provide fiberglass wall panels where shown on the Drawings, as specified herein, and as needed for a complete and proper installation.

B. Related Sections:
1. Documents affecting work of this Section include, but are not necessarily limited to, General Conditions, Supplementary Conditions, and Sections in Division l of these Specifications.
2. Section 09 9100: Priming of gypsum board and CMU surfaces.

1.2 SUBMITTALS

A. General: Submit in accordance with Section 01 3300.
1. Product Data: Submit manufacturer's specifications and other data needed to prove compliance with the specified requirements.
2. Installation Procedures: Submit manufacturer's recommended installation procedures.

B. Contract Closeout Submittals: Manufacturer's recommended cleaning procedures.

PART 2 - PRODUCTS

2.1 WALL PANELS

A. Textured Gloss Panels shall be finished panels 4' x 8' or 10' x 3/32" as required for installation with no horizontal seams, color as indicated on finish schedule. See Drawings for location.
1. Panels shall be solid fiberglass reinforced polyester construction. Class A; Flame spread of 25 or less, smoke-developed less than 450.
2. Adhesive shall be per manufacturer's standards, meeting requirements of ASTM C557-65T, non-toxic, non-flammable and per State Fire Marshal Standards.
3. Color: As noted on the Finish Schedule

B. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products which may be incorporated in the work include, but are not limited to, the following:
1. Glasbord by Crane Composites, Inc.
2. FiberLite FRP - Wall Panels by Nudo.
4. Products specified are for establishing the type, design, and quality required. Products of equal or better type, design, and quality produced by other manufacturers will be considered provided the request for substitution is submitted in accordance with Section 01 2500.

2.2 OTHER MATERIALS

A. Provide manufacturer's standard prefinished vinyl clad moldings and trim in harmonizing colors at all joints, corners, and edges.

B. Adhesive: Titebond Fast Grab FRP Adhesive or approved equivalent.

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PART 3 - EXECUTION

3.1 INSTALLATION

A. Securely install panels by adhering to substrate as recommended by the manufacturer. Set panels straight, plumb, level, and true to the lines and levels shown on the Drawings.

B. Install maximum length materials wherever possible.

C. Finish butt joints, wall juncture, wall/ceiling and wall/curb joints with the manufacturer's standard trim pieces and the specified sealant, tooling to a smooth finish.

D. When installed as a wainscot, position panels in a horizontal railroad style to minimize seams.

E. When indicated to be installed backside (smooth side) out, select panels free of mars and scratches.

3.2 CLEANING

A. Upon completion of each buildings work, remove all debris from building and site. Remove all excess mastic and caulking materials from finished surfaces and adjacent surfaces.

END OF SECTION 09 7730

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SECTION 09 9100 - PAINTING

PART 1 - GENERAL

1.1 SUMMARY

A. General: Paint and finish all exposed surfaces using the combination of materials listed on Painting Schedule in Part 3 of this Section, as specified herein, and as needed for a complete and proper installation.
   1. Surface preparation, priming, and painting specified in this Section are in addition to shop priming and surface treatment specified in other sections.
   2. Paint exposed surfaces whether or not colors are designated in schedules. Paint exposed surfaces to match adjacent materials or areas, in the color selected by the Architect.
   3. **Painting of Patch Work:**
      a. Drawings do not indicate all existing areas or all portions of individual existing areas required to be painted because of patch work, but give the general intent for the work required.
      b. Paint all new work within previously painted existing areas as part of the work of this Section regardless of the trade installing new work and causing patching work.
      c. Paint entire overall surface from corner to corner regardless of the extent of new work and patch work.
      d. In existing areas where 2 or more walls or 1 wall and 1 ceiling surface are new or require painting because of patching, paint entire area including all new work and all previously painted existing surfaces.

B. Work Included: The following list is not totally inclusive and does not exclude work not stated herein but required to be painted in the specifications, Finish Schedule, and drawings. Unless otherwise specified, work to be painted under this Section includes, but is not limited to:
   1. Work specifically noted as requiring a paint finish in the drawings and specifications, and on the Finish Schedule.
   2. Priming of gypsum board and CMU substrates for fiberglass reinforced panels.
   3. Concrete, sealer where indicated.
   4. Wood trim.
   5. Wood casework.
   6. Interior and exterior ferrous metal.
   7. Interior and exterior galvanized metal.
   8. Galvanized flashings and sheet metal.
   9. Roof vents, fire vents, and roof accessories.
   10. Metal doors and frames.
   11. Wood doors.
   12. Cement plaster.
   13. Gypsum board.
   14. Acoustical ceilings/surfaces.
   15. Exposed surfaces of glazing stops, including those visible after glazing is installed.
   16. Exposed mechanical items including:
      a. Piping, pipe hangers, and supports.
      b. Tanks.
      c. Ductwork and insulation.
      d. Mechanical equipment, and supports.
      e. Accessory items.
   17. Exposed electrical conduit, raceways, fittings, panels, and switchgear.

C. Work Not Included:

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1. Unless otherwise indicated, painting is not required on surfaces in concealed areas and inaccessible areas such as furred spaces, foundation spaces, utility tunnels, pipe spaces, and duct shafts.
2. Surfaces of prefinished metals, anodized aluminum, stainless steel, chromium plate, copper, bronze, and similar finished materials will not require painting under this Section unless indicated on the Drawings.
3. Do not paint moving parts of operating units; mechanical or electrical parts such as valve operators; linkages; sensing devices; and motor shafts, unless otherwise indicated.
4. Do not paint over required labels or equipment identification, performance rating, name, or nomenclature plates.
5. Do not paint concrete which has been sandblasted unless specifically noted for painting.
6. Do not paint galvanized gratings.

D. Related Sections:
1. Documents affecting work of this Section include, but are not necessarily limited to, General Conditions, Supplementary Conditions, and Sections in Division l of these Specifications.
2. Priming or priming and finishing of certain surfaces may be specified to be factory-performed or installer-performed under pertinent other Sections.
3. Section 07 9210: Joint Sealants.
4. Section 09 0175: Preparation of existing surfaces for painting and wall covering.
5. Section 09 9600: Painting of items with special paint coatings.
6. Section 32 1720: Painting for pavement markings.

E. Definitions: "Paint," as used herein, means coating systems materials including primers, emulsions, epoxy, enamels, sealers, fillers, and other applied materials whether used as prime, intermediate, or finish coats.

1.2 SUBMITTALS

A. General: Submit in accordance with Section 01 3300.
1. Product Data: Submit manufacturer's descriptive literature and product specifications for each product. Include data to indicate compliance with the specified requirements.
2. Installation Procedures: Submit manufacturer's recommended installation procedures.
3. Samples: Following the selection of colors and glosses by the Architect, submit Samples for the Architect's review.
a. Provide four Samples of each color and each gloss for each material on which the finish is specified to be applied, approximately 8" x 10" in size.
b. Provide wood stain samples on specified wood for color selection or approval.
c. If so directed by Architect, submit Samples during progress of the Work in the form of actual application of the approved materials on actual surfaces to be painted.
d. Revise and resubmit each Sample as requested until the required gloss, color, and texture are achieved. Such Samples, when approved, will become standards of color and finish for accepting or rejecting the work of this Section.
e. Do not commence finish painting until approved Samples are on file at the job site.

B. Contract Closeout Submittals: Manufacturer's recommended cleaning procedures.

1.3 QUALITY ASSURANCE

A. Comply with applicable codes and regulations of governmental agencies having jurisdiction, including those having jurisdiction over airborne emissions and industrial waste disposal. Where those requirements conflict with this specification, comply with the more stringent provisions.

B. Paint Coordination:
1. Provide finish coats which are compatible with the prime coats actually used and specified.

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2. Review other Sections of these Specifications as required, verifying the prime coats to be used and assuring compatibility of the total coating system for the various substrata.
3. Upon request, furnish information on the characteristics of the specific finish materials to assure that compatible prime coats are used.
4. Provide barrier coats over noncompatible primers, or remove the primer and reprime as required.
5. Notify the Architect in writing of anticipated problems in using the specified coating systems over prime-coatings supplied under other Sections.

1.4 DELIVERY, STORAGE, AND HANDLING

A. General:
1. Do not store flammable materials inside buildings.
2. Mix paint in a location and manner that will protect the environment and facilities.
3. Provide ventilation needed to comply with OSHA requirements.

1.5 SITE CONDITIONS

A. Do not apply exterior materials during fog, rain, or mist, or when inclement weather is expected within the dry time specified by the manufacturer. No exterior or interior painting shall be performed until the surfaces are thoroughly dry and cured. Do not apply paint when temperature is below 50̊F. Avoid painting surfaces when exposed to direct sunlight.

1.6 EXTRA MATERIALS

A. Upon completion of the work of this Section, deliver to the Owner an extra stock equaling 5% of each color, type, and gloss of paint used in the Work, tightly sealing each container, and clearly labeling with contents and location where used.

B. Deliver materials to the Inspector of Record along with an inventory list of items provided. Obtain and forward to the Architect, a signed receipt from the Inspector accepting delivery.

PART 2 - PRODUCTS

2.1 PAINT MATERIALS

A. Products specified are for establishing the type, design, and quality required and are based on products of **Sherwin-Williams.** Other product systems approved for use are by Pittsburg Paints**,** Dunn-Edwards, and Vista Paint. Products of equal or better type, design, and quality produced by other manufacturers will be considered provided the request for substitution is submitted in accordance with Section 01 2500.
1. Where products are proposed other than Sherwin-Williams, submit a new painting schedule compiled in the same format used for the Painting Schedule included in this Section.
2. Approved specifications of materials for the other referenced manufacturers may be obtained from the Architect.

B. Undercoats and Thinners:
1. Provide undercoat paint produced by the same manufacturer as the finish coat, unless specified otherwise.
2. Use only the thinners recommended by the paint manufacturer, and use only to the recommended limits.
3. Provide undercoat, finish coat, and thinner material as parts of a unified system of paint finish.

C. Paint Systems: The specified standard is 100% acrylic premium top-of-the line paint, except where surfaces are

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specified to receive industrial coatings.

2.2 COLOR SCHEDULES

A. Refer to the Finish Schedule on the Drawings.

2.3 APPLICATION EQUIPMENT

A. For application of the approved paint, use only such equipment as is recommended for application of the particular paint by the manufacturer of the particular paint, and in accordance with all current Environmental Protection Agency standards and regulations.

2.4 JOINT SEALANTS

A. Provide in accordance with Section 07 9200.

2.5 OTHER MATERIALS

A. Provide other materials, not specifically described but required for a complete and proper installation, as selected by the Contractor subject to the approval of the Architect.

PART 3 - EXECUTION

3.1 SURFACE CONDITIONS

A. Examine the areas and conditions under which work of this Section will be performed. Correct conditions detrimental to timely and proper completion of the Work. Do not proceed until unsatisfactory conditions are corrected.

3.2 MATERIALS PREPARATION

A. Mix, prepare, and store painting and finishing materials in accordance with the manufacturer’s written recommendations.

3.3 SURFACE PREPARATION

A. General:
   1. Perform preparation and cleaning procedures in strict accordance with the paint manufacturers' recommendations.
   2. Remove removable items which are in place and are not scheduled to receive paint finish.
   3. Following completion of painting in each space or area, reinstall the removed items by using workmen who are skilled in the necessary trades.
   4. Clean each surface to be painted prior to applying paint or surface treatment.
   5. Remove dirt and other foreign substances. Remove oil and grease with clean cloths and cleaning solvent of low toxicity and flash point in excess of 200 degrees F, prior to start of mechanical cleaning.
   6. Schedule the cleaning and painting so that dust and other contaminants from the cleaning process will not fall onto wet newly painted surfaces.

B. Metal:
   1. Thoroughly clean surfaces until free from dirt, oil, and grease per SSPC-SP 1. Remove all mill scale, rust formation, etc.

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2. On galvanized surfaces, use solvent for the initial cleaning, and then treat the surface thoroughly with etching solution. Remove etching solution completely before proceeding. **Prime etched metals the same day cleaning was performed.** If any oxidation (white rust) has formed, sand and remove all forms of contamination. If the galvanized has been passivated or stabilized, the surface must be abraded, i.e. Brush-Off Blast Clean per SSPC-SP7 or chemically treated.
3. Allow to dry thoroughly before application of paint.
4. Primers specified for structural steel and metal fabrications are standalone systems. Apply full paint system as specified in this Section even if metal comes preprimed or shop primed.

C. Prefinished Metal:
1. Solvent clean per SSPC-SP 1. Abrade substrate to remove gloss and obtain minimum surface profile of 1.0 mil. Solvent wipe to remove dust.

D. Concrete:
1. Thoroughly clean surfaces.
2. Prior to painting, the material shall be dry to the extent that a proper, long lasting, and non-blistering bond will be assured. Should the dryness of the substrate be in question, test the substrate in the presence of the paint manufacturer's representative. Do not paint substrate in question until dryness condition improves to meet the paint manufacturer's requirements.
3. Where floors are to be sealed, provide surface preparation per SSPC-SP13/NACE 6.

E. Masonry and Cement Plaster:
1. Allow to dry at least 30 days prior to cleaning in preparation for painting.
2. Remove glaze, efflorescence, laitance, surface deposits, and other foreign matter.

F. Gypsum Board: Remove all sanding dust.

G. Wood, Painted Finish:
1. Remove surface deposits of sap and pitch by scraping and cleaning with mineral spirits.
2. Seal all knots and pitch pockets with the paint manufacturer's recommended materials prior to prime coat.
3. Sand smooth all wood surfaces exposed to view, using the proper sandpaper and remove dust. Where so required, use varying degrees of coarseness in sandpaper to produce a uniformly smooth and unmarred wood surface.
4. After prime coat is dry, fill cracks, holes, and scratches with suitable wood filler or spackling compound. When dry, sand flush with surface.
5. Do not proceed with painting of wood surfaces until the moisture content of the wood is 12% or less as measured by a moisture meter.

H. Wood, Stained Finish:
1. Apply paste wood filler to open grained wood prior to sanding.
2. Sand smooth all wood surfaces exposed to view, using the proper sandpaper and remove dust. Where so required, use varying degrees of coarseness in sandpaper to produce a uniformly smooth and unmarred wood surface.
3. Apply wash coat of sealer, sand and remove dust.
4. Lightly sand and clean between finish coats as recommended by the paint manufacturer.
5. Seal tops, bottoms, and edges of cutouts on wood doors.

3.4 JOINT SEALANT

A. Refer to Section 07 9200.

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B. Joint locations:
   1. Intersection of interior painted wall / ceiling surface to door and window frames.
   2. Intersection of exterior wall finish to door and window frames, color to match adjacent wall finish.
   3. Intersection of painted wall / ceiling surface to dissimilar wall /ceiling surface (painted or unpainted).

3.5 PAINT APPLICATION

A. General:
   1. Touchup or reprime shop-applied prime coats which have been damaged, and touchup bare areas prior to start of finish coats application.
   2. Slightly vary the color of succeeding coats.
      a. Do not apply additional coats until the completed coat has been inspected and approved.
      b. Only the inspected and approved coats of paint will be considered in determining the number of coats applied.
   3. Sand and dust between coats to remove defects visible to the unaided eye from a distance of five feet.
   4. On removable panels and hinged panels, paint the back sides to match the exposed sides.
   5. Finish to be smooth.

B. Priming: Primers specified for structural steel and metal fabrications are standalone systems. Apply full paint system as specified in this Section even if metal comes preprimed or shop primed.

C. Drying: Allow sufficient drying time between coats, modifying the period as recommended by the material manufacturer to suit adverse weather conditions.

D. Brush Applications:
   1. Brush out and work the brush coats onto the surface in an even film.
   2. Cloudiness, spotting, holidays, laps, brush marks, runs, sags, ropiness, and other surface imperfections will not be acceptable.
   3. Ferrous and non-ferrous metals may be sprayed on first coat(s) but final coat shall be applied with brush or roller.

E. Spray Application:
   1. Except as specifically otherwise approved by the Architect, confine spray application to wall surfaces, large expanse areas and similar surfaces where hand brush work would be inferior.
   2. Where spray application is used, apply each coat to provide the hiding equivalent of brush coats.
   3. Do not double back with spray equipment to build up film thickness of two coats in one pass.
   4. Ferrous and non-ferrous metals may be sprayed on first coat(s) but final coat shall be applied with brush or roller.

F. Roller Application:
   1. Apply paint with short nap roller on all metal doors. Color as specified (same interior and exterior).
   2. Remove all surface applied door trim prior to painting.
   3. Roller marks, lap marks, runs, sags, fuzz, lint or other surface imperfections will not be acceptable.
   4. Ferrous and non-ferrous metals may be sprayed on first coat(s) but final coat shall be applied with brush or roller.

G. For completed work, match the approved Samples as to texture, color, and coverage. Remove, refinish, or repaint work not in compliance with the specified requirements.

H. Exposed Mechanical and Electrical Items:
   1. Finish electric panels, access doors, conduits, pipes, ducts, grilles, registers, vents, exposed plumbing vents and flues, and items of similar nature to match the adjacent wall and ceiling surfaces, or as directed.

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2. Paint visible duct surfaces behind vents, registers, and grilles flat black.
3. Exposed vents and flues: Apply two coats of heat-resistant paint approved by the Architect.
4. Factory finished items that match color scheme may be approved for leaving unpainted by Architect.

I. Exposed Pipe and Duct Insulation:
1. Apply one coat of latex paint on insulation which has been sized or primed under other Sections; apply two coats on such surfaces when unprepared.
2. Match color of adjacent surfaces unless otherwise noted.
3. Remove band before painting, and replace after painting.

J. Hardware: Paint prime coated hardware to match adjacent surfaces, unless otherwise noted. Paint metal portions of head seals, jamb seals, and astragal seals to match the color of the door frame unless otherwise directed by the Architect.

K. Wet Areas:
1. In toilet rooms and contiguous areas, add an approved fungicide to paints.
2. For oil base paints, use 1% phenolmercuric or 4% tetrachlorophenol.
3. For water emulsion and glue size surfaces, use 4% sodium tetrachlorophenate.

L Miscellaneous:
1. Use "stipple" finish where enamel is specified.
2. Ferrous Metal: When metal comes shop primed or preprimed, always reprime with a solvent primer or Direct-to-Metal (DTM) primer. Sand or remove all visible rust.
3. **Wood Trim: Backprime exterior wood trim prior to installation with the paint manufacturer's recommended exterior wood primer.**
4. Touch-up shall be performed using the same application method as the original final coat application.

3.6 PROTECTION

A. Protect floors, furnishings, equipment, finish hardware, name or information plates, dials, gauges, tile, or other such surfaces not requiring painting from spotting, spillage, or damage of any kind. Clean, repair, or replace any damaged surfaces as directed by the Architect.

B. Remove, loosen, or mask hardware, fixture canopies, outlet covers, switch plates, and other similar items as required for painting work and then replace.

C. Using workmen skilled in these trades, move equipment adjacent to walls to permit wall surfaces to be painted, and following completion of painting, replace and reconnect.

3.7 CLEANING

A. Upon completion of all paint work, clean paint from all glass surfaces leaving a sharp clean line.

B. Remove paint spots, oil, or stains.

3.8 PAINTING SCHEDULE

A. General: Provide paint systems as specified below.
1. Products specified in this schedule are based upon products of **Sherwin-Williams** and are specified for establishing the type and quality of products required. Refer to Paragraph 2.1.A of this Section.
2. See Finish Schedule for colors and gloss.
3. Abbreviations: (F) = Flat, (LL) = Low Luster, (SGE) = Semi-Gloss Enamel; (ESE) = Eggshell Enamel; (GE) =

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Gloss Enamel; (SL) = Stain/Lacquer

B. Exterior Metal, Ferrous (SGE):
   1. First coat: B66-310, Pro Cryl Universal Primer
   2. Second coat: B66 Series DTM Semi-Gloss
   3. Third coat: B66 Series DTM Semi-Gloss

C. Exterior Metal, Galvanized and Aluminum (SGE):
   1. First coat: B71Y1, DTM Wash Primer
   2. Second coat: B66 Series, DTM Semi-Gloss
   3. Third coat: B66 Series, DTM Semi-Gloss

D. Exterior Metal, Prefinished Aluminum (SGE):
   1. First coat: B5100150, Extreme Bonding Primer
   2. Second coat: B66 Series, DTM Semi-Gloss
   3. Third coat: B66 Series, DTM Semi-Gloss

E. Exterior Metal, Prefinished Ferrous (SGE):
   1. First coat: B5100150, Extreme Bonding Primer
   2. Second coat: B66-350, Sher-Cryl HPA Semi-Gloss
   3. Third coat: B66-350, Sher-Cryl HPA Semi-Gloss

F. Exterior Cement Plaster and Concrete (LL):
   1. First coat: A24W300, Loxon Masonry Primer
   2. Second coat: A6 Series, A100 Exterior Flat
   3. Third coat: A6 Series, A100 Exterior Flat

G. Exterior Concrete Block (F):
   1. First coat: B42W00150, PI Heavy Duty Block Filler
   2. Second Coat: A6 Series, A100 Exterior Flat
   3. Third coat: A6 Series, A100 Exterior Flat

H. Exterior Wood (F):
   1. First coat: B51W00620, Prep Rite ProBlock Latex Primer
   2. Second coat: A6 Series, A100 Exterior Flat
   3. Third coat: A6 Series, A100 Exterior Flat

I. Exterior Wood - Solid Color Stain (F):
   1. First coat: A15 Series, Woodscapes Exterior Acrylic Solid Color Stain
   2. Second coat: A15 Series, Woodscapes Exterior Acrylic Solid Color Stain

J. Interior Primer Only behind FRP or VWC:
   1. Gypsum Drywall: B51W00620, Prep Rite ProBlock Latex Primer
   2. Concrete Block: B42W00150, PI Heavy Duty Block Filler

K. Interior Flat Wall Paint (F):
   1. Gypsum Drywall:
      a. First coat: B28-2600, Pro Mar 200 Zero Primer
      b. Second coat: B30-3600, Pro Mar 200 Zero Flat
      c. Third coat: B30-3600, Pro Mar 200 Zero Flat
   2. Concrete Block:
      a. First coat: B42W00150, PI Heavy Duty Block Filler

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b. Second coat: B30-3600, Pro Mar 200 Zero Flat
c. Third coat: B30-3600, Pro Mar 200 Zero Flat

3. Acoustic Surfaces:
   a. First Coat: D16W00151 Cashmere
   b. Second Coat: D16W00151 Cashmere

L. Interior Egg-Shell Enamel (ESE):
1. Gypsum Drywall:
   a. First coat: B28-2600, Pro Mar 200 Zero Primer
   b. Second coat: B20-2600, Pro Mar 200 Zero EG
   c. Third coat: B20-2600, Pro Mar 200 Zero EG
2. Concrete Block:
   a. First coat: B42W46, Heavy Duty Block Filler
   b. Second coat: B20-2600, Pro Mar 200 Zero EG
   c. Third coat: B20-2600, Pro Mar 200 Zero EG
3. Cement Plaster:
   a. First coat: A24, Loxon Masonry Primer
   b. Second coat: B20-2600, Pro Mar 200 Zero EG
   c. Third coat: B20-2600, Pro Mar 200 Zero EG
4. Ferrous Metal:
   a. First coat: B66-310, Pro Cryl Universal Primer
   b. Second coat: B20-2600, Pro Mar 200 Zero EG
   c. Third coat: B20-2600, Pro Mar 200 Zero EG
5. Galvanized Metal:
   a. First coat: B71Y1, DTM Wash Primer
   b. Second coat: B20-2600, Pro Mar 200 Zero EG
   c. Third coat: B20-2600, Pro Mar 200 Zero EG

M. Interior Semi-Gloss Enamel (SGE):
1. Ferrous Metal:
   a. First coat: B66-310, Pro Cryl Universal Primer
   b. Second coat: B6601551, Multi-Surface Acrylic
   c. Third coat: B6601551, Multi-Surface Acrylic
   d. Note: Where trim paint is an extension of or same as exterior color, use the same paint specified under “Exterior Metals”.
2. Galvanized Metal:
   a. First coat: B71Y1, DTM Wash Primer
   b. Second coat: B6601551, Multi-Surface Acrylic
   c. Third coat: B6601551, Multi-Surface Acrylic
   d. Note: Where trim paint is an extension of or same as exterior color, use the same paint specified under “Exterior Metals”.
3. Wood Doors and Trim:
   a. First coat: B5100150, Extreme Bonding Primer
   b. Second coat: B6601551, Multi-Surface Acrylic
   c. Third coat: B6601551, Multi-Surface Acrylic
4. Prefinished Aluminum:
   a. First coat: B5100150, Extreme Bonding Primer
   b. Second coat: B6601551, Multi-Surface Acrylic
   c. Third coat: B6601551, Multi-Surface Acrylic
5. Concrete Block:
   a. First coat: B42W46, Heavy Duty Block Filler
   b. Second coat: B31-2600, Pro Mar 200 Zero SG

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c. Third coat: B31-2600, Pro Mar 200 Zero SG

6. Gypsum Drywall:
   a. First coat: B28-2600, Pro Mar 200 Zero Primer
   b. Second coat: B31-2600, Pro Mar 200 Zero SG
   c. Third coat: B31-2600, Pro Mar 200 Zero SG

N. Interior Gloss Enamel (GE):
1. Ferrous Metal:
   a. First coat: B66-310, Pro Cryl Universal Primer
   b. Second coat: B21W351, Pro Classic Waterborne Interior Gloss Enamel
   c. Third coat: B21W351, Pro Classic Waterborne Interior Gloss Enamel
2. Galvanized Metal:
   a. First coat: B71Y1, DTM Wash Primer
   b. Second coat: B21W351, Pro Classic Waterborne Interior Gloss Enamel
   c. Third coat: B21W351, Pro Classic Waterborne Interior Gloss Enamel
   d. Note: Where trim paint is an extension of or same as exterior color, use the same paint specified under “Exterior Metals”.
3. Wood Doors and Trim:
   a. First coat: B5100150, Extreme Bonding Primer
   b. Second coat: B21W351, Pro Classic Waterborne Interior Gloss Enamel
   c. Third coat: B21W351, Pro Classic Waterborne Interior Gloss Enamel
4. Concrete Block:
   a. First coat: B42W46, Heavy Duty Block Filler
   b. Second coat: B21W351, Pro Classic Waterborne Interior Gloss Enamel
   c. Third coat: B21W351, Pro Classic Waterborne Interior Gloss Enamel
5. Gypsum Drywall:
   a. First coat: B5100150, Extreme Bonding Primer
   b. Second coat: B21W351, Pro Classic Waterborne Interior Gloss Enamel
   c. Third coat: B21W351, Pro Classic Waterborne Interior Gloss Enamel

O. Stain and Lacquer (SL):
1. Wood Doors and Trim (transparent):
   a. Stain: A49 Series, Wood Classics Oil Stain
   b. First coat: B44MJ91, Lacquer Sealer
   c. Second coat: B44FJ86, Semi-Gloss Lacquer
   d. Third coat: B44FJ86, Semi-Gloss Lacquer
2. Wood Trim (opaque):
   a. First coat: A15 Series, Woodscapes Acrylic Solid Color Stain
   b. Second coat: A15 Series, Woodscapes Acrylic Solid Color Stain

P. Acoustic Surfaces:
1. First Coat: D16W00151 Cashmere
2. Second Coat: D16W00151 Cashmere

Q. Exposed (Sealed) Concrete Floors:
1. General Polymers clear floor coating and resinous flooring.
2. Epoxy Flooring: SW Armorseal 8100.

END OF SECTION 09 9100

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SECTION 10 1400 - SIGNAGE

PART 1 - GENERAL

1.1 SUMMARY

A. Provide identifying devices where shown on the Drawings, as specified herein, and as needed for a complete and proper installation including, but not necessarily limited to:

1. Restroom signage.
2. Room identification signage (room name, room number).
3. Tactile exit signage.
4. Room occupancy signage.
5. Accessibility signage.

B. Related Sections:
1. Documents affecting work of this Section include, but are not necessarily limited to, General Conditions, Supplementary Conditions, and Sections in Division l of these Specifications.

1.2 SUBMITTALS

A. General: Submit in accordance with Section 01 3300.
1. Product Data: Submit manufacturer's descriptive literature and product specifications for each product. Include data to indicate compliance with the specified requirements.
2. Installation Procedures: Submit manufacturer's recommended installation procedures.
3. Shop Drawings: Submit shop drawings showing details of installation and anchorage sufficient to enable proper interface with the work of other trades.
4. Samples:
a. Provide color chip samples to match colors specified.
b. Provide sample of sign for example of quality and design characteristics.

1.3 QUALITY CONTROL

A. Code References:
1. Raised Characters: 11B-703.2.
2. Braille: Section 11B-703.3.
3. Visual Characters: Section 11B-703.5.
4. Pictograms: Section 11B-703.6.
5. Symbols of Accessibility: Section 11B-703.7.
6. International Symbol of Accessibility: Section 11B-703.7.2.1.

PART 2 - PRODUCTS

2.1 APPROVED MANUFACTURERS

A. Products specified are for establishing the type, design, and quality required. Products of equal or better type, design, and quality produced by other manufacturers will be considered provided the request for substitution is submitted in accordance with Section 01 2500.

B. Acceptable Products: Design of plexiglass signs is based on the use of manufacturer’s standard products: Subject

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to compliance with requirements, manufacturers offering products which may be incorporated in the work include, but are not limited to, the following:

1. ASI Sign Systems.
2. Inland Pacific.
3. Innerface Architectural Signage, Inc.
4. Mohawk Sign Systems.
5. Vomar Products, Inc.
6. Best Signs, Inc.

2.2 SIGNS

A. **Type "A" - Restroom Signs**:

1. Type A1: MEN - 12" equilateral triangle.
2. Type A2: WOMEN - 12" diameter circle.
3. Type A3: UNISEX - 12" diameter circle with equilateral triangle inscribed. Triangle color shall contrast with circle color. Circle color shall contrast with door color.
4. Type A4: Restroom, with raised wheelchair logo, 3/4" high raised text and braille.
   a. Braille: Contracted (Grade 2) braille symbols on sign A4 per CBC Section 11B-703.3.
5. Material:
   a. Types A1, A2, and A3: 1/4" thick acrylic plastic, 1/4" radius corners.
   b. Type A4: 1/8" acrylic plastic base plaque, integral color (single piece, not laminated), 1/4" radius corners, 1/32" raised letters and numbers.
6. Color: Black with white silk screened lettering and graphic, see detail.
7. Attachment: Epoxy and vandal resistant screws.
8. Text: See graphics/text detail on the drawings.
9. Letter Style: Calibri, all capital letters.

B. **Type "B" - Room Name, Room Number, or Tactile Exit Signs:**

1. Type B1: 4"H x Length as Required (LAR).
2. Type B2: 4"H x LAR.
3. Type B3: 5-1/2"H x LAR.
4. Type B4: 4"H x LAR, text: “EXIT”
5. Material: 1/8" acrylic plastic base plaque, integral color (single piece, not laminated), 1/4" radius corners, 1/32" raised letters and numbers.
6. Color: Black with white lettering.
7. Attachment:
   a. Exterior: Epoxy and minimum of 2 vandal resistant screws
   b. Interior: Epoxy
8. Letter style: Calibri, all capital letters.
9. Text: Refer to the Door Schedule and related details on the Drawings.
10. Numeral height: 2".
11. Letter height: 1". Except at access doors for automatic sprinkler riser rooms and fire pump rooms which require 2” minimum height with a minimum stroke of 3/8”.
12. Braille: Contracted (Grade 2) braille symbols on all room name and number signs per Section 11B-703.3.

C. **Type "G" – Fire Riser room:**

1. Type B1: 4"H x Length as Required (LAR).
2. Material: 1/8" acrylic plastic base plaque, integral color (single piece, not laminated), 1/4" radius corners, 1/32" raised letters and numbers.
3. Color: Red with white lettering.
4. Attachment:
   a. Exterior: Epoxy and minimum of 2 vandal resistant screws

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b. Interior: Epoxy
5. Letter style: Calibri, all capital letters.
6. Text: Refer to the Door Schedule and related details on the Drawings.
7. Numeral height: 2".
8. Letter height: 1". Except at access doors for automatic sprinkler riser rooms and fire pump rooms which require 2” minimum height with a minimum stroke of 3/8”.

2.3 BRAILLE REQUIREMENTS

A. Braille Symbols:
1. Contracted (Grade 2) braille.
2. Braille Dots:
a. Base diameter: 0.059” to 0.063”.
b. Distance between two dots in the same cell: 0.100”.
c. Distance between corresponding dots in adjacent cells: 0.300”.
d. Raise dots 0.025” to 0.037” above the background.
e. Distance between corresponding dots from one cell directly below: 0.395” to 0.400”.
f. Dots shall have domed or rounded tops.

2.4 TACTILE CHARACTER REQUIREMENTS

A. Raised Character Proportions per CBC Section 11B-703.2.4 and 11B-703.2.6:
1. Width of upper-case letter "O" shall be a minimum of 60% and a maximum of 110% of the height of the upper-case letter "I".
2. Stroke thickness of upper-case letter "I" shall be 15% maximum of the height of the character.

B. Visual Character Proportions per CBC Section 11B-703.5.4 and 11B-703.5.7:
1. Width of upper-case letter "O" shall be a minimum of 60% and a maximum of 110% of the height of the upper-case letter "I".
2. Stroke thickness of upper-case letter "I" shall be a minimum of 10% and a maximum of 20% maximum of the height of the character.

PART 3 - EXECUTION

3.1 SURFACE CONDITIONS

A. Examine the areas and conditions under which work of this Section will be performed. Correct conditions detrimental to timely and proper completion of the Work. Do not proceed until unsatisfactory conditions are corrected.

3.2 INSTALLATION

A. Install the work of this Section in strict accordance with the manufacturers' recommendations as approved by the Architect, using only the approved mounting materials, and locating all components firmly into position, level and plumb.

B. Mounting Location and Height. Install signs on the nearest wall adjacent to the latch side of the door. Where there is no wall or space on the latch side, including at double doors, place signs on the nearest adjacent wall, preferably on the right.
1. Mount signs 48" minimum above the finish floor or ground surface, measured from the baseline of the lowest line of Braille and 60" maximum above the finish floor or ground surface measured from the baseline of the highest line of raised characters.

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2. Determine mounting location such that a person may approach within 3" of signage without encountering protruding objects or standing within the swing of the door.

C. At locations where an exit sign and a room identification sign are back to back on glass, align both signs and make signs the same size.

D. At locations where a sign is mounted on glass with no opposing sign, provide blank sign of the same size to conceal mounting adhesive.

E. Where signs are mounted on split-faced masonry, grind masonry to provide smooth surface to mount signs.

END OF SECTION 10 1400

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SECTION 10 2113 – COMPACT GRADE LAMINATE TOILET PARTITIONS

PART 1 - GENERAL

1.1 SUMMARY

A. Provide floor anchored, overhead braced, composite toilet partitions and wall mounted urinal screens where shown on the Drawings, as specified herein, and as needed for a complete and proper installation.

B. Related Sections:
1. Documents affecting work of this Section include, but are not necessarily limited to, General Conditions, Supplementary Conditions, and Sections in Division l of these Specifications.
2. Section 10 2810: Toilet accessories and grab bars.

1.2 SUBMITTALS

A. General: Submit in accordance with Section 01 3300.
1. Product Data: Submit manufacturer's descriptive literature and product specifications for each product. Include data to indicate compliance with the specified requirements.
2. Installation Procedures: Submit manufacturer's recommended installation procedures.
3. Shop Drawings: Submit shop drawings in sufficient detail to show fabrication, installation, anchorage, and interface of the work of this Section with adjacent trades.
4. Color Charts: Submit 4 color charts or samples showing colors selected by the Architect.

B. Contract Closeout Submittals: Manufacturer's recommended cleaning procedures.

1.3 QUALITY ASSURANCE

A. Single Source Requirements: To the greatest extent possible provide products from a single manufacturer.

B. Colors: Provide finish selections indicated in the Finish Schedule.
1. Acceptable Manufacturers: The products and manufacturers specified in the Finish Schedule are for purposes of establishing color and quality. Refer to each Specification Section for additional manufacturers and Section 01620 for substitution requirements.
2. Manufacturer’s Standard Colors and Finishes: Where the Finish Schedule specifies a manufacturer’s standard color or finish, the Architect makes no guarantee that matching colors or finishes are available as other manufacturer’s “standard colors” from the listing of acceptable manufacturers. The Contractor shall be responsible for providing colors matching those indicated on the Drawings.
3. Custom Colors: Where the Finish Schedule indicates a specific manufacturer’s colors, other acceptable manufacturers shall provide matching custom colors where a standard color is not acceptable.

1.4 SPECIAL WARRANTY

A. In addition to the warranty requirements of the Contract Documents, submit 2 original copies of the manufacturer's written **2-year warranty** for materials and workmanship.

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PART 2 - PRODUCTS

2.1 TOILET PARTITIONS AND URINAL SCREENS

A. Basis of Design: DuraLineSeries CGL #1082/1085.67 Compact Laminate (Solid Phenolic) in the stalls by Bobrick Washroom Equipment Inc., www.bobrick.com.
   1. Products specified are for establishing the type, design, and quality required. Products of equal or better type, design, and quality produced by other manufacturers will be considered provided the request for substitution is submitted in accordance with Section 01 2500.

B. Toilet Partitions:
   1. Design Type:
      a. Standard Height.
         1) Door/Panel Height: 58 inches.
         2) Floor Clearance: 12 inches.
   2. Privacy Style Partitions: No sightlines with gap-free interlocking doors and stiles routed 0.300 inches from the edge to allow 0.175 inch overlap to prevent line-of-sight into the toilet compartment. Privacy strips fastened or adhered onto the partition material are not acceptable.
   3. Mounting Configuration:
      a. Floor-mounted, overhead-braced with anodized aluminum headrails, 0.065 inch thick with anti-grip profile.
         1) Stile Maximum Height: 83 inches;
         2) Extended Height: 97 ¾ inches.

C. Urinal Screens:
   1. Mounting Configuration:
      a. Wall-hung.
         1) Screen Height: 54 inches (107 cm) with 12 inches floor clearance.
      b. Continuous bracket

D. Materials: Solidly fused plastic laminate with matte-finish melamine surfaces; integrally bonded colored face sheets and black phenolic-resin core.

E. Edges: Black; brown edges not acceptable.

F. Color:
   1. As selected by Architect from manufacturer's standard DuraLineSeries Compact Grade Laminate color range.
   2. As indicated on Drawings.
   3. Other color as selected by architect based on Manufacturer’s range and confirmed by local Manufacturer Representative.

G. Fire Resistance:
   1. National Fire Protection Association/International Building Code Interior Wall and Ceiling Finish: Class B / Uniform Building Code: Class II.
      a. Flame Spread Index (ASTM E 84): 30 for panels and stiles.
      b. Smoke Developed Index (ASTM E 84): 55 for panels, 20 for stiles.

H. Finished Thickness:
   1. Stiles and Doors: 3/4 inch.
   2. Panels and Screens: 1/2 inch.

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I. Stiles: Floor-anchored stiles furnished with expansion shields and threaded rods.
   1. Leveling Devices: 7 gauge, 3/16 inches thick, corrosion-resistant, chromate-treated, double zinc-plated steel angle leveling bar bolted to stile; furnished with 3/8 inch diameter threaded rods, hex nuts, lock washers, flat washers, spacer sleeves, expansion anchors, and shoe retainers.
   2. Stile Shoes: One-piece, 22 gauge, 18-8, Type 304 stainless steel, 4 inch height; tops with 90 degree return to stile. One-piece shoe capable of adapting to 3/4 inch or 1 inch stile thickness and capable of being fastened (by clip) to stiles starting at wall line.

J. Wall Posts: Pre-drilled for door hardware, 18-8, Type 304, 16 gauge stainless steel with satin finish; 1 inch x 1-1/2 inches x 58 inches high.

K. Anchors: Expansion shields and threaded rods at floor connections as applicable.

2.2 HARDWARE

A. Compliance: Operable with one hand, without tight grasping, pinching, or twisting of the wrist, and force to operate does not exceed 5 pounds.

B. Emergency Access: Hinges, latch allow door to be lifted over keeper from outside compartment.

C. Materials: 18-8, Type 304, heavy-gauge stainless steel with satin finish.

D. Doorstops: Prevents in swinging doors from swinging out beyond stile; on out swing doors, doorstop prevents door from swinging in beyond stile.

E. Fastening: Hardware is secured to door and stile with pin-in-head Torx stainless steel machine screws. Hinges, latch and optional door stops secured to door with pin-in-head Torx stainless steel machine screws into factory-installed, threaded brass inserts. Fasteners for hinges latch and optional door stops secured directly into core not acceptable.
   1. Threaded Brass Inserts: Factory-installed; withstand direct pull force exceeding 1500 lbs. per insert.

F. Clothes Hooks / Bumper: Projecting no more than 1-1/8 inch from face of door. Mount at +48”.

G. Door Latch: Track of door latch prevents in swing doors from swinging out beyond stile; on out swing doors, door keeper prevents door from swinging in beyond stile; 16 gauge sliding door latch, 14 gauge keeper; requires less than 5-lb force to operate; twisting latch operation not acceptable.

H. Locking: Door locked from inside by sliding door latch into keeper.

I. Pull: U-shaped or loop handle on each side of the door.

J. Hinge Type:
   a. Standard.
      1) Balanced, with field-adjustable cam to permit door to be fully closed or partially open when compartment is unoccupied.

K. Mounting Brackets:
   a. Full-Height.
      1) Mounting Brackets: 18 gauge (1.2 mm) stainless steel and extend full height of panel.
      2) U-Channels: Secure panels to stiles.

2.3 MISCELLANEOUS MATERIALS

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A. Provide other materials, not specifically described but required for a complete and proper installation, as selected by the Contractor subject to the approval of the Architect.

PART 3 - EXECUTION

3.1 SURFACE CONDITIONS

A. Examine the areas and conditions under which work of this Section will be performed. Correct conditions detrimental to timely and proper completion of the Work. Do not proceed until unsatisfactory conditions are corrected.

3.2 INSTALLATION

A. Coordinate as required with other trades to assure proper and adequate provision in the work of those trades for interface with the work of this Section.

B. Install the work of this Section in strict accordance with the original design, the approved Shop Drawings, pertinent requirements of governmental agencies having jurisdiction, and the manufacturer's recommended installation procedures as approved by the Architect, anchoring all components firmly into position for long life under hard use, plumb, level, and square.
   1. Verify blocking and supports in walls and ceilings have been installed properly at points of attachment.
   2. Verify location does not interfere with door swings or use of fixtures.
   3. Use fasteners and anchors suitable for substrate and project conditions.
   4. Install units rigid, straight, plumb, and level.
   5. Conceal evidence of drilling, cutting, and fitting to room finish.
   6. Test for proper operation.

C. Except for compartments for the handicapped, adjust doors to remain at a uniformly open position when unlocked.

D. Touchup scratches and abrasions to be permanently and completely invisible to the unaided eye from a distance of five feet.

END OF SECTION 10 2130

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SECTION 10 2810 - TOILET ACCESSORIES

PART 1 - GENERAL

1.1 SUMMARY

A. Provide toilet accessories where indicated on the Drawings, as specified herein, and as needed for a complete and proper installation.

B. Related Sections: Documents affecting work of this Section include, but are not necessarily limited to, General Conditions, Supplementary Conditions, and Sections in Division 1 of these Specifications.

1.2 SUBMITTALS

A. General: Submit in accordance with Section 01 3300.
1. Product Data: Submit manufacturer's descriptive literature and product specifications for each product. Include data to indicate compliance with the specified requirements.
2. Installation Procedures: Submit manufacturer's recommended installation procedures.
3. Shop Drawings: Submit dimensioned drawings as required to depict the space required for these items, and their interface with the work of other trades.

B. Contract Closeout Submittals: Operation and Maintenance manuals in accordance with requirements of Section 01 7820.

PART 2 - PRODUCTS

2.1 TOILET ACCESSORIES

A. Basis of Design: Bobrick Contura Series.
1. Products specified are for establishing the type, design, and quality required. Products of equal or better type, design, and quality produced by other manufacturers will be considered provided the request for substitution is submitted in accordance with Section 01 2500.

B. Provide all listed products by one manufacturer:

GB-1: Grab Bar constructed of 18 gauge type 304 satin-finish stainless steel, horizontal 2-wall type, concealed mounting, stainless steel, 1-1/2" outside diameter; Bobrick B-6897 .

GM-1: Tempered Glass Mirror; satin finish stainless steel angle frame with corners mitered, ground, and polished smooth; No. 1 quality, 1/4" thick tempered select float glass selected for silvering and electrolytically copper plated by the galvanic process; concealed theft resistant mounting. Bobrick B-2908. Sizes as indicated.

HS-1: Hook Strip, satin finish stainless steel. 1307x24 36 48 60 by ASI, B-232x 24 36 48 60 by BOBRICK. Lengths as shown on Drawings.

PT-1: Paper towel dispenser, with Towelmate surface mounted satin-finish stainless steel; tumbler lock on top of cabinet radius contoured front door, with one piece drawn cover; Bobrick B-4262.

PTW: Combination paper towel & waste receptacle; semi-recessed, satin stainless steel with with two flush tumbler locks. Unit shall come with Towelmate; Bobrick B-38032.

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SD-1: Liquid Soap Dispenser surface mounted; dispenses all-purpose soap corrosion resistant valves, contoured front with drawn cover satin stainless steel, with vessel attached to back; Bobrick B-4112.

SND-1: Sanitary Napkin Disposal; satin stainless steel finish with drawn cover, one piece construction, secured to cabinet with full-length stainless steel piano-hinge; Bobrick B-270.

TP-1: Toilet Paper Dispenser surfaced mounted multi-roll dispenser; with contoured front, with one piece drawn cover and theft resistant heavy duty spindles; Bobrick B-4288.

TP-2: Toilet Paper Dispenser recessed multi-roll dispenser; Type 3-4 stainless steel with satin finish; Bobrick B-6637. Including theft resistant toilet tissue spindle, which is removable only with special key provided; Bobrick 283-604.

TSC-1: Toilet Seat Cover Dispenser; satin stainless steel contoured front, beveled flanges, no exposed corners or edges; Bobrick B-4221.

WR-1: Waste Receptacle, satin finish stainless steel with vinyl wall bumper; Bobrick B-2250.

2.2 OTHER MATERIALS

A. Provide other materials, not specifically described but required for a complete and proper installation, as selected by the Contractor subject to the approval of the Architect.

B. All fixtures shall be provided with vandal-resistant screws and attachments.

C. General Contractor shall provide solid wood, metal or masonry backing as required for all wall-mounted fixtures.

PART 3 - EXECUTION

3.1 SURFACE CONDITIONS

A. Examine the areas and conditions under which work of this Section will be performed. Correct conditions detrimental to timely and proper completion of the Work. Do not proceed until unsatisfactory conditions are corrected.

3.2 INSTALLATION

A. Coordinate as required with other trades to assure proper and adequate provision in the work of those trades for interface with the work of this Section.

B. Install each item in its proper location, firmly anchored into position, level and plumb, and in accordance with the manufacturer's recommendations.

END OF SECTION 10 2810

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SECTION 10 4400 - FIRE PROTECTION SPECIALTIES

PART 1 - GENERAL

1.1 SUMMARY

A. Provide fire protection specialties where shown on the Drawings, as specified herein, and as needed for a complete and proper installation.

B. Related Sections: Documents affecting work of this Section include, but are not necessarily limited to, General Conditions, Supplementary Conditions, and Sections in Division l of these Specifications.

1.2 SUBMITTALS

A. General: Submit in accordance with Section 01 3300.
1. Product Data: Submit manufacturer's descriptive literature and product specifications for each product. Include data to indicate compliance with the specified requirements.
2. Installation Procedures: Submit manufacturer's recommended installation procedures.
3. Shop Drawings: Submit shop drawings as needed to depict the space required for these items, and their interface with the work of other trades.

B. Contract Closeout Submittals: Manufacturer's recommended operating instructions in accordance with requirements of Section 01 7820.

1.3 DEFINITIONS

A. Light (Low) Hazard Location: Locations where total amounts of Class A combustible materials is of minor quantity, including offices, classrooms, and assembly halls.

B. Extra (High) Hazard Location: Locations where the total amounts of Class A combustibles or Class B flammable are present in storage, production, or use, and/or finished product over and above those expected and classed as Ordinary (Moderate) Hazards, including laboratories, woodworking and vehicle repair.

PART 2 - PRODUCTS

2.1 MATERIALS, GENERAL

A. Products specified are for establishing the type, design, and quality required. Products of equal or better type, design, and quality produced by other manufacturers will be considered provided the request for substitution is submitted in accordance with Section 01 2500.

2.2 SURFACE MOUNTED FIRE EXTINGUISHER BRACKETS

A. J.L. Industries No. MB810 or MB818.

2.3 FIRE EXTINGUISHER CABINETS AT LIGHT (LOW) HAZARD LOCATIONS

A. Recessed Cabinets at 2 X 6 (and larger) Walls: J.L. Industries Cosmopolitan 8135W17, 3/8" projection, stainless steel, with powder coat finish, color Bronze, flat trim construction with corners welded and ground smooth.

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2.4 FIRE EXTINGUISHERS

A. Light (Low) Hazard Locations: Provide one multi-purpose, dry chemical, 5 lb. fire extinguisher, **UL rating of 3A-40BC** at each cabinet.
   1. Heavy duty steel cylinder, metal valve and siphon tube, replaceable molded valve stem seal, corrosion and impact resistant epoxy finish, visual pressure gauge, pull pin, upright grip operation.
   2. JL Industries, Cosmic 5E or approved equal.

B. Service, charge, and tag each fire extinguisher not more than five calendar days prior to the Date of Substantial Completion of the Work as that Date is established by the Owner.

PART 3 - EXECUTION

3.1 SURFACE CONDITIONS

A. Examine the areas and conditions under which work of this Section will be performed. Correct conditions detrimental to timely and proper completion of the Work. Do not proceed until unsatisfactory conditions are corrected.

3.2 INSTALLATION

A. Coordinate as required with other trades to assure proper and adequate provision in the work of those trades for interface with the work of this Section.

B. Install the work of this Section in strict accordance with the original design, the approved Shop Drawings, pertinent requirements of governmental agencies having jurisdiction, and the manufacturer's recommended installation procedures as approved by the Owner, anchoring all components firmly into position for long life under hard use.

C. Locate bracket-mounted extinguishers where directed by the Owner and the Fire Department official.

END OF SECTION 10 4400

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SECTION 11 5270 - AUDIO-VISUAL MOUNTINGS

PART 1 - GENERAL

1.1 SUMMARY

A. Provide audio-visual mountings as shown on the Drawings, as specified herein, and as needed for a complete and proper installation.

B. Related Sections: Documents affecting work of this Section include, but are not necessarily limited to, General Conditions, Supplementary Conditions, and Sections in Division l of these Specifications.

1.2 SUBMITTALS

A. General: Submit in accordance with Section 01 3300.
1. Product Data: Submit manufacturer's descriptive literature and product specifications for each product. Include data to indicate compliance with the specified requirements.
2. Installation Procedures: Submit manufacturer's recommended installation procedures.
3. Shop Drawings: Submit design, calculations, loads, reactions, drawings, and other data.

B. Contract Closeout Submittals: Operation and Maintenance manuals in accordance with requirements of Section 01 7820.

PART 2 - PRODUCTS

2.1 FLAT PANEL TV MONITOR MOUNT

A. Products specified are for establishing the type, design, and quality required. Products of equal or better type, design, and quality produced by other manufacturers will be considered provided the request for substitution is submitted in accordance with Section 01 2500.
1. ST650(P) by peerless-AV; tilting wall mount; maximum TV weight of 180 lbs; OPM-0179-13.
2. TS525TU by Chief; swing arm mount; maximum TV weight of 125 lbs; OPM-0179-13.

2.2 OTHER MATERIALS

A. Provide other materials, not specifically described but required for a complete and proper installation, as selected by the Contractor subject to the approval of the Architect.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Examine the areas and conditions under which work of this Section will be performed. Correct conditions detrimental to timely and proper completion of the Work. Do not proceed until unsatisfactory conditions are corrected.

B. Coordinate and provide anchorage and backing as needed.

C. Install all units in strict accordance with the manufacturer's installation requirements.

END OF SECTION 11 5270

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SECTION 22 00 00 – PLUMBING

PART 1: - GENERAL

1.1 GENERAL MECHANICAL PROVISIONS:

A. The General Mechanical Provisions, Section 23 00 00, shall form a part of this Section with the same force and effect as though repeated here.

1.2 SCOPE:

A. Included: Provide all labor, materials and services necessary for complete, lawful and operating systems as shown or noted on the drawings or as specified here. The work includes, but is not necessarily limited to, the following:
1. Sanitary sewer system.
2. Domestic water system.
3. Drain system (including condensate drain).
4. All equipment as shown or noted on the drawings or as specified.
5. Coordinate and cooperate with commission agent as required by Section 01 91 13.
6. Demolition as indicated on drawings. Where demolition is called for, remove all equipment, piping, braces, housekeeping pads, supports and related items no longer required.
7. Lead Free: All equipment, fixtures, valves and fixture stops providing water for human consumption installed after January 1, 2010, must meet the “Lead Free” requirements for the State of California.

B. Work Specified Elsewhere:
1. Line voltage power wiring, disconnect switches and installation of all starters are included in the Electrical Section unless otherwise noted.
2. Concrete and reinforcing steel unless specifically called for on the drawings or specifications.
3. Painting unless specifically called for in the drawings or specifications.
4. Carpentry.

PART 2: - PRODUCTS

2.1 PIPING MATERIALS:

A. Sanitary Sewer:
1. Soil, Waste and Vent Piping (Non-Pressurized) - Inside Building, Within Five Feet of Building Walls: Standard weight coated cast iron pipe and fittings. Plain end, CISPI 301, ASTM A888, or hub end with rubber gaskets, ASTM A74, ASTM C564. ABI, Charlotte, Tyler. Couplings shall be heavy-duty shielded couplings, Type 304 stainless steel, with neoprene gasket, ASTM C-1540. Husky HD 2000, Clamp-All 80, Mission HeavyWeight. MG Couplings are also acceptable. Size 2" and smaller above grade may be standard weight galvanized steel, ASTM A53, with coated cast iron recessed drainage fittings, ANSI B16.12. 2" and smaller exposed to view shall be galvanized steel, ASTM A53, with coated cast iron recessed drainage fittings, ANSI B16.12.
Where required by soil conditions, as determined by the method described in ASTM A74-09, Appendix X2, below grade cast iron pipe and fittings shall have 8 mil (minimum) Polyethylene Encasement (Poly Wrap), Per ANSI/AWWA C105/A21.5.
2. Cleanouts: Comparable models of Josam, Wade, Mifab or Zurn are acceptable. Grease plug prior to installation. Floor Cleanouts: Smith 4023 with nickel bronze top in finished areas; Smith 4223 in utility areas. Wall Cleanouts: Smith 4532 with stainless steel cover and screw. Pipe Cleanouts: Iron body with threaded brass plug. Site cleanouts more than 5’ outside building may be PVC with PVC plug.

3. Cleanout Box: Precast reinforced concrete. Cast iron lid marked for service. Christy F8 in foot traffic areas; G5 in roadways. Provide with PVC pipe extension down to top of pipe.

B. Water:

1. Hot and Cold Water Piping: Materials used in the water system, except valves and similar devices, shall be of like material, except where otherwise approved by Engineer and Authority Having Jurisdiction, prior to start of work. For existing water systems of galvanized steel or copper, materials shall match existing.
   a. Inside Building, Within Five Feet of Building Walls, and All Above Grade to Civil P.O.C.:
      (1) Schedule 40 galvanized steel pipe, ASTM A53. 150 psi galvanized malleable iron screwed fittings, ANSI B16.3.

   -or-
      (2) Hard temper seamless copper, ASTM B88. Wrought copper fittings, ANSI B16.22. Type L with brazed joints (1100F, min.). 1-1/2" and smaller above grade may be soldered, 95-5 tin-antimony solder. All nipples shall be lead-free red brass (85% copper). Above grade fittings may be copper press fittings, ASME B16.18 or ASME B16.22. EPDM O-rings. Installation shall be in accordance with the manufacturer’s installation instructions. ProPress, Apollo, Mueller Streamline.
2. Valves and Specialties:
   a. Valves:
      (1) General: Manufacturer's model numbers are listed to complete description. Equivalent models of Crane, Kitz, Milwaukee, Nibco, Stockham, Walworth or Watts are acceptable. All valves of a particular type or for a particular service shall be by the same manufacturer. Butterfly valves may be substituted for 2-1/2" and larger gate valves above grade; see specification below.
      (2) Gate Valve: 2" and Smaller: All bronze. Non-rising stem. Threaded bonnet. Wedge disk. Malleable iron handwheel. 200 psi CWP. Nibco T-113-LF. 2-1/2" and Larger: Iron body, bronze mounted. Non-rising stem. Resilient wedge. 200 psi CWP. Flanged or AWWA hub end as applicable. Nibco F-619-RWS. Underground valves shall have square operating nut.
      (3) Butterfly Valve: Ductile iron threaded lug body. Aluminum bronze disk. EPDM molded-in liner and seals. 416 stainless steel shaft. 6" and smaller valves shall have multi-position lever handle. 8" and larger valves shall have gear operator. Provide 2" extension neck at insulated pipes. Nibco LD-2000.
      (4) Ball Valve: Full port. Lead free brass body, cap, stem, disk and ball. Screwed connection. Lever handle. PTFE seat and stem packing. Min. 400 psi CWP. CSA-US and UL listed. Nibco T-FP-600A-LF.
   b. Instruments:
      (1) Thermometer: 3" dial. Stainless steel case. Back or bottom connected as required. 1/2" NPT. 20F-240F, 2F divisions for hot water. 25F-125F, 2F divisions for chilled water. 2" insertion length. Allowance to be made for insulation thickness. For installations over 7 feet above finish floor, provide digital thermometer with remote reader. Marshalltown, Moeller, Taylor, Tel Tru, Winters.
      (2) Thermometer Well: Brass well. Suitable for thermometer above. Provide 2" extension at insulated pipes.
   c. Miscellaneous Specialties:
      (1) Temperature and Pressure Relief Valve: ASME rated fully automatic, reseating combination temperature and pressure relief valve sized in accordance with energy input. Sensing element immersed within upper 6" of tank. Watts.
      (2) Union: 2" and Smaller: AAR malleable iron, bronze to iron ground seat. 300 psi. Unions for copper piping shall be copper or lead free cast bronze. Anvil. Size 2-1/2" and Larger: Grooved pipe, synthetic gasket, malleable iron housing. EPDM gasket, NSF 61 rated. Victaulic Style 77, Gruvlok.

(3) Dielectric Coupling: Insulating union or flange rated for 250 psig. Wilkins DUXL Series.

(4) Shock Absorber: Multiple bellows. All stainless steel construction. Designed and applied in accordance with PDI WH201. Amtrol, Smith, Wade, Zurn.

(5) Flexible Connection: Corrugated bronze or stainless steel core covered with high tensile bronze or stainless steel tubular braid. 150 psi working pressure. 2" and smaller shall have screwed connections. 2-1/2" and larger shall have flanged connections. Flexonics, Keflex.

C. Drain Piping (including Condensate): Same as inside building cold water piping.

D. Miscellaneous Piping Items:

1. Pipe Support:
   a. Pipe Hanger: Steel "J" hanger with side bolt for piping 4" and smaller; steel clevis hanger for piping 5" and larger. Load and jam nuts. Size and maximum load per manufacturer's recommendation. Felt liner for copper piping. Hanger and rod shall have galvanized finish. B-Line, Anvil, Unistrut.
   b. Isolating Shield: Galvanized steel shell and reinforcing ribs. 1/4" non-conducting hair felt pad. Pipe hanger in accordance with paragraph above. Increase hanger size per manufacturer's recommendation. B-Line, Semco, Superstrut.
   c. Construction Channel: 12-gage, 1-5/8" x 1-5/8" galvanized steel channel. Single or multiple section. Self-locking nuts and fittings. B-Line, Anvil, Unistrut.
2. Flashing: Vent flashing shall be 4 lb/ft2 lead, 16" sq. flange, length sufficient to be turned down 2" into vent. Oatey. Flashing for other piping through roof shall be prefabricated galvanized steel roof jacks with 16" sq. flange. Provide clamp-on storm collar and seal water tight with mastic. For cold process built-up roof, material shall be 4 lb/ft^2 lead instead of galvanized steel. For single-ply roofing, use the roofing manufacturer’s recommended flashing material.

2.2 PIPING INSULATION MATERIALS:

A. General: All piping insulation materials shall have fire and smoke hazard ratings as tested under ASTM E-84 and UL 723 not exceeding a flame spread of 25 and smoke developed of 50.

B. Pre-Molded Fiberglass: Heavy density sectional pre-molded fiberglass with vapor barrier laminated all service jacket and pressure sealing vapor barrier lap. Thermal conductivity shall not exceed 0.25 Btu-in/hr-ft2-F at a mean temperature of 50F. Perm rating 0.02, ASTM E96. Puncture rating 50 Beach units, ASTM D781. Provide 3" (min.) wide tape of same material as lap for butt joints. For hot water piping to 140°F, thickness shall be 1" for pipe sizes less than 1”; 1 1/2" thickness for pipe sizes 1" and 1-1/2”; 2” thickness for 2” and larger. See Title 24, Part 6 “California Energy Code” for temperatures above 140°F. Knauf, Johns-Manville, Owens-Corning.

C. Fiberglass Blanket: Unfaced. Thermal conductivity shall not exceed 0.25 Btu-in/hr-ft2-F at a mean temperature of 50F. 1-1/2" thickness. Knauf, Johns-Manville, Owens-Corning.

D. PVC Jacket (for pipe, fittings and valves): Pre-molded polyvinyl chloride (PVC) jackets, 0.020" thickness. Size to match application. Provide solvent weld adhesive and PVC vapor barrier pressure sealing tape by same manufacturer. Zeston.

E. Aluminum Jacketing: Aluminum pipe and fitting jacketing, 0.016" thickness for straight pipe. 0.024" thickness for fittings. Integral moisture barrier. Stucco-Embossed finish. Provide pre fabricated aluminum strapping and seals by same manufacturer. ITW or RPR.

F. Outdoor Weather Barrier Mastic: Childers CP-10/11, Foster 46-50.

G. Metal Jacketing Sealant: Childers CP-76, Foster 95-44.

H. Molded Closed Cell Vinyl (Piping Insulation Under Accessible Lavatories and Sinks): Fully molded closed cell vinyl, 1/8" thick, minimum. Thermal conductivity shall not exceed 1.17 BTU-in/hr-ft^2-ºF at an average temperature of 73ºF. Weep hole in cleanout nut enclosure. Hinged cap over valve to allow access for servicing. Out of sight nylon fastening system and internal ribs on drain insulation to provide air gap (Lav-Guard Only). Truebro Lav-guard, McGuire Pro Wrap, Plumberex.

2.3 FIXTURES:

A. General: Provide rough-in for and install all plumbing fixtures shown on drawings. Except in equipment rooms, all trim, valves and piping not concealed in wall structure, above ceiling or below floors, shall be brass with polished chrome plate finish, unless noted otherwise. All enameled fixtures shall be acid resisting. Standard color is white unless otherwise noted.

B. Schedule: Refer to Plumbing Fixture Schedule on the drawings for list of fixtures and trim. Manufacturer's model numbers are listed to complete description. Equivalent models of American Standard, Eljer, Elkay, Haws, Just, Kohler, T&S Brass, Willoughby or Zurn are acceptable. For drainage fixtures, equivalent models of Josam, Mifab, Smith, Wade or Zurn are acceptable.

C. Stops and P-Traps: All fixtures shall be provided with stops and P-Traps as applicable. Wall mounted faucets, valves, etc. shall have integral stops or wall mounted stops.
   1. Stops: All hot and cold water supplies shall be 1/2" FIP inlet ¼ turn ball angle stops with loose key, lock shield, and chrome plated copper riser (3/8" for 2-1/2 gpm and less, otherwise 1/2"). BrassCraft, Dahl, McGuire.
   2. P-Traps: Semi-cast brass, ground joint. 17-gage. Clean-out plug. Unobstructed waterway. California Tubular, Dearborn Brass, McGuire.

D. Caulking: Caulk fixtures with white G.E. "Sanitary SCS1700", mildew resistant silicone sealant with EPA listed anti-microbial.

2.4 EQUIPMENT:

A. General Requirements:
   1. Capacity: Capacities shall be in accordance with schedules shown on drawings. Capacities are to be considered minimum.
   2. Dimensions: Equipment must conform to space requirements and limitations as indicated on drawings and as required for operation and maintenance. Equipment will not be accepted that does not readily conform to space conditions. Prepare and submit layout drawings for all proposed equipment (different than scheduled units) showing actual job conditions, required clearances for proper operation, maintenance, etc.
   3. Ratings - Electrical: Electrical equipment shall be in accordance with NEMA standards and UL or ETL listed where applicable standards have been established.
   4. Piping: Each item or assembly of items shall be furnished completely piped for connection to services. Control valves and devices shall be provided. Equipment requiring domestic water for non-potable use shall be provided with backflow preventer acceptable for intended use by local governing authorities.
   5. Electrical:
      a. General: Each item or assembly of items shall be furnished completely wired to individual terminal blocks for connection to single branch electrical circuit. All electrical accessories and controls required by equipment shall be furnished. Provide terminal blocks for controls and interlocks not included in equipment package. Controllers and other devices shall be in NEMA 1 or 3R enclosures as applicable.

b. Wiring: Conductors, conduit, and wiring shall be in accordance with Electrical Specifications. Individual items within assembly shall be separately protected with dead front, fused disconnect, fuse block, or circuit breaker for each ungrounded conductor, all accessible on operating side of equipment. Switches, contacts and other devices shall be in ungrounded conductors.

c. Control Voltage: Equipment connected to greater than 240 volts shall be provided with 120 volt control circuit from integral protected transformer if separate source is not indicated on plans. 240 volt control is acceptable if confined within control panel.

d. Submittals: Included in shop drawings shall be internal wiring diagrams and manufacturer's recommended external wiring.

B. Electric Water Heater: Glass lined tank with magnesium anode protection. 150 psi working pressure. Fully insulated. Automatic temperature control. High limit control. Provide ASME rated temperature and pressure relief valve sized in accordance with energy input, dielectric couplings and drain cock. UL listed. Bradford-White, A.O. Smith, American Appliance, State Industries.

PART 3: - EXECUTION

3.1 PIPING INSTALLATION:

A. General:

1. Piping Layout: Piping shall be concealed in walls, above the ceilings, or below grade unless otherwise noted. Exposed piping shall run parallel to room surfaces; location to be approved by Architect. No structural member shall be weakened by cutting, notching, boring or otherwise, unless specifically allowed by structural drawings and/or specifications. Where such cutting is required, reinforcement shall be provided as specified or detailed. All piping shall be installed in a manner to ensure unrestricted flow, eliminate air pockets, prevent any unusual noise, and permit complete drainage of the system. All piping shall be installed to permit expansion and contraction without strain on piping or equipment. Vertical lines shall be installed to allow for building settlement without damage to piping. Pipe sizes indicated on the drawings are nominal sizes unless otherwise noted.

2. Joints:

a. Threaded: Pipe shall be cut square and reamed to full size. Threads shall be in accordance with ANSI B2.1. Joint compound or tape suitable for conveyed fluid shall be applied to male thread only. Joints shall be made with three threads exposed.

b. Brazed: Filler rod shall be of suitable or the same alloy as pipe. Brazing filler metal shall have a minimum melting point of 1100FBrazing shall be performed by a Certified Brazer as certified by an organization/institution that uses standards recognized by the American Welding Society (AWS) and meets the requirements of the ASME Boiler and Pressure Vessels Code, Section 9.

c. Open Ends: Open ends of piping shall be capped during progress of work to preclude foreign matter.

d. Electrical Equipment: Piping shall not be run over electrical panels, motor control centers or switchboards.

3. Fittings and Valves:

a. Standard Fittings: All joints and changes in direction shall be made with standard fittings. Close nipples shall not be used.

b. Reducers: Pipe size reduction shall be made with bell reducer fittings. Bushings shall not be used.

c. Unions: A union shall be installed on the leaving side of each valve, at all sides of automatic valves, at equipment connections, and elsewhere as necessary for assembly or disassembly of piping.

d. Valves: All valves shall be full line size. Provide shut-off valve for each building and each equipment connection. Provide shut-off valve at each point of connection to existing

piping. At equipment connections, valves shall be full size of upstream piping, except that gas valves within 18" of the point of connection to the equipment may be the same size as the equipment connection.

e. Valve Accessibility: All valves shall be located so that they are easily accessible. Valves located above ceilings shall be installed within 24" of the ceiling. For situations where this is not practical or where valves are greater than 10' above the floor, chain wheel operators shall be provided. Chain shall extend down to 7' above the floor. All such installations must have prior review by the Engineer.

4. Pipe Support:

a. General: Hangers shall be placed to support piping without strain on joints or fittings. Maximum spacing between supports shall be as specified below. Actual spacing requirements will depend on structural system. Side beam clamps shall be provided with retaining straps to secure the clamp to the opposite side of the beam. Vertical piping shall be supported with riser clamp at 20' on center (maximum). Support pipe within 12" of all changes in direction. Support individual pipes with pipe hanger. Copper piping systems which protrude through a surface for connection to a fixture stop or other outlet shall be secured with a drop ell, Nibco 707-3-5, to a Holdrite Model #SB1 bracket; nipple through surface shall be threaded brass.

(1) Pressure Pipe:

Pipe Size (Inches)	Maximum Spacing* Between Supports (ft.)		
	Copper	Sch. 40 steel	Plastic
1/2	6	6	4
3/4	6	8	4
1	6	8	4
1-1/4	6	10	4
1-1/2	6	10	4
2	10	10	4
2-1/2	10	10	4
3	10	10	4
4	10	10	4
6	10	10	4
8	10	10	4

*Based on straight lengths of pipe with couplings only. Provide additional supports for equipment, valves or other fittings. Seismic requirements may reduce maximum spacing.

(2) Gravity Drain Pipe: Piping shall be supported at each length of pipe or fitting, but in no case at greater spacing than indicated above for pressure pipe.

b. Hot and Cold Water Piping: All hot and cold water piping shall have isolating shield; no portion of this piping shall touch the structure without an isolating shield except at anchor points for fixture rough-in.

c. Trapeze: Trapeze hangers of construction channel and pipe clamps may be used. Submit design to Engineer for review.

5. Miscellaneous:

a. Escutcheons: Provide chrome plated metal escutcheons where piping penetrates walls, ceilings, or floors in finished areas.

b. Pipe Sleeves: All piping passing through concrete shall be provided with pipe sleeves. Allow 1" annular clearance between sleeve and pipe for piping 3" and smaller, otherwise 2" annular clearance. Piping through walls or footings below grade shall be sealed with Link Seal. Pipes passing through floors shall have Holdrite HydroFlame water/firestop sleeves, UL listed.

c. Pipes Passing through Fire Rated Surfaces: Pipes passing through fire rated walls, floors, ceilings, partitions, etc. shall have the annular space surrounding the pipe or pipe

insulation sealed with fire rated materials in accordance with the requirements of 2025 CBC Section 714.

d. Dielectric Couplings: Dielectric couplings shall be installed wherever piping of dissimilar metals are joined, except that bronze valves may be installed in ferrous piping without dielectric couplings.

e. Thermometer Tap: Provide tee for instrument well. Minimum size of pipe surrounding well shall be 1-1/2". Mount on side of pipe.

B. Sanitary Sewer Piping:

1. General: Where inverts are not indicated, piping shall be installed at 1/4" per foot pitch. Piping 4" and larger may be installed at 1/8" per foot pitch where structural or other limitations prevent installation at a greater pitch. Bell and spigot piping shall be installed with barrel on sand bed; excavate hole for bell.
2. Cleanouts: Install cleanouts at ends of lines, at changes of direction greater than 45 degrees, and at not greater than 100 foot intervals. Locate interior cleanouts in accessible locations and bring flush to finished surface.
3. Vents: Vents shall terminate not less than 6" above the roof nor less than 12" from any vertical surface nor within 10' of any outside air intake. Install horizontal vent lines at 1/4" per foot pitch. Offset vents 2' minimum from gutters, parapets, ridges and roof flashing.

C. Water Piping: Connections to branches and risers shall be made from top of main. Supply header in fixture battery shall be full size to last fixture, reducing in size only on individual connections to each fixture in battery. Minimum pipe size shall be 1/2", unless otherwise noted. Exposed fixture stops and flush valves shall be installed with brass nipples for copper piping and galvanized nipples for galvanized piping. Nipples are to extend from outside of wall to fitting at header or drop behind finish wall surfaces. Pipe nipples shall be same size as stop or flush valve. Provide shut off for each building and each connection to equipment. Shock absorbers shall be installed in a vertical position as indicated on drawings. Only equipment mounted on vibration isolators shall be connected with flexible connections. Underground hot water and cold water piping which run parallel to each other shall be installed a minimum of 3 feet apart.

D. Drain Piping (Including Condensate): Install with constant pitch to receptacle, 1/4" per foot where possible, otherwise 1/8" per foot minimum. Provide TEE with clean-out plug at all changes of direction. Provide trap at each air handling unit to prevent air leakage. Only equipment mounted on vibration isolators shall be connected with flexible connection. Piping not concealed in wall structure, above ceilings or below floors shall be chrome plated brass, except in equipment rooms, piping shall be galvanized steel. P&T relief and water heater drain piping shall be galvanized steel. Provide secondary drain piping where required.

3.2 PIPING INSULATION INSTALLATION:

A. Domestic Hot Water:

1. General: All domestic hot water piping, fittings and accessories shall be insulated.
2. Pipe: Apply pre-molded fiberglass sections to pipe using integral pressure sealing lap adhesive in accordance with manufacturer's recommendations. Stagger longitudinal joints. Seal butt joints with factory supplied pressure sealing tape.
3. Fittings and Valves:
   a. Wrap all fittings and valves with pre-cut fiberglass blanket to thickness matching adjoining insulation. Cover blanket with PVC jacket in accordance with manufacturer's recommendations. Solvent weld. Seal all joints with factory supplied pressure sealing vapor barrier tape with 1-1/2" (min.) overlap on both sides of joint. Insulate valves to stem. Do not insulate unions, flanges or valves unless water temperature exceeds 140F or the piping is exposed to weather.
   b. For miscellaneous fittings and accessories for which PVC jackets are not available or where proximity of fittings precludes a neat-appearing installation, the Contractor may cover the

fiberglass blanket with stretchable glass fabric, one coat of lagging adhesive and a final coat of vapor barrier coating. All exposed ends of insulation shall be adequately sealed.

4. Additional Finish for Exposed Piping and Equipment: All piping and equipment exposed to view but protected from the weather shall be given an additional finish of PVC jackets.

B. Cold Water Piping-Freeze Protection: All cold water piping exposed to weather or other areas subject to freezing (i.e. ventilated attics, uninsulated exterior soffits, etc.) shall be insulated same as hot water piping. Cover with PVC jacketing where exposed to view, aluminum jacketing where exposed to weather.

C. Piping Insulation Under Accessible Lavatories and Sinks: Water piping, water stops and drain piping under accessible lavatories and sinks shall be insulated with 1/8" thick molded closed cell vinyl. Installation shall be in accordance with manufacturer's instructions.

3.3 FIXTURE INSTALLATION:

A. Fixture Height: Shall be as indicated on Architectural drawings.

B. Floor Drains or Floor Sinks: Shall be placed parallel to room surfaces, set level, flush with floor, and adjusted to proper height to drain. Cover openings during construction to keep all foreign matter out of drain line.

C. Wall Hung Fixtures: Shall be provided with proper backing and hanger plates secured to wall. Fixtures mounted on carriers shall bear against stop nuts, clear of wall surface. Caulk fixtures against walls with white G.E. "Sanitary SCS1700" silicone sealant. Caulking shall be smooth and flush with fixture surface (not concave).

D. Floor Mounted Fixtures: Shall be provided with proper support plates. Caulk floor mounted fixtures with white G.E. "Sanitary SCS1700" silicone sealant. Caulking shall be smooth and flush with fixture surface (not concave).

E. Other Connections: Rough-in and connection for trim or fixtures supplied by others shall be included in this specification section.

3.4 EQUIPMENT INSTALLATION:

A. General: It shall be the responsibility of the equipment installer to insure that no work done under other specification sections shall in any way block, or otherwise hinder the equipment. All equipment shall be securely anchored in place.

B. Connections to Equipment: Where size changes are required for connections to equipment, they shall be made immediately adjacent to the equipment and, if possible, inside the equipment cabinet.

3.5 TESTS AND ADJUSTMENTS:

A. General: Unless otherwise directed, tests shall be witnessed by a representative of the Architect. Work to be concealed shall not be enclosed until prescribed tests are made. Should any work be enclosed before such tests, the Contractor shall, at his expense, uncover, test and repair all work to original conditions. Leaks and defects shown by tests shall be repaired and entire work retested. Tests may be made in sections, however, all connections between sections previously tested and new section shall be included in the new test.

B. Gravity Systems:

1. Sanitary Sewer: All ends of the sanitary sewer system shall be capped and lines filled with water to the top of the highest vent, 10' above grade minimum. This test shall be made before any fixtures are installed. Test shall be maintained until all joints have been inspected, but no less than 2 hours.
2. Drains (Including Condensate): Similar to Sanitary Sewer.

C. Pressure Systems:
   1. General: There shall be no drop in pressure during test except that due to ambient temperature changes. All components of system not rated for test pressure shall be isolated from system before test is made.
   2. Domestic Hot and Cold Water Piping: Maintain 100 psig water pressure for 4 hours.

D. Fixtures: Provide torque testing of water closet carrier anchor bolts in presence of Inspector. If Inspector is not available, a testing agency shall handle the inspection.

3.6 DISINFECTION:

A. Disinfect all domestic water piping systems in accordance with 2025 CPC Section 609.10, and in accordance with administrative authority. Disinfection process shall be performed in cooperation with health department having jurisdiction and as required by applicable codes in presence of Inspector of Record (IOR). During procedure signs shall be posted at each water outlet stating, "Chlorination Do Not Drink". Contractor shall notify the IOR 48 hours prior to the need for testing so the IOR can make arrangements for the testing laboratory to collect samples and test the water. Samples shall be taken at the furthest point of each building. Contractor shall obtain a copy of the test results from the Testing laboratory and shall provide copies to the Architect, IOR and Owner before project completion. If the water fails the bacteriological test, Contractor shall disinfect the piping again and pay for any retesting required, at no additional cost to owner. Contractor shall include copy of Bacteriological Test Results at closeout with operation and maintenance manuals.

END OF SECTION

SECTION 23 00 00 - GENERAL MECHANICAL PROVISIONS

PART 1: - GENERAL

1.1 GENERAL CONDITIONS:

A. The preceding General and Special Conditions and Divisions 00 and 01 requirements shall form a part of this Section with the same force and effect as though repeated here. The provisions of this Section shall apply to all of the Sections of Divisions 21, 22 and 23 of these Specifications and shall be considered a part of these sections.

1.2 CODES AND REGULATIONS:

A. All work and materials shall be in full accordance with current rules and regulations of all applicable codes. Nothing in these Drawings or Specifications is to be construed to permit work not conforming to these codes. Should the Drawings or Specifications call for material or methods of construction of a higher quality or standard than required by these codes, the Drawings and Specifications shall govern. Applicable codes and regulations include, but are not necessarily limited to, the following:
1. California Code of Regulations (CCR):
    a. Title 8, Industrial Relations
    b. Title 24, Part 1, Administrative Regulations, 2025 Edition
    c. Title 24, Part 6, California Energy Code, 2025 Edition
    d. Title 24, Part 11, California Green Building Code, 2025 Edition
2. California Building Code - CBC - 2025
3. California Mechanical Code - CMC - 2025
4. California Plumbing Code - CPC - 2025
5. California Fire Code - CFC - 2025
6. California Electrical Code - CEC - 2025
7. Air Diffusion Council - ADC
8. American Gas Association - AGA
9. Air Movement and Control Association - AMCA
10. American National Standards Institute - ANSI
11. Air Conditioning and Refrigeration Institute - ARI
12. American Society of Heating, Refrigerating, and Air Conditioning Engineers - ASHRAE
13. American Society of Mechanical Engineers - ASME
14. American Society for Testing and Materials - ASTM
15. American Water Works Association - AWWA
16. Cast Iron Soil Pipe Institute - CISPI
17. National Electrical Manufacturers Association - NEMA
18. National Fire Protection Association - NFPA
19. National Sanitation Foundation - NSF
20. Occupational Safety and Health Act - OSHA
21. Plumbing and Drainage Institute - PDI
22. Sheet Metal and Air Conditioning Contractors National Association - SMACNA
23. Underwriters' Laboratory - UL

1.3 PERMITS AND FEES:

A. The Contractor shall take out all permits and arrange for all tests in connection with his work as required by Section 01 1100. All charges shall be included in the work.

1.4 COORDINATION OF WORK:

A. Layout of materials, equipment and systems is generally diagrammatic unless specifically dimensioned. Some work may be shown offset for clarity. The actual locations of all materials, piping, ductwork, fixtures, equipment, supports, etc. shall be carefully planned prior to installation of any work in order to avoid all interference with each other, or with structural, electrical, architectural or other elements. Verify the proper voltage and phase of all equipment with the electrical plans. If discrepancies are discovered between drawing and specification requirements, the more stringent requirement shall apply. All conflicts shall be called to the attention of the Architect and the Engineer prior to the installation of any work or the ordering of any equipment. No work shall be prefabricated or installed prior to this coordination. No costs will be allowed to the Contractor for any prefabrication or installation performed prior to this coordination.

B. Mandatory Coordination and Shop Drawings:

1. Prepare or have prepared high level detailed Shop Drawings in plan view, with cross-sections as necessary, indicating the proposed installation plan for all HVAC, mechanical, fire sprinkler, and plumbing installations for the project. These Drawings should depict actual elevations and linear dimensions, as well as all routing changes, transitions, major offsets, deck and structural attachments deemed necessary to accomplish the installation. Individual Shop Drawings may be prepared for each trade working within the designated space or area; however, the coordination of the consolidated installation shall remain the responsibility of the Contractor. These Shop Drawings shall be provided to each Subcontractor having Work in each area for coordination. Any fittings, offsets or other changes due to coordination shall be at no additional cost to Owner.
2. Whereas the Drawings are diagrammatic, showing only the general arrangement of the systems, Contractor shall have responsibility for the fitting of materials and equipment to other parts of the equipment and structure, and to make adjustments as necessary or required to resolve space problems, preserve service room, and avoid architectural and structural elements and the Work of other trades. Contractor may be required to identify certain areas to relocate installations within the spaces depicted on the Drawings, e.g., ductwork and/or piping may be shifted within the space shown to accommodate other systems. Such functional relocations shall not be deemed a change to the requirements of the Contract. In the event a major re-routing of a system appears necessary, Contractor shall prepare and submit for approval, Shop Drawings of the proposed rearrangement.
3. Because of the diagrammatic nature and small scale of the Drawings, all necessary offsets, adjustments, and transitions required for the complete installation are not shown. Contractor shall carefully investigate the conditions affecting all the Work and shall arrange such Work accordingly, furnishing such fittings, equipment, valves, accessories, offsets, etc., as may be required, regardless of size or cost, to meet such conditions, at no additional cost to the Owner.
4. Coordination changes are not design changes and shall be provided at no additional cost to Owner. Any guidance, drawing or clarification issued by the Architect or Engineer to assist the Contractor or their sub-contractors in their coordination during construction are not design changes and shall be provided at no additional cost to Owner.
5. Resolve differences or disputes between subcontractors and materials suppliers concerning coordination, interference, or extent of work between sections. The Contractor's decisions, if consistent with the Contract Documents, shall be final. The Architect and their Consultants are not required to coordinate work between sections and will not do so. Any changes required that affect the design intent shall be presented to and approved by the Architect and Engineer of Record.
6. The coordinated Shop Drawings must be signed off by HVAC, Plumbing, Fire Sprinkler, Electrical, Framing, Ceiling Installation, and Data and Low Voltage Subcontractors.
7. The signed off Shop Drawings shall be submitted to the Owner's Representative for review and approval prior to commencement of installation.
8. Provide reviewed Shop Drawings to each Subcontractor having Work in each area.

1.5 GUARANTEE:

A. Guarantee shall be in accordance with the General Conditions. These Specifications may extend the period of the guarantee for certain items. Where such extensions are called for, or where items are normally provided with guarantee periods in excess of that called for in the General Conditions, the certificate of

guarantee shall be furnished to the Owner through the Architect. Equipment that is started and operated prior to acceptance shall have the guarantee extended to cover that period. Owner guarantee shall start at acceptance.

1.6 QUIETNESS:

A. Piping, ductwork and equipment shall be arranged and supported so that vibration is a minimum and is not transmitted to the structure.

1.7 DAMAGES BY LEAKS:

A. The Contractor shall be responsible for damages caused by leaks in the temporary or permanent piping systems prior to completion of work and during the period of the guarantee, and for damages caused by disconnected pipes or fittings, and the overflow of equipment prior to completion of the work.

1.8 EXAMINATION OF SITE:

A. The Contractor shall examine the site, compare it with Plans and Specifications, and shall have satisfied himself as to the conditions under which the work is to be performed. No allowance shall subsequently be made in his behalf for any extra expense to which he may be put due to failure or neglect on his part to make such an examination.

1.9 COMPATIBILITY WITH EXISTING SYSTEMS:

A. Any work which is done as an addition, expansion or remodel of an existing system shall be compatible with that system.

1.10 MATERIALS AND EQUIPMENT:

A. Materials and equipment shall be new unless otherwise noted. Materials and equipment of a given type shall be by the same manufacturer. Materials and equipment shall be free of dents, scratches, marks, shipping tags and all defacing features at time of project acceptance. Materials and equipment shall be covered or otherwise protected during construction as required to maintain the material and equipment in new factory condition until project acceptance.

1.11 SUBMITTALS:

A. Shop Drawings: Within 30 days of contract award, the Contractor shall submit six copies of shop drawings for all materials, equipment, etc. proposed for use on this project (this includes deferred approval items). Material or equipment shall not be ordered or installed until written review is processed by the Engineer. Any item omitted from the submittal shall be provided as specified without substitution.
All shop drawings must comply with the following:
1. Shop drawings are required for all material and equipment items and shall include manufacturer's name and catalog numbers, dimensions, capacities, performance curves, and all other characteristics and accessories as listed in the specifications or on the drawings. Descriptive literature shall be current factory brochures and submittal sheets. Capacities shall be certified by the factory. FAX submittals are not acceptable.
2. All shop drawings shall be submitted at one time in a neat and orderly fashion in a suitable binder with title sheet including Project, Engineer and Contractor, table of contents, and indexed tabs dividing each group of materials or item of equipment. All items shall be identified by the specification paragraph number for which they are proposed. All equipment shall also be identified by the mark number as indicated on drawings.
3. All capacities, characteristics, and accessories called for in the specifications or on the drawings shall be high-lighted, circled or underlined on the shop drawings. Calculations and other detailed

data indicating how the item was selected shall be included for items that are not scheduled. Data must be complete enough to permit detailed comparison of every significant characteristic which is specified, scheduled or detailed.

4. Drawings shall be submitted in both hard copy and electronic form, electronic files shall be in their native format (i.e. DWG for AutoCAD, RVT for Revit, etc).
5. Electronic Submittals: Where allowed by Division 01, electronic submittals are acceptable providing the following requirements are met. Electronic submittals which do not comply with these requirements will be rejected.
    a. Submittal shall be a single file in PDF format, with bookmarks for table of contents and each tab, and sub-bookmarks for each item.
    b. All text shall be searchable (except text that is part of a graphic).
    c. Submittal shall include all items noted in 1 through 3 above, except a binder is not required.
    d. Electronic submittals shall be processed through normal channels. Do not submit directly to the Engineer unless the Engineer is the prime consultant for the project.
    e. Contractor shall provide Owner and Owner's Representative with hard copies of the final submittal. Coordinate exact number required with Owner through Architect/Engineer.

B. Substitutions:
1. Manufacturers and model numbers listed in the specifications or on the drawings establish the size, standard of quality, features and function selected by the Engineer for this Project. Alternate manufacturers may be submitted for review by the Engineer as allowed by Section 01 33 00 "Submittal Procedures" or Section 01 25 00 "Substitution Procedures", as applicable. If the alternate manufacturers are not approved, then the Contractor shall submit product specified. Calculations and other detailed data indicating how the item was selected shall be included.
2. Due to the complexity of mechanical equipment, features and functions, where equipment is scheduled on the drawings, any equipment submitted other than scheduled equipment is considered a substitution, and shall comply with the requirements of Section 01 25 00 "Substitution Procedures". It is understood that because of this complexity, subsequent reviews of Substitution Requests may be unavoidable. The Mechanical Engineer waives the fees identified in Section 01 25 00, for the initial and first subsequent review of a Substitution Request for mechanical equipment scheduled on the Drawings.
3. The Contractor shall assume full responsibility that substituted items or procedures will meet the specifications and job requirements and shall be responsible for the cost of redesign and modifications to the work caused by these items. At the Engineer's request, furnish locations where equipment similar to the substituted equipment is installed and operating along with the user's phone numbers and contact person. Satisfactory operation and service history will be considered in the acceptance or rejection of the proposed substitution.

C. Review: Submittals will be reviewed for general conformance with the design concept, but this review does not guarantee quantity shown, nor does it supersede the responsibility of the Contractor to provide all materials, equipment and installation in accordance with the drawings and specifications. The Contractor shall agree that shop drawing submittals processed by the Engineer are not Change Orders; that the purpose of shop drawing submittals by the Contractor is to demonstrate to the Engineer that the Contractor understands the design concept, that he demonstrates his understanding by indicating which equipment and material he intends to furnish and install and by detailing the fabrication and installation methods he intends to use. The Contractor shall agree that if deviations, discrepancies or conflicts between shop drawings and design drawings and specifications are discovered either prior to or after shop drawing submittals are processed by the Engineer, the design drawings and specifications shall control and shall be followed. If a resubmittal is required, submit a complete copy of the Engineer's review letter requiring such with the resubmittal.

1.12 MANUFACTURER'S RECOMMENDATIONS:

A. All material, equipment, devices, etc., shall be installed in accordance with the recommendations of the manufacturer of the particular item. The Contractor shall be responsible for all installations contrary to the manufacturer's recommendations. The Contractor shall make all necessary changes and revisions to achieve such compliance. Manufacturer's installation instructions shall be delivered to and maintained at the job site through the construction of the project.

1.13 SCHEDULING OF WORK:

A. All work shall be scheduled subject to the review of the Architect, Engineer and the Owner. No work shall interfere with the operation of the existing facilities on or adjacent to the site. The Contractor shall have at all times, as conditions permit, a sufficient force of workmen and quantity of materials to install the work contracted for as rapidly as possible consistent with good work, and shall cause no delay to other Contractors engaged upon this project or to the Owner.

1.14 OPENINGS, CUTTING AND PATCHING:

A. The locations and dimensions for openings through walls, floors, ceilings, foundations, footings, etc. required to accomplish the work under this Specification Division shall be provided under this Division. Except as noted below, the actual openings and the required cutting and patching shall be provided by other Divisions. Coring through existing concrete or masonry walls, floors, ceilings, foundations, footings, etc., and saw cutting of concrete floors or asphaltic concrete required to accomplish the work under this Specification Division shall be provided under this Division. Patching of these surfaces shall be provided by other Divisions. Cutting or coring shall not impair the strength of the structure. Any damage resulting from this work shall be repaired at the Contractor's expense to the satisfaction of the Architect.

1.15 EXCAVATION AND BACKFILL:

A. General: Barrel of pipe shall have uniform support on sand bed. Sand shall be free from clay or organic material, suitable for the purpose intended and shall be of such size that 90 percent to 100 percent will pass a No. 4 sieve and not more than 5 percent will pass a No. 200 sieve. Unless otherwise noted, minimum earth cover above top of pipe or tubing outside building walls shall be 24", not including base and paving in paved areas.

B. Excavation: Width of trenches at top of pipe shall be minimum of 16", plus the outside diameter of the pipe. Provide all shoring required by site conditions. Where over excavation occurs, provide compacted sand backfill to pipe bottom. Where groundwater is encountered, remove to keep excavation dry, using well points and pumps as required.

C. Backfill:
1. 6" Below, Around, and to 12" Above Pipe: Material shall be sand. Place carefully around and on top of pipe, taking care not to disturb piping, consolidate with vibrator. Native soil may be used where allowed by Geotechnical (Soils) Report. Where native soil is used, trenching for gravity drain pipe shall be done using a laser-level and trencher.
2. One Foot Above Pipe to Grade: Material shall be sandy or silty loam, free of lumps, laid in 6" layers, uniformly mixed to proper moisture and compacted to required density. If backfill is determined to be suitable and required compaction is demonstrated by laboratory test, water compaction in 6" layers may be used, subject to review by Engineer.

D. Compaction: Compact to density of 95% within building and under walkways, driveways, traffic areas, paved areas, etc. and to 90% elsewhere. Demonstrate proper compaction by testing at top, bottom and one-half of the trench depth. Perform these tests at three locations per 100' of trench.

1.16 PROTECTIVE COATING FOR UNDERGROUND PIPING:

A. All metal pipe below grade shall have a factory applied protective coating of extruded high density polyethylene, 35 to 70 mils total thickness, X-Tru-Coat, Scotchkote. All fittings and areas of damaged coating shall be covered with two layer double wrap of 10 mil polyvinyl tape to total thickness of 40 mils. Johns-Manville. Protective coating shall be extended 6" above surrounding grade.

1.17 ACCESS DOORS:

A. Provide access doors as required where equipment, piping, valves, ductwork, etc. are not otherwise accessible. Access doors shall match the wall or ceiling finish and fire rating as indicated on the Architectural drawings. 16-gage steel frame and 14-gage steel door with paintable finish, except in ceramic tile, where door shall be 16-gage stainless steel with satin finish. Continuous hinge. Key and cylinder lock (except quick-opening type for Emergency Gas Shutoff Valve). Deliver doors to the General Contractor for installation. Milcor. Unless otherwise noted, the minimum sizes shall be as follows:

1 valve up to 1-1/2"	12" x 12"
1 valve up to 3"	16" x 16"

1.18 HOUSEKEEPING PAD:

A. Housekeeping pads shall be 6" high concrete, 3000 PSI strength, unless otherwise noted. Pad shall extend 6" beyond the largest dimensions of the equipment, unless otherwise noted. The top edge of the pad shall have a 3/4" chamfer. The pad shall have #4 reinforcing bars at 12" on center, each way, located at the mid-depth of the pad. If not poured at the same time as the floor slab with pad rebar tied to floor rebar, the pad shall be anchored as follows: Drill 1" diameter, 4" deep hole in floor. Fill hole with "Por-Rok", then insert 8" long, #4 rebar into hole. Provide a minimum of 4 of these anchors per pad, but no more than 4 feet apart in either direction. Anchor points shall be 12" from the edge of the pad.

1.19 CONCRETE ANCHORS:

A. Steel bolt with expansion anchor requiring a drilled hole powder driven anchors, adhesive anchors and concrete screws are not acceptable. Re-use of screw anchor holes shall not be permitted. Minimum concrete embedment shall be 4 1/2 diameters. Minimum spacing shall be 12 diameters center to center and 6 diameters center to edge of concrete. Post-installed anchors in concrete used for component anchorage shall be pre-qualified for seismic application in accordance with ACI 355.2 and ICC-ES AC193. Post-installed anchors in masonry used for component anchorage shall be pre-qualified for seismic applications in accordance with ICC-ES AC01. Maximum allowable loads for tension and shear shall be as determined by Calculation in compliance with ACI 318-19, Chapter 17, and the anchor’s ICC or IAPMO evaluation report. Hilti, Powers, Red Head.

1.20 EQUIPMENT ANCHORING:

A. All equipment shall be securely anchored in accordance with ASCE 07-22, Chapter 13, as amended by CBC Section 1617.1. All equipment mounted on concrete shall be secured with a concrete anchor as shown on drawings at each mounting point.

1.21 SEISMIC SUPPORT AND RESTRAINT DESIGN SERVICE:

A. All mechanical systems (equipment, ductwork, piping, etc.) shall be provided with supports and seismic restraints in accordance with ASCE 07-22, Chapter 13, as amended by CBC Section 1617.1. Brace spacing shall be reduced by 50% for cast iron, plastic, no-hub, or other non-ductile piping. A copy of this manual shall be kept on site at all times during construction.

B. Contractor shall obtain the services of a Seismic Design service to provide engineered seismic supports and restraints for the project (**for Design Team review only, not a Deferred Submittal)**. Mason Industries, or pre-approved equal. **Note: Use of the "12 inch rule" does not exempt Contractor from this requirement.**

1.22 ASBESTOS CONTAINING MATERIALS AND ASBESTOS REMOVAL:

A. No materials or material coatings containing asbestos shall be allowed on this project.

B. All asbestos removal shall be by Owner. Asbestos is to be removed before the work is started. If the Contractor discovers asbestos which has not been removed, the Contractor shall immediately cease work in that area and promptly notify the Owner.

1.23 SYSTEM IDENTIFICATION:

A. Above Grade Piping: Provide markers on piping which is either exposed or concealed in accessible spaces. For piping systems, other than drain and vent lines, indicate the fluid conveyed or its abbreviation, either by pre-printed markers or stenciled marking, and include arrows to show direction of flow. Pre-printed markers shall be the type that wrap completely around the pipe, requiring no other means of fastening such as tape, adhesive, etc. Comply with ANSI A13.1 for colors. Locate markers at ends of lines, near major branches and other interruptions including equipment in the line, where lines pass through floors, walls or ceilings or otherwise pass into inaccessible spaces, and at 50' maximum intervals along exposed portions of lines. Marking of short branches and repetitive branches for equipment connections is not required.

B. Below Grade Piping: Bury a continuous, pre-printed, bright-colored, metallic ribbon marker capable of being located with a metal detector with each underground pipe. Locate directly over buried pipe, 6" to 8" below finished grade.

C. Equipment: All equipment shall be identified with a plastic laminated, engraved nameplate which bears the unit mark number as indicated on the drawings (e.g. AC-4) and identifies the area or space served by the equipment. Provide 1/2" high lettering - white on black background. Nameplates shall be permanently secured to the exterior of the unit.

1.24 CLEANING:

A. Progressively and at completion of the job, the Contractor shall thoroughly clean all of his work, removing all debris, stain and marks resulting from his work. This includes but is not limited to building surfaces, piping, equipment and ductwork, inside and out. Surfaces shall be free of dirt, grease, labels, tags, tape, rust, and all foreign material.

B. At the end of each work day, the Contractor shall cover all open ends of piping and ductwork with protective plastic.

1.25 ACCEPTANCE TESTING:

A. All acceptance testing as required by California Code of Regulations, Title 24, and as noted on the Certificate of Compliance form, (where applicable), shall be performed and documented by an Acceptance Test Technician (ATT). These documents must be provided to the building inspector during construction and must be completed through an Acceptance Test Technician Certification Provider (ATTCP). The Contractor shall submit a copy of the documentation to the Engineer for review (hardcopy or electronic), prior to submitting to Administrative Authority.

1.26 OPERATION AND MAINTENANCE INSTRUCTIONS:

A. Printed: Three copies of Operation and Maintenance Instructions and Wiring Diagrams for all equipment and parts list for all faucets, trim, valves, etc. shall be submitted to the Engineer. All instructions shall be clearly identified by marking them with the same designation as the equipment item to which they apply (e.g. AC-3). All Wiring Diagrams shall agree with reviewed Shop Drawings and indicate the exact field installation. All instructions shall be submitted at the same time and shall be bound in a suitable binder with tabs dividing each type of equipment (e.g. Pumps, Fans, Motors, etc.). Each binder shall be labeled indicating "Operating and Maintenance Instructions, Project Title, Contractor, Date" and shall have a Table of Contents listing all items included. Electronic O & M's shall comply with the Electronic submittal requirements in this Section.

B. Verbal: The Contractor shall verbally instruct the Owner's maintenance staff in the operation and maintenance of all equipment and systems. The controls contractor shall present that portion of the instructions that apply to the control system. The Engineer's office shall be notified 48 hours prior to this meeting.

1.27 RECORD DRAWINGS:

A. The Contractor shall obtain one set of blue line prints for the project, upon which a record of all construction changes shall be made. As the work progresses, the Contractor shall maintain a record of all deviations in the work from that indicated on the drawings. Final location of all underground work shall be recorded by depth from finished grade and by offset distance from permanent surface structures, i.e. building, curbs, walks. In addition, the water, gas, sewer, underfloor duct, etc. within the building shall be recorded by offset distances from building walls. As part of the Contractor's overhead expense, request a full set of reproducible drawings to transfer the changes, notations, etc. from the marked-up prints to the reproducible drawings. The record drawings (marked-up prints and reproducibles) shall be submitted to the Engineer for review.

PART 2: - PRODUCTS (not used)

PART 3: - EXECUTION (not used)

END OF SECTION

SECTION 23 0001 - HEATING, VENTILATING AND AIR CONDITIONING

PART 1: - GENERAL

1.1 GENERAL MECHANICAL PROVISIONS:

A. The General Mechanical Provisions, Section 23 00 00, shall form a part of this Section with the same force and effect as though repeated here.

1.2 SCOPE:

A. Included: Provide all labor, materials and services necessary for complete, lawful and operating systems as shown or noted on the drawings or as specified here. The work includes, but is not necessarily limited to, the following:
1. Air distribution system.
2. All equipment as shown or noted on the drawings or as specified. Furnish motor starters except where motor control centers are used. Coordinate with Division 26.
3. Refrigeration system.
4. System energy balance.
5. Coordinate with Section 23 09 23 (Direct Digital Control and Energy Management System) regarding location and installation of system sensors and to provide simultaneous start-up.
6. Coordinate and cooperate with commission agent as required by Section 01 91 13.
7. Demolition as indicated on drawings. Where demolition is called for, remove all equipment, piping, ductwork, braces, supports, housekeeping pads, temperature controls and related items no longer required.

B. Work Specified Elsewhere:
1. Line voltage power wiring, motor starters in motor control centers, disconnect switches and installation of all starters are included in the Electrical Section, unless otherwise noted.
2. Connection of gas, condensate drains and domestic water to equipment.
3. Concrete and reinforcing steel unless specifically called for in the drawings or specifications.
4. Painting unless specifically called for in the drawings or specifications.
5. Carpentry.
6. Direct Digital Control and Energy Management System (DDC/EMS).

PART 2: - PRODUCTS

2.1 PIPING MATERIALS:

A. Refrigerant Piping: Hard drawn Type ACR copper, dried and capped, ASTM B280. Wrought copper fittings, silver alloy brazed, 1100ºF, Silfos.

B. Miscellaneous Piping Items:
1. Pipe Support:
a. Pipe Hanger: Steel "J" hanger with side bolt for piping 4" and smaller; steel clevis hanger for piping 5" and larger. Load and jam nuts. Size and maximum load per manufacturer's recommendations. Felt liner for copper piping. Hanger and rod shall have galvanized finish. B-Line, Anvil, Unistrut.
b. Insulation Support: Calcium silicate insulation, 100 psi, or heavy density fiberglass, 100 psi. Insulation thickness equal to adjoining pipe insulation. Steel support shield or saddle. Provide vapor barrier for chilled water piping. Insulation and/or vapor barrier shall extend 1" beyond steel support. Pipe hanger in accordance with paragraph 1

above. Increase hanger size per manufacturer's recommendation. B-Line, Pipe Shields, Inc., Uni-Grip.

c. Isolating Shield: Galvanized steel shell and reinforcing ribs. 1/4" non-conducting hair felt pad. Pipe hanger in accordance with paragraph above. Increase hanger size per manufacturer's recommendation. B-Line, Semco.

d. Construction Channel: 12-gage, 1-5/8" x 1-5/8" galvanized steel channel. Single or multiple section. Self-locking nuts and fittings. B-Line, Anvil, Unistrut.

2. Flashing: Flashing for piping through roof shall be prefabricated galvanized steel roof jacks with 16" square flange around pipe. Provide clamp-on storm collar and seal water tight with mastic. Maintain dielectric separation between copper and galvanized materials. For cold process built-up roof, material shall be 4 lb/ft2 lead instead of galvanized steel. For single-ply roofing, use the roofing manufacturer’s recommended flashing material.

2.2 PIPING INSULATION MATERIALS:

A. General: All piping insulation materials shall have fire and smoke hazard ratings as tested under ASTM E-84 and UL 723 not exceeding a flame spread of 25 and smoke developed of 50.

B. PVC Jacket (for pipe, fittings and valves): Pre-molded polyvinyl chloride (PVC) jackets, 0.020" thickness. Size to match application. Provide solvent weld adhesive and PVC vapor barrier pressure sealing tape by same manufacturer. Zeston.

C. Aluminum Jacketing: Aluminum pipe and fitting jacketing, 0.016" thickness for straight pipe. 0.024" thickness for fittings. Integral moisture barrier. Stucco-Embossed finish. Provide pre-fabricated aluminum strapping and seals by same manufacturer. ITW or RPR.

D. Outdoor Weather Barrier Mastic: Childers CP-10/11, Foster 46-50.

E. Metal Jacketing/Flashing Sealant: Childers CP-76, Foster 95-44.

F. Insulating Tape: Ground virgin cork and synthetic elastomeric. Black, odorless, and non-toxic. K factor 0.43 Btu-in/hr-ft2-ºF or less. Non-shrinking. For outdoor use, provide protective finish by same manufacturer. Halstead.

G. Foamed Plastic: Rubber based elastomeric preformed pipe insulation. Thermal conductivity shall not exceed 0.27 Btu-in/hr-ft2-ºF at a mean temperature of 70ºF. 1/2" thick. Provide adhesive by same manufacturer. Armacell Armaflex.

2.3 DUCTWORK MATERIALS:

A. General: All ductwork materials shall have fire and smoke hazard ratings as tested under ASTM E-84 and UL 723 not exceeding a flame spread of 25 and smoke developed of 50. Shall comply with 2025 CMC.

B. Metal Ductwork: Metal ductwork shall be galvanized sheet steel, lock forming quality, ASTM A-653, with gage and construction to match SMACNA Standard for pressure required (26 gage minimum).

C. Flexible Ductwork: Insulated flexible ductwork. One pound per cubic foot glass fiber insulation, 1-1/2" thick (R-6), 2” thick (R-8) where ductwork is outside the building thermal insulation envelope. Thermal conductivity shall not exceed 0.25 Btu-in/hr-ft^2-ºF at a mean temperature of 75ºF. Seamless metalized reinforced polyester vapor barrier jacket. Continuous internal liner bonded to galvanized steel wire helix. Duct shall be capable of continuous operation at 1-1/2" of positive water static pressure and 4,000 ft/min air velocity. Duct shall be capable of continuous operation at 1-1/2" of positive water static pressure and 4,000 ft/min air velocity. Steel connection collars. Duct shall comply with NFPA 90A. JP Lamborn.

D. Duct Sealants: All Joints Exposed to Weather: Sealant shall be G.E. "Silglaze II" or Silimax Multipurpose Silicone Sealant, without substitution. Joints Not Exposed to Weather: Fiber reinforced. White in color. Design Polymerics DP1030, Hardcast Versa-Grip 181, Hardcast CCWI-181. Joints Not Exposed to Weather and Exposed to View in Finished Areas: Non fibrated. Gray in color. Foster 32-19, Childers CP-146, Design Polymerics DP 1010, or United Duct Sealer WB.

2.4 AIR TERMINALS AND DUCT FITTINGS:

A. Grilles: (Grilles, Registers, Diffusers and Louvers)
1. Information on Drawings: Refer to Grille Schedule on the drawings for the list of grilles. Manufacturer's model numbers are listed to complete the description Titus. Equivalent models of Anemostat or Krueger are acceptable. Refer to the floor plans for neck size, CFM, air diffusion pattern and fire damper, if required.
2. Performance: Submit complete performance data (throw, pressure drop, noise level, etc.) for all grilles proposed, other than those scheduled. Testing shall be in accordance with ANSI/ASHRAE 70-1991. If, according to the certified data of the manufacturer of the proposed units, the sizes indicated on the drawings will not perform satisfactorily, the units shall be reselected by the Contractor for the proper diffusion, spread, pressure drop, throw and noise level.
3. Frame and Accessories: All supply, return, and exhaust grilles shall not have an opposed blade volume control damper unless otherwise noted. All surface mounted grilles shall have a perimeter gasket and flanged edge. All grilles shall have frames suitable for mounting in the surfaces designated by the architectural drawings. Key or screwdriver operated, no slide bars.
4. Finish: All ceiling and wall grilles and all louvers shall have a paintable white finish unless otherwise noted. Interior components (everything behind the face plate) shall be flat black. Floor grilles shall have an anodized aluminum finish unless otherwise noted.

B. Branch Duct Volume Damper: Volume control damper (VCD) in rectangular ducts shall be as follows: Opposed blade, 6" maximum blade width, 16-gage blade, 48" maximum length, nylon or oil impregnated bronze bearings, 1/2" diameter pin shaft, 16-gage channel frame, actuating rod and linkage out of air stream. VCD in round duct shall be as follows: Damper blade full height of branch and 1" less than branch width. All branch dampers shall have regulator with stamped steel handle, spring loaded shaft nut, cast body and serrated self-locking die cast core. Regulator for horizontal ducts overhead shall be mounted on sides or bottom of ducts. Secure a 12" length of brightly colored plastic ribbon to handle for ease of location. Where rectangular or round ductwork is insulated, slit insulation to allow handle to protrude. Ventlok 641 (with 607 end bearing for round ducts).

C. Extractor: Curved blade turns in adjustable position rigid frame. Tuttle and Bailey Deflectrol.

D. Turning Vanes: Double wall, hollow metal, air foil shape. Spacing in accordance with manufacturer's recommendations. Aero Dyne HEP.

E. Flexible Connection: UL listed neoprene coated 30 ounce fiberglass cloth. 3" metal, 3" fabric, 3" metal. Ventglas.

2.5 DUCTWORK INSULATION MATERIALS:

A. General: All ductwork insulation materials shall have fire and smoke hazard ratings as tested under ASTM E-84 and UL 723 not exceeding a flame spread of 25 and smoke developed of 50.

B. Fiberglass Blanket: Installed thermal resistance at a mean temperature of 75ºF shall not exceed indicated value. 3/4 lb/ft^3 or 1 lb/ft^3, R-6 where ductwork is within the building thermal insulation envelope. 3/4 lb/ft^3 R-8 where ductwork is outside the building thermal insulation envelope and/or above the roof. Faced with glass reinforced foil laminated to Kraft paper. Certainteed, Knauf, Johns-Manville, Owens-Corning.

C. Acoustic Lining: Glass fiber. Installed thermal resistance at a mean temperature of 75ºF shall meet or exceed indicated value. One side coated to prevent fiber erosion up to 6000 ft/min. Average noise reduction coefficient of 0.80. 1.5 lb/ft3 density. 1" thick (R-4.2) where ductwork is within the building thermal insulation envelope. 2" thick (R-8) where ductwork is outside the building thermal insulation envelope and/or above the roof. Certainteed, Knauf, Johns-Manville, Owens-Corning.

D. Bonding Adhesive: Design Polymerics DP2501, Foster 85-60.

2.6 EQUIPMENT:

A. General Requirements:
1. Capacity: Capacities shall be in accordance with schedules shown on drawings. Capacities are to be considered minimum.
2. Dimensions: Equipment must conform to space requirements and limitations as indicated on drawings and as required for operation and maintenance. Where Architectural screening is indicated, equipment shall not extend above or beyond screening. Equipment will not be accepted that does not readily conform to space conditions. Prepare and submit layout drawings for all proposed equipment (different than scheduled units) showing actual job conditions, required clearances for proper operation, maintenance, etc.
3. Ratings - Electrical: Electrical equipment shall be in accordance with NEMA Standards and UL or ETL listed where applicable standards have been established.
4. Piping: Each item or assembly of items shall be furnished completely piped for connection to services. Control valves and devices shall be provided. Equipment requiring domestic water for non-potable use shall be provided with backflow preventer acceptable for intended use by local governing authorities.
5. Electrical:
   a. General: Each item or assembly of items shall be furnished completely wired to individual terminal blocks for connection to single branch electrical circuit (note that some accessories may require a separate circuit). All electrical accessories and controls required by equipment shall be furnished. Provide terminal blocks for controls and interlocks not included in equipment package. Manual and magnetic starters shall have ambient compensating running overcurrent protection in all ungrounded conductors. Magnetic starters shall be manual reset, shall have H-O-A switches and auxiliary contacts. Controllers and other devices shall be in NEMA 1 or 3R enclosures as applicable.
   b. Wiring: Conductors, conduit, and wiring shall be in accordance with Electrical Specifications. Individual items within assembly shall be separately protected with dead front, fused disconnect, fuse block, or circuit breaker for each ungrounded conductor, all accessible on operating side of equipment. Switches, contacts and other devices shall be in ungrounded conductors.
   c. Motors: Shall be rated, constructed and applied in accordance with NEMA and ANSI Standards without using service factor. Single-phase motor shall be of type to suit application. Three-phase motors shall be open drip proof, NEMA B design on pumps and fans, NEMA C on reciprocating equipment, sealed ball bearing, three-phase induction unless otherwise noted. Design shall limit starting inrush current and running current to values shown on drawings. Motors 1 horsepower and larger shall be the premium efficiency type, tested according to IEEE Standard 112, Method B. Motors exposed to weather shall be TEFC. Motors in a fan air stream shall be TEFC or TEAO. Vertical motors outdoors shall be ODP or TEFC and shall have rain caps.
   d. Starters: Motor starters shall be furnished for all equipment except where starter is in a motor control center as designated on the electrical drawings. Deliver starter to Electrical Contractor for installation and wiring.

e. Control Voltage: Equipment connected to greater than 240 volts shall be provided with 120 volt control circuit from integral protected transformer if separate source is not indicated on plans. 240 volt control is acceptable if confined within control panel.
f. Submittals: Included in shop drawings shall be internal wiring diagrams and manufacturer's recommended external wiring.

6. Fan Selection - Static Pressure: Unless otherwise noted, pressure scheduled as external static pressure (ESP) includes all ductwork and accessory losses external to the unit housing. Unless otherwise noted, pressure scheduled as total static pressure includes all ductwork, filter, coil, cabinet, damper and other accessory losses. Unless otherwise noted, pressure scheduled as duct static pressure includes all supply and return ductwork and accessory losses external to the unit housing and plenum (as applicable). The allowance for filter losses is 0.3" WC, unless otherwise noted. Submit itemized static pressure losses for all components.
7. Filters:
   a. General: Tested and rated in accordance with ASHRAE Standard 52.2 and Title 24, C.C.R. Furnish and install one complete change of all filters after air balance is completed and prior to acceptance.
   b. Filter Media: 2" media. MERV-13. Clean filter resistance 0.41" water at 500 fpm. Throw away frame. Class 2. Camfil AP-Thirteen.
8. Screens: All duct or louver openings to the outside shall be covered with 1/2", 16-gage, galvanized wire mesh screen.
9. Mixing Dampers: Opposed blade, 16-gage. Six-inch maximum blade width, 48" maximum length. Nylon or oil impregnated bronze bearings. One-half inch diameter pin shaft. 16-gage channel frame. One percent maximum leakage at 4" WC in accordance with AMCA 500 for outside air dampers. Actuating rod out of air stream. Arrow.
10. Sound Ratings: Shall be in accordance with ASHRAE 36 - 72. Sound ratings shall not exceed scheduled values.
11. Drives: Unless noted as direct connected, drives shall be V-belt, rated at 150% of motor horsepower. Multiple drive belts shall be matched set. Drive sheaves shall be dynamically balanced, adjustable, range +/- 10%, selected at mid range. Adjustable relative movement shall be lockable to shaft. Belts shall be aligned within 1-1/2 degrees at all times. Open drives shall be provided with OSHA approved open mesh belt guards. Belt guards exposed to weather shall be weatherproof enclosure with louvered face for adequate ventilation. Driving motor shall be mounted on adjustable rails. T.B. Woods, Browning. Submit RPM range of driven machine with drive selection.

B. Rooftop Package Heat Pump:
1. General: Self-contained heat pump designed for outdoor installation. Factory assembled and tested. Refer to Paragraph 2.6A for general requirements. Provide all starters and relays required for operation. 24-volt control circuit from integral transformer. Weatherproof cabinet, galvanized steel with enamel finish. Indoor air section fully insulated. Outside air inlet. Drain pan. Multivane centrifugal supply fan. ARI certified. Trane.
2. Refrigeration: Sealed hermetic compressor with internal vibration isolating mount. Crankcase heater, high/low pressure switch, recycling timer. Suction line accumulator. Air cooled condenser with propeller fan. Nonferrous finned coil. Low ambient control to 35 degrees. 5-year extended warranty on compressor(s).
3. Controls: Compressor and fan motors shall have both thermal and current sensitive overload devices. Automatic defrost control (only if required) every 90 minutes for a period of not more than 10 minutes.
4. Accessories: Electric resistance heater, nichrome elements, over temperature and overcurrent protection. Emergency heat control to allow heater operation if compressor is inoperative.

C. Exhaust Fan:
1. General: All exhaust fans shall be tested and rated in accordance with AMCA Standard 210. Fans exposed to weather shall have ventilated weatherproof housing over motor and drive assembly.

Refer to Paragraph 2.6A for general requirements. All direct drive fans shall be provided with unit mounted speed controllers. All exhaust fans shall have a disconnect switch. All motors 1 horsepower and larger shall be the premium efficiency type.

2. Roof Fan (Direct, Downblast): Spun aluminum, roof mounted, direct driven, downblast centrifugal exhaust ventilator. Fan shall be of bolted and welded construction utilizing corrosion resistant fasteners and stainless-steel fasteners on cap. Spun aluminum structural components shall be constructed of minimum 16 gauge marine alloy aluminum, bolted to a rigid aluminum support structure. Aluminum base shall have continuously welded curb cap corners for maximum leak protection. Discharge baffle shall have a rolled bead for added strength. An integral conduit chase shall be provided through the curb cap and into the motor compartment to facilitate wiring connections. Motor shall be enclosed in a weather-tight compartment, separated from the exhaust airstream. Unit shall bear an engraved aluminum nameplate. Wheel shall be centrifugal backward inclined, constructed of 100% aluminum, including a precision machined cast aluminum hub. An aerodynamic aluminum inlet cone shall be provided for maximum performance and efficiency. Motor shall be heavy duty type with permanently lubricated sealed bearings and furnished at the specified voltage, phase and enclosure. Backdraft damper. Greenheck.

D. Split System Heat Pump (IDU/ODU):
   1. General: Refer to Paragraph 2.6A for General Requirements. Completely assembled and factory tested. Provide all starters and relays required for operation. All components by same manufacturer. Trane.
   2. Outdoor Unit:
      a. Compressor: Sealed hermetic rotary compressor with vibration isolator mountings. Crankcase heater, suction line accumulator, recycling timer. High and low head pressure/temperature protection. Motor overload protection, low ambient feature to 20F cooling mode. High and low side service valves. Recycling timer. Single phase start assist kit. 5-year extended warranty.
      b. Fan and Coil: Finned tube non-ferrous coil. Propeller type fan, 1200 RPM maximum, direct drive. Totally enclosed motor, overload protected, permanently lubricated, resiliently mounted.
      c. Cabinet: Weatherproof, factory paint.
   3. Indoor Unit:
      a. Supply Fan: Direct drive, multi-speed forward curve, centrifugal fan, resiliently mounted. Thermally protected motor.
      b. Indoor Coil: Copper tube, aluminum fin, DX coil.
      c. Electric Heaters: Integral part of unit, complete with all operational and safety controls, single point wiring terminal, 5-year factory warranty, UL listed as a complete unit.
      d. Condensate Pan: Install under complete coil area with drain connections.
      e. Filter: Washable media. Class 2 or better.
   4. Controls: Microprocessor control containing temperature selection, room temperature indication, automatic cooling/heating changeover, malfunction alarm, power failure automatic restart safety, and emergency operation function.

E. Energy Recovery Ventilator:
   1. General: Rooftop packaged energy recovery ventilator. Refer to Paragraph 2.6A for general requirements. Units shall be listed per ANSI/UL 1812. Energy transfer ratings of the energy recovery core shall be ARI Certified. Performance shall be as scheduled on plans. Outdoor air shall not mix with exhaust air in a common plenum. Exhaust discharge and outside air intake shall not be located on the same side on roof top units. Lossnay.
   2. Unit Casing and Access: Unit shall be constructed of G90 galvanized steel. All components shall be easily accessible through removable access panels. Energy recovery core shall be mounted to slide out of the cabinet for ease of inspection, removal and cleaning. Housing shall be insulated with 1/2-inch insulation. Outdoor air and exhaust air discharges shall have integral backdraft dampers. Duct adapters shall be factory installed on all four intake/discharge ports.

3. Intake Location: Standard end connections shall be designed for optional relocation in the field. Alternate intake and discharge connections are easily integrated into various duct connections.
4. Energy Recovery Core: Core shall be of the enthalpy type for both sensible and latent heat recovery. Energy transfer ratings must be AHRI certified to standard 1060 and bear the AHRI certification symbol for AHRI Air-to-Air Energy Recovery Ventilation Equipment Certification Program based on AHRI 1060 ratings. Ratings “in accordance with 1060” without certification are not acceptable. The total energy core shall be constructed of specially treated cellulose fiber membrane layered in a cross-flow corrugated structure.
5. Fans and Motors: Fans shall be forward-curved direct drive with 3 speed motors. Fans shall be statically and dynamically balanced. Fan motors shall have voltage as scheduled, single phase, thermally protected and be compatible for use with speed controller.
6. Filters: The outdoor air shall be filtered with a 2-inch deep, 30% efficient, disposable filter. Filter rack shall be internal to the unit and factory installed.
7. Electrical: All internal electrical components shall be factory wired for single point power connection. All electrical components shall be UL listed, approved, or classified where applicable and wired in accordance with the California Electrical Code.
8. Warranty: The energy recovery ventilator shall be warranted to be free from defects in material and workmanship for a period of five years from the shipment date. The energy recovery core shall be warranted to be free from defects in material and workmanship for a period of ten years from the shipment date. Motors shall be warranted by the motor manufacturer for a period of one year from the shipment date.

PART 3: - EXECUTION

3.1 PIPING INSTALLATION:

A. General:
1. Piping Layout: Piping shall be concealed in walls, above the ceilings, or below grade unless otherwise noted. Exposed piping shall run parallel to room surfaces; location to be approved by Architect. No structural member shall be weakened by cutting, notching, boring or otherwise, unless specifically allowed by structural drawings and/or specifications. Where such cutting is required, reinforcement shall be provided as specified or detailed. All piping shall be installed in a manner to ensure unrestricted flow, eliminate air pockets, prevent any unusual noise, and permit complete drainage of the system. All piping shall be installed to permit expansion and contraction without strain on piping or equipment. Vertical lines shall be installed to allow for building settlement without damage to piping. Lines shall be adequately braced against vertical and lateral movement. Pipe sizes indicated on the drawings are nominal sizes unless otherwise noted. Pipe sizes shall not decrease in direction of flow, unless otherwise noted.
2. Joints:
   a. Threaded: Pipe shall be cut square, and reamed to full size. Threads shall be in accordance with ANSI B2.1. Joint compound or tape suitable for conveyed fluid shall be applied to male thread only. Joints shall be made with three threads exposed.
   b. Brazed: Filler rod shall be of suitable or the same alloy as pipe. Brazing filler metal shall have a minimum melting point of 1100ºF. Brazing shall be performed by a Certified Brazer as certified by an organization/institution that uses standards recognized by the American Welding Society (AWS) and meets the requirements of the ASME Boiler and Pressure Vessels Code, Section 9.
   c. Open Ends: Open ends of piping shall be capped during progress of work to preclude foreign matter.
3. Fittings and Valves:
   a. Standard Fittings: All joints and changes in direction shall be made with standard fittings. Close nipples shall not be used.
   b. Reducers: Pipe size reduction shall be made with bell reducer fittings. Bushings shall not be used.

c. Valves: All valves shall be full line size. At equipment connections, valves shall be full size of upstream piping. Provide a shut-off valve at each point of connection to existing piping.

d. Valve Accessibility: All valves shall be located so that they are easily accessible. Valves located above ceilings shall be installed within 24" of the ceiling. For situations where this is not practical or where valves are greater than 10' above floor, chain wheel operators shall be provided. Chain shall extend down to 7' above the floor. All such installations must have prior review by the Engineer.

4. Pipe Support:

a. General: Hangers shall be placed to support piping without strain on joints or fittings. Maximum spacing between supports shall be as specified below (based on straight lengths of pipe with couplings only). Provide additional supports for equipment, valves or other fittings. Seismic requirements may reduce maximum spacing. Actual spacing requirements will depend on structural system. Refer to drawings for additional requirements and attachment to structure. Side beam clamps shall be provided with retaining straps to secure the clamp to the opposite side of the beam. Vertical piping shall be supported with riser clamp at 20' on center (maximum). Support pipe within 12" of all changes in direction.

b. Refrigerant Piping: Support insulated refrigerant line with construction channel and sheet metal support saddle or Cooper B-Line Armafix clamps. 5' spacing. Use isolation shield for uninsulated pipe. When using pre-charged tubing, all changes of direction shall be made with bending tools producing neat uniform bends. Free hand bends will not be accepted.

c. Trapeze: Trapeze hangers of construction channel and pipe clamps may be used. Submit design to Engineer for review.

5. Miscellaneous:

a. Escutcheons: Provide chrome plated escutcheons where piping penetrates walls, ceilings, or floors in finished areas.

b. Pipe Sleeves: All piping passing through concrete or concrete block shall be provided with pipe sleeves. Allow 1" (nominal) clearance between sleeve and pipe or pipe insulation. Piping through walls or footings below grade shall be sealed with Link Seal.

c. Pipes Passing through Fire Rated Surfaces: Pipes passing through fire rated walls, floors, ceilings, partitions, etc. shall have the annular space surrounding the pipe or pipe insulation sealed with fire rated materials in accordance with the requirements of 2025 CBC Section 714.

B. Refrigerant Piping: Pipe shall be cut square. Joint surfaces shall be thoroughly cleaned, fitted and erected before brazing. Continuously purge with Nitrogen during brazing. After installation, evacuate to 29 inches of mercury, ambient temperature during evacuation shall not be less than 70ºF. After evacuation, fill with dry nitrogen to 250 psi and maintain for two-hour period without additional charge. After nitrogen test, purge with refrigerant charged through dryer and maintain holding charge in system and equipment. Refrigerant piping below grade shall be run in 4" (min.) PVC conduit with long radius ells. Seal ends of conduit watertight.

3.2 PIPING INSULATION INSTALLATION:

A. Refrigerant Piping: Cover piping with foamed plastic insulation. Longitudinal and end seams shall be thoroughly cemented with adhesive in accordance with manufacturer's recommendations. Cover all fittings, unions, valves and connections. Piping exposed to view shall be covered with PVC jacketing. Piping exposed to weather shall be covered with aluminum jacketing, install all joints and seams to prevent water entry, seal with 1/8” bead of gray metal jacketing sealant.

3.3 DUCTWORK INSTALLATION:

A. General:
   1. Standards: Unless otherwise noted, all ductwork shall be constructed and installed in accordance with current SMACNA Standards. Ductwork shall be built to a pressure classification equal to or greater than the maximum operating pressure at that point in the ductwork. A copy of these standards shall be maintained at the job site at all times. Duct work and accessories shall be installed in a manner to prevent vibration and rattling.
   2. Access: Provide duct access doors as required to adjust equipment and dampers. Provide wall or ceiling access panels, or remote actuators as required where equipment and dampers are not otherwise accessible. Remote regulator shall be as detailed on drawings.
   3. Flanges and Escutcheon: Where ductwork penetrates walls, ceilings, or floors, furnish and install flange or escutcheon of same material as duct.
   4. Flexible Connections: Connection of ductwork to any vibrating equipment shall be with 3" (min.) flexible connection. Install with ample slack and uniform gap. There shall be no metal to metal contact across flexible connection. Flexible connections exposed to weather shall have a protective sheet metal cover.

B. Low Velocity-Low Pressure (up to 2,000 ft/min and up to 2.0 in water):
   1. Sheet Metal Ductwork:
      a. Ells: Ells with less than standard radius and square ells shall be fitted with turning vanes.
      b. Tees: Tees in supply ductwork shall be straight tap-in with extractor or 45 degree take-off as shown on drawings. Grilles or branches in supply ductwork shall be a minimum of 8 duct diameters downstream of tees.
      c. Duct Joints and Seams: All joints and seams which are not exposed to weather shall be sealed airtight with duct sealant. All joints and seams exposed to weather shall be sealed air and water tight with outdoor sealant. (See Part 2 of this Specification). All joints on metal ductwork exposed to view inside building shall be sealed air tight with grey duct sealant.
      d. Dampers: Install volume control damper and damper regulator in all branch ducts.
   2. Flexible Glass Fiber Ductwork: The use of flexible duct is limited to the last 5 feet of each branch duct (i.e. one 5 foot section of flexible duct may be used to connect the grille to the sheet metal branch duct). No joints are permitted in this 5' length. Hangers shall be 4" wide metal straps spaced to prevent sagging, 42" spacing maximum. Insert 6" wide fiberglass pad between duct and hanging strap. Joints shall be installed with stainless steel or nylon draw bands, Duro Dyne Dyn-O-Tie. Minimum turn radius shall be in accordance with SMACNA Standards (turn radius of duct centerline not less than 1.5 times the duct diameter).

3.4 AIR TERMINALS AND DUCT FITTINGS INSTALLATION:

A. General: Unless otherwise noted, all air terminals and duct fittings shall be installed in accordance with current SMACNA Standards. Terminals and fittings shall be installed in a manner to prevent vibration and rattling. Metal surfaces exposed to view behind grilles and registers shall be painted flat black.

3.5 DUCTWORK INSULATION INSTALLATION:

A. General: Insulate all sheet metal supply, return and outside air intake ductwork except as noted below. Insulation shall be continuous through walls and floors except at fire dampers.

B. Where Insulation Is Not Required: Do not insulate factory-insulated ducts or casings, acoustic lined ducts, fibrous glass ducts, underground ductwork, supply or return ductwork exposed to view in the space that it serves, or exhaust ductwork.

C. Concealed Ductwork: Wrap concealed ductwork including outside air intakes with fiberglass blanket lapped 2" minimum. Secure with staples 4" on centers maximum on straight runs and 3" maximum at

elbows and fittings. Insulation on bottom of ducts wider than 36" shall also be secured with mechanical fasteners at 24" on center.

D. Acoustic Lining: Unless otherwise indicated, all supply and return ductwork in equipment rooms, all ductwork exposed to weather and other ducts as indicated on drawings, shall have acoustic lining. Do not acoustic line outside air intakes. Where acoustic lining is installed, increase each sheet metal dimension to accommodate lining and maintain clear inside duct dimensions shown on drawings. Apply lining with bonding adhesive in accordance with manufacturer's recommendations and also secure with mechanical fasteners in accordance with SMACNA Standards. Seal exposed edges of lining with bonding adhesive.

3.6 EQUIPMENT INSTALLATION:

A. General: It shall be the responsibility of the equipment installer to ensure that no work done under other specification sections shall in any way block or otherwise hinder the equipment. All equipment shall be securely anchored in place. All equipment shall be installed level.

B. Connections to Equipment: Where size changes are required for connections to equipment, they shall be made immediately adjacent to the equipment and, if possible, inside the equipment cabinet.

C. Equipment Platforms: Shall be as shown on drawings and as follows: Flashing and platform cover shall be 22 gage (min.) sheet metal. All joints and seams shall be soldered with 2" (min.) overlaps. Provide 3/4" gap around perimeter between roofing and platform cover to facilitate re-roofing. Extend drip lip down 3" (min.). Provide 30# felt under platform cover.

3.7 TESTS AND ADJUSTMENTS:

A. General: Unless otherwise directed, tests shall be witnessed by a representative of the Architect. Work to be concealed shall not be enclosed until prescribed tests are made. Should any work be enclosed before such tests, the Contractor shall, at his expense, uncover, test and repair all work to original conditions. Leaks and defects shown by tests shall be repaired and entire work retested.

3.8 SYSTEM ENERGY BALANCE:

A. Scope: Provide the services of an independent test and balance agency to test, adjust and balance, retest and record performance of the system to obtain design quantities as specified. The agency must prove that they have no affiliation with any equipment manufacturer, design engineer, installing contractor, or any other party which might lead to a conflict of interest, in order to provide an unbiased, third party system balance and report.

B. Qualifications: Prior to commencing work, the agency shall be reviewed by the Engineer and shall be certified by the Associated Air Balance Council, National Environmental Balancing Bureau or Testing, Adjusting and Balancing Bureau. The agency shall provide documentation of having successfully completed at least five projects of similar size and scope.

C. Instruments: All instruments shall be accurately calibrated; calibration histories shall be available for examination. Application of instrumentation shall be in accordance with AABC, NEBB or TABB standards.

D. Submittals: Include in shop drawings copies of forms to be used for testing and balancing showing all data which is to be recorded. Three copies of completed balance report shall be submitted to and reviewed by the Mechanical Engineer prior to the final mechanical construction review.

E. Procedure - General: Procedure shall be in accordance with Associated Air Balance Council's "National Standards for Field Measurements and Instrumentation - Total System Balance", Volume Two, No. 12173, or equivalent NEBB or TABB standards. System shall be in full, continuous operation during test. Balanced

quantities shall be plus 10%, minus 0% of design quantities. All nameplate data, manufacturer, model and serial numbers shall be recorded for each item tested.

F. Extended Warranty: The test and balance agency shall include an extended warranty of 90 days after completion of test and balance work, during which time the Engineer, at his discretion, may request a recheck or resetting of any item or items in test report. The agency shall provide technicians to assist the Engineer in making any tests he may require during this period of time.

G. Verify that the Controls Contractor has commissioned and documented their work before the TAB work begins.

H. Air Balance Procedure (For Each Air Handling System):
1. All air filters shall be clean when air balance is performed.
2. Provide a sketch of the equipment showing exactly where all pressure readings were taken.
3. Adjust blower RPM to design requirements.
4. Record motor full load amperes.
5. Make pitot tube traverse of main supply and return ducts and obtain design CFM at fans.
6. Record system static pressures, inlet and discharge.
7. Record filter quantity, size(s) and pressure drop across filter(s) at each filter bank.
8. Adjust system for design CFM recirculated air.
9. Adjust system for design CFM outside air.
10. Record entering air temperatures. (DB heating, DB and WB cooling.)
11. Record leaving air temperatures. (DB heating, DB and WB cooling.)
12. Adjust all main supply and return air ducts to design CFM.
13. Adjust all zones to design CFM, supply and return.
14. Adjust all diffusers, grilles and registers to plus 10%, minus 0% of design requirements.
15. Adjust CFM at all exhaust fans, make-up units, etc. (high and low speed, where applicable). Record applicable data from items 1 through 11 above.
16. Each grille, diffuser and register shall be identified as to location.
17. Verify proper diffusion pattern for all ceiling grilles and that all sidewall grilles are set for 5 degrees upward deflection unless otherwise noted. Make a notation of any that are not set properly.
18. Size, type and manufacturer of diffusers, grilles, registers and all tested items shall be identified and listed. Manufacturer's ratings shall be used to make required calculations on all items.
19. Readings and tests of diffusers, grilles, and registers shall include required FPM velocity and test resultant velocity, required CFM and test resultant CFM after adjustments.
20. In cooperation with the control manufacturer's representative, set adjustments of automatically operated dampers to operate as specified. Testing agency shall check all controls for proper calibrations and list all controls requiring adjustment by control installers.
21. All diffusers, grilles and registers shall be adjusted for required air patterns and to minimize drafts.
22. As a part of the work of this contract, THE AIR CONDITIONING CONTRACTOR shall make any changes in pulleys, belts and dampers or the addition of dampers required for correct balance as recommended by air balance agency, at no additional cost to Owner.
23. Set, test and adjust packaged heating/cooling unit economizer operation in cooperation with controls contractor. Record minimum and maximum outside and exhaust airflows.

END OF SECTION

SECTION 23 09 23 - DIRECT DIGITAL CONTROL AND ENERGY MANAGEMENT SYSTEM

PART 1 - GENERAL

1.1 GENERAL MECHANICAL PROVISIONS:

A. The General Mechanical Provisions of Section 23 00 00 shall form a part of this Section with the same force and effect as though repeated here.

1.2 SCOPE:

A. General: The direct digital control and energy management system (DDC/EMS) includes control panels, control devices, valves, actuators, all line and low voltage control and interlock wiring (including wiring to controllers, switches, timers, relays, etc.) and conduit and related equipment, as required for proper operation of all equipment. Provide all equipment, programming, labor, materials and services necessary for a complete, lawful and operating DDC/EMS as shown or noted on the drawings and as specified herein. All control wiring, line and low voltage shall be installed in conduit. Power wiring, power to DDC/EMS control panels and disconnect switches are included in the Electrical Specifications, except that power wiring for control devices such as controllers, valves, etc., is included in the control system. Electrical work shall be in accordance with Electrical Specifications. The system shall be direct digital control/electric. **The control system shall be direct digital. Distech, without substitution, to match existing. The system shall be Niagara 4, HTML5 based, with open license supervisory controller.** The system shall communicate over the District's Ethernet LAN/WAN, and shall include the latest upgrading (software and firmware) during the warranty period. The data wiring shall have an Ethernet connection at the DDC/EMS panel. A Graphical User Interface (GUI) shall be provided. Coordinate with Section 23 00 01, Heating, Ventilating and Air Conditioning and with Division 26. Comply with ASHRAE 55 and Title 24.
1. All work described in this section shall be installed, wired, circuit tested and calibrated by factory certified technicians qualified for this work.
2. Coordinate and cooperate with commission agent as required by Section 01 91 13.
3. Provide access to hardware and software or onsite technical support required to assist the TAB effort. The hardware and software or the onsite technical support shall be provided at no cost to the TAB Firm.

B. Contractor Qualifications: All controls shall be furnished and installed by a Contractor who is licensed, N4 certified and approved by the controls manufacturer for design, installation, start-up and service of their product. The Contractor must have sufficient personnel to respond to a trouble call at the site within four hours. The Contractor's local manager shall have a minimum of five years' experience in the design, installation, start-up and service of similar systems. The Contractor shall submit a list of at least five projects which are similar in size, scope and contract value to this project. This list shall include the Owner's contact person, phone number and controls contract value.

C. Submittals: Within 60 days of contract award, submit eight (8) copies of shop drawings showing the following aspects of the DDC/EMS system (CAD file with DXF format if required of floor and site plans can be secured from the Architect).
1. All termination points, terminal cabinets, and cabling.
2. Schedule of input and output points.
3. Locations of all visible DDC/EMS system components (i.e. interior and exterior sensors, terminal strips, panels, trench and pull boxes, etc.), identifying specifically any exposed conduit.
4. Descriptive literature for all material and equipment items shall include manufacturer's name and catalog numbers, dimensions, capacities, and all other characteristics and accessories as listed in the specifications or on the drawings.

5. Submit copies of forms to be used for testing and verification showing all data which is to be recorded. Three copies of complete report shall be submitted for review.
6. Complete written sequence of operation for all controlled equipment.

D. Installation and Operation Manuals: Furnish Installation and Operating Manuals for all components. These manuals shall contain full documentation which shall include, without being limited to, the following:
1. General description and specifications.
2. Installation and initial checkout procedures.
3. Complete alignment and calibration procedures for all components.
4. Detailed schematics and assembly drawings and communication trunk diagram with control unit addresses.
5. BACNet architecture diagrams
6. Sequence of Operations.
7. Controller points lists.

1.3 SYSTEM ARCHITECTURE

A. DDC/EMS Equipment: The main controller shall contain the network communications and information management programs providing integrated global control, trend logging, local and remote alarming and fully menu driven user interface. The local network controller must be an intelligent, stand-alone microprocessor based controller which can have a variety of configurations based on their application.

B. Campus-Wide Data Transfer System: The DDC/EMS shop drawings shall indicate where all equipment items are to be located for input and output to complete the system. The conduit/cabling system shall inter-tie these points as required to complete one system to meet the design criteria herein. Conduit shall be used for all EMS wiring whenever access is limited (hard-lid, walls, etc). When EMS wiring is installed in/above accessible areas (such as T-bar ceilings), free-air with J-hooks and wire-ties is acceptable. However, EMS wiring cannot be intermixed or bundled with any other cabling/wiring (Fire Alarm, internet, etc). System high speed communication shall be hardwired using a Belden shielded cable as recommended by DDC manufacturer.

C. User Interface Communication: The user may communicate with the DDC/EMS system with a workstation located at the District Office over the WAN, with a remote workstation, with an On-Campus Operator Workstation, or with a Lap-Top computer (Service Tool).

D. Standard Network Support: All Master Controllers, Workstation(s) and File Server shall be capable of residing directly on the owner's Ethernet TCP/IP LAN/WAN. Furthermore, the Master Controllers, Workstation(s) and File Server shall be capable of using standard, commercially available, off-the-shelf Ethernet infrastructure components such as routers, switches and hubs. With this design the owner may utilize the investment of an existing or new enterprise network or structured cabling system. This also allows the option of the maintenance of the LAN/WAN to be performed by the owner's Information Technology Department as all devices utilize standard TCP/IP components. If the DDC/EMS contractor needs an additional data port that is not already provided, its installation must be coordinated with the District's IT department (and IT infrastructure contractor if applicable) and shall be installed at the DDC/EMS contractor's expense. As a result, the DDC/EMS contractor shall ensure any additional data port locations are clearly indicated and that the existing EMS data ports they intend to utilize are addressed/identified prior to construction so they are not damaged or removed. This coordination shall occur between the District's Construction Office, IT department, DDC/EMS operator, IT infrastructure contractor (if applicable), and the project's general construction contractor manager.

PART 2 - PRODUCTS

2.1 GENERAL:

A. General Requirements: The Electronic Microprocessor Based Direct Digital Control and Energy Management System (DDC/EMS) shall monitor the data environment and perform control functions in relation to a programmed strategy and the status of the data environment. The system shall use solid state computer based digital and analog technology. The system shall be standard with the manufacturer to insure on going parts availability and trained technical support. The DDC/EMS shall be of the user programmable type requiring no special computer education for operation. All necessary instruction manuals and user orientation training shall be supplied by the manufacturer or agent thereof. The DDC/EMS shall be UL listed as a Direct Digital Control and Energy Management System. The programmable control requirements of the DDC/EMS shall include, but not be limited to:

OPTIMUM START/STOP (BASED ON HISTORICAL DATA)
TIME OF DAY ROUTINES
SCHEDULED OCCUPANCY ROUTINES INCLUDING HOLIDAYS
CUSTOM TAILORED REPORTING
ACCUMULATING RUN TIME
CRITICAL CONDITION ALARMING
FLUID FLOW SWITCH AND CONTROL ALARMING
PID CONTROL ON ANALOG OUTPUTS
HOT WATER RESET
DAY/NIGHT SETBACK
ECONOMIZER/PURGE
CUSTOM TAILORED REPORTING
ACCUMULATING RUN TIME
POINT OVERRIDE ABILITY FOR EVERY DIGITAL AND ANALOG OUTPUT
SEPARATE MODES AS REQUIRED BY CONTROL SEQUENCE
ALL EXTERIOR LIGHTING CIRCUITS CONTROLLED BY SYSTEM

B. Environment: The DDC/EMS shall operate in an environment of 40 120 degrees F and 10 95% relative humidity. Sensors and control elements shall operate under the temperature, pressure, humidity, and vibration conditions normally encountered in the installed location. The DDC/EMS shall maintain accuracy as follows:
1. +/ 0.5 F for the space temperatures in the 0 F 130 F range.
2. +/ 0.5 F for duct temperatures in the 40 F 130 F range.
3. +/ 1.0 F for outside air temperatures in the 30 230 F range.
4. +/ 1.0 F for water temperature in the 30 230 F range.
5. KWH and KW monitoring within 1.0%.

C. Battery Backup: The system shall be tolerant of power failure and hold memory for a minimum of 12 hours. On power restoration, the system shall automatically and without operator intervention of execution of manual restart procedures:
1. Come On Line.
2. Update all monitored functions.
3. Resume operation based on current time and status.
4. Implement special building start up strategies as required.
5. Log time of power outages and start ups.

D. Program Storage: All JACE 8000 hardware licenses and certificates shall be stored on local MicroSD memory card employing encrypted “safe boot” technology.

E. Protocol: Protocol shall be BACNet. The Main Controller shall be enabled to support and shall be licensed with the following Open protocol drivers (client and server) by default.
1. BACNet
2. Lon
3. Modbus
4. SNMP
5. KNX

F. The Main Controller shall provide the following hardware features as a minimum:
1. Two 10/100 Mbps Ethernet ports.
2. Two Isolated RS-485 ports with biasing switches.
3. 1 GB RAM
4. 4 GB Flash Total Storage / 2 GB User Storage
5. Wi-Fi (Client or WAP)
6. USB Flash Drive
7. High Speed Field Bus Expansion
8. -20-60°C Ambient Operating Temperature
9. Integrated 24 VAC/DC Global Power Supply
10. MicroSD Memory Card Employing Encrypted Safe Boot Technology

G. The Main Controller shall be provided with a 5 Year (SMA) Software Maintenance Agreement. Labor to implement not included.

2.2 SYSTEMS DESCRIPTION:

A. Modular Design/Expandability: The DDC/EMS shall be of a modular design providing distributed processing capability, and allowing future expansion of both input/output points and processing/control functions. The modular DDC/EMS shall be configured on the main/local concept. The main controller shall have the capability of adding local controllers and the local controllers shall be capable of adding I/O modules.

B. Main (Master) Description: The master shall function as the overall system coordinator, accept control programs, perform automated energy management functions, control peripheral devices and perform all necessary mathematical calculations. The master shall be a microcomputer of modular design. The word size shall be 16 bits or larger, with a memory cycle time less than 1 microsecond. All chips shall be second sourced. The master shall have the following:
1. Protected Access: Key lock protected access to output override switches and internal circuitry.
2. Memory: The master shall have memory required for systems operation and diagnostics or MCP software.
3. Real Time Clock: The master shall have a battery backed uninterruptable "Real Time Clock". The accuracy shall be within ten seconds per day. The RTC shall provide the following information: Time of Day, Day, Month, Year, and Day of Week. The system shall be programmed to automatically correct the clock for day light savings time and leap years and Time Sync.
4. Power: The master shall operate from 120 VAC +/- 20%, 60 Hz. Line voltages below the operating range of the system shall be considered outages. The master shall have over voltage surge protection, and require no additional AC power signal conditioning.
5. Parallel Processing: The master shall be capable of parallel processing, executing separate control programs simultaneously. Any control program may affect control of another program if desired. Each program shall have full access to all I/0 facilities of the processors.
6. Communications Processor: Each master shall provide communication to the District’s Workstation(s) (LAN) and the field buses. In addition, each master must have communications ports that support portable service tool and connection to third party controllers such as a chiller control panel or Variable Frequency Drives.

7. Uninterruptable Functions: Control functions shall not be interrupted due to program entry or other user communications.

C. Local Controller Units: The local units function as a stand-alone controller and as an Input/Output interface of the DDC/EMS and the Data Environment.
1. HVAC units must be fully controlled by a controller connected to the DDC/EMS that can be fully programmed by the DDC/EMS contractor.
2. Monitoring: Local units shall be used to connect the data environment to the system and contain all necessary Input/Output functions to read field sensors and operate controlled equipment based on internal instructions or instructions from the Master. The units shall be fully supervised to detect failures. The units shall report the status of all points in its data environment at the rate of at least once every second. Local units shall connect directly to the Master with a twisted pair shielded RS-485 interface.al unit failure.
3. Unit Failure: Upon failure of the unit (including transmission failure), the unit shall automatically fail off or to a predetermined state for three-way valves. All local units must run independently in the event of a central unit failure (including transmission failure) in bypass mode via the thermostat.
4. Power: The unit shall operate from 120 VAC, +/-20%, 60 Hz, 220 VAC, +/-20%, 50 Hz or 24 VAC +/- 20%, 50/60 Hz power. For voltages below the operating threshold the unit shall totally shutdown and de energize its outputs.
5. LAN and/or Field Bus: Each unit shall communicate with any unit through the RS-485 interface LAN and/or field bus.
6. Auxiliary Port: Each unit shall be equipped with an auxiliary port to allow local interrogation of input and output values, and keyboard override of outputs through laptop.

2.3 INPUT/OUTPUT CAPABILITY:

A. Inputs: The DDC/EMS shall accept information in the form of a temperature, voltage, digital signal (on off) or pulse counter.
1. Analog Inputs: The Analog Input (AI) function shall monitor each analog input, perform A/D conversion, and hold the digital value in a buffer for interrogation. The A/D conversion shall have a minimum resolution of 10 bits. Input ranges shall be within the range of 0-10 VDC.
2. Digital Inputs: The Digital Input (DI) function shall accept dry contact closures and voltage level or resistance level (5VDC reference voltage) transitions. A voltage level below 1 volt or a resistance below 500 ohms shall be read as ON (closed), a voltage level above 3 volts or a resistance above 1400 ohms shall be read as OFF (open).
3. Pulse Accumulator Inputs: The pulse accumulator function shall have the same characteristics as the DI, except that, in addition, a buffer shall be included to totalize pulses between interrogations. Each input shall accept pulses at a minimum of 2 per second.
4. Temperature Inputs: Temperature inputs originating from a thermistor, shall be monitored and buffered as an AI, except that, automatic conversion to degrees F shall occur without any additional signal conditioning.
5. Input Wiring: All analog inputs shall be two wire devices, with shielded wire for accurate operation.

B. Outputs:
1. Master and local controllers - Form C relay outputs rated at 5 amp, 24 VAC/DC or 2 amp, 30 VAC for on/off or Pulse Width Modulation for maintained operation of field devices. Output pulse width shall be selectable between 0.1 and 3200 seconds with a minimum resolution of 0.1 seconds. Isolation and protection against voltage surges shall be provided. Central plant controllers shall be equipped with an ON/OFF/AUTO switch to manually obtain either output state. Manual overrides shall be reported to the master at each update. An LED shall be provided to indicate the state of each digital output.

2. All digital and analog output points on every controller must have an override (highest priority) input point in the controller's point list in the JACE. This override point must be clearly labeled and identifiable. For example, "DO1ovrd" would be the point to override Digital Output 1.

2.4 SOFTWARE:

A. User Software: HTML5 based. Provide software (required upgrades) for Laptop Computer (Service Tool) and District office workstation, as required.

B. Software Features:

1. Mathematical Requirements: The DDC/EMS shall have a math package capable of addition, subtraction, multiplication, division, square root, greater than and less than functions, minimum and maximum selection functions, and up to five levels of parenthesis for computation of variables. Control commands may be executed based on these calculated variables which are available to the program on a global basis. Math expressions may be used in action and exit commands of control program. The mathematical software shall be capable of mixed mode arithmetic, utilizing Boolean logic statements in combination with basic arithmetic to provide conditional mathematical computations.
2. Passwords: The DDC/EMS shall have multiple levels of user programmable passwords in addition to a master password, for programming security. Separate passwords may be user programmed. Level of password will define user's access level and ability to change system.
3. Trend Logging: The DDC/EMS shall trend log variables. Any system variable (inputs, outputs, numerals, can be trend logged.
4. Messages: The DDC/EMS shall provide alarming, preventative maintenance and status reporting messages.
5. Documentation Format: The programming language of the DDC/EMS shall be plain English based such that a printout of the control program shall serve as the primary documentation for the system.
6. Micro Processor Integrity Checking: Each DDC/EMS microprocessor shall continuously monitor and check itself and produce error messages in the event of a malfunction.
7. Data Plotting: The DDC/EMS shall provide plots of values of system variables on a graph. Graphs may consist of combinations of up to 3 system variables at a time from the history logs.

C. Color Graphics Requirements Provide HTML5 based color graphics which allow user to access and change (based on user access level) all schedules and setpoints (including damper or control valve positions) directly through the user graphics. Real time data shall continuously be updated. Navigation between the screens (forward and backwards) shall be accomplished with the use of a mouse. The minimum graphic screens shall include the following:

1. Site lay-out locations of all equipment being controlled, control component locations, and spaces served. Provide multiple screens-minimum of 1 screen per building plus site and others as needed for clarity. By "clicking" mouse on the desired equipment area a flow diagram will be displayed for the related equipment (as described below - Item 2). By "clicking" the mouse on a conditioned space, a graphic display of the zone conditions (as described below - Item 3) will be displayed.
2. Each building must have a graphical summary page of all the zones in that building that displays zone temperature, set point, discharge air temperature, and fan command.
3. Zone & HVAC Equipment Description on GUI: Each item of HVAC equipment must be clearly identified by what area it serves and its unit number. For example, if HC-2A serves Classroom 4, the GUI should list it as "Classroom 4, HC-2A." It should NOT be listed as only "HC-2A" or "Classroom 4."
4. Flow diagrams shall be provided for each HVAC system, such as air-handling system, chilled water system, hot water system, condenser water system, package unit system, brine system with all inputs and outputs dynamically displayed.

5. Each temperature control zone shall have a screen providing set points, temperatures, and related HVAC system status data.
6. Scheduling screens allowing On/Off times to be set.

D. Software Manual: The software manual shall describe programming and testing, starting with a system overview and proceeding to a detailed description of each software feature. The manual shall instruct the user on programming or reprogramming any portion of the system. This shall include all control programs, variables, set points, time periods, messages, passwords and other information necessary to load, alter, test and execute the system. The manual shall include commands, editing and writing control programs, printouts and logs, mathematical calculations, and instructions on modifying any control point, verifying error status, changing passwords, and initiating or disabling control programs.

E. Software Licenses: The owner shall be named the license holder of all software associated with any and all incremental work on the project(s). All Niagara 4 software licenses shall have the “accept.station.in=*”; “accept.station.out=*”; “accept.wb.in=*”; and “accept.we.out=*” section of the software licenses. The intent is to insure that the installed Niagara 4 products may be completely open for integrations. Owner shall be free to direct the modification of the software license, regardless of supplier. In addition, the Owner shall receive ownership of all job-specific software configuration documentation, data files, and application-level software developed for this project. This shall include all custom, job-specific software code and documentation for all configuration and programming that is generated for a given project and/or configured for use within Niagara Framework (Niagara 4) based controllers and/or servers and any related LAN/WAN/Intranet and Internet connected routers and devices. Any and all required IDs and passwords for access to any component or software program shall be provided to the Owner.

2.5 USER INTERFACE:

A. LAN Connections: If an additional LAN connection is needed, the conduit and cable from LAN rack is to be installed by electrical contractor. The planned location of all LAN connections (new and existing) to EMS equipment must be coordinated with the District’s networking staff and EMS staff as early as possible. Final connections shall be made by DDC/EMS Contractor.

B. Direct Computer Communication: The DDC/EMS shall have a computer compatible communication mode for communication with other intelligent devices, which performs data integrity checking, with automatic retransmission of data when errors are detected.

C. JACE software must include all applications to make all folders viewable and accessible in the JACE.

2.6 SYSTEM COMPONENTS:

A. Control Components:
1. Wall Switches: Plates for all wall switches and timers shall match those specified in Division 26.
2. Labels: All labels, signs, etc. shall be engraved, laminated plastic, white on black background, 1/8" high lettering, minimum.
3. Temperature Sensors:
   a. Sensor Type: All temperature sensors shall be made of a highly stable, precision thermistor material accurate to within $\pm$0.36 Degrees F. Identify each temperature sensor with a "Lamicoid" label keyed to the control system as-built drawings.
   b. Room Sensor: Room temperature sensor shall have Executive Decorator housing with programmable visible temperature indication. Housing shall include an occupancy override, temperature setpoint adjustment and a service tool jack.
   c. Vandal Resistant Room Sensor: Where noted, shall be a blank stainless steel wall plate with the sensing element bonded to the back side. The plate back shall be insulated to reduce wall temperature influence.

d. Duct Sensor: Duct temperature sensor shall be a probe type element with 9 inch insertion length. Element shall be installed where air mixture provides a true temperature indication. Where adequate mixing is not practical, the duct temperature sensor shall have an averaging type thermistor element, installed across the entire cross section of the duct.

e. Outdoor Air Sensor: Outdoor air temperature sensor shall be a probe type element mounted in a ventilated, treated white PVC sun shield to minimize radiant energy effects. The sensor and sun shield shall be mounted on a weatherproof outlet box for outdoor installation.

f. Low Differential Air Pressure Applications (0" to 5" W.C.): The differential pressure transmitter shall be of industrial quality and transmit a linear, 4 to 20 mA output in response to variation of differential pressure or air pressure sensing points. Non-interactive zero and span adjustments, adjustable from the outside cover. (0.00 - 1.00" to 5.00") W.C. input differential pressure ranges. 4-20 mA output. Maintain accuracy up to 20 to 1 ratio turndown. Reference Accuracy: +0.2% of full span.

g. CO2 Sensor: The sensor shall have a five year recommended calibration interval. In addition, the sensor shall be provided with a five-year calibration guarantee, providing for free factory replacement if the sensor is found to be out of calibration within five years of the purchase date. The sensor shall have accuracy of ±50 ppm and repeatability of ±20 ppm. All adjustments to the sensor including output scaling, elevation adjustment, relay set point, relay dead-band, linear or exponential output, and single point calibration shall be made via on-board push buttons and LCD display. The LCD display must be covered by a solid door and only viewable when the door is opened for adjustments.

4. Temperature Control Panels: Each panel and each control device or readout on the front of the panel shall be identified with a laminated plastic label with 1/4" high engraved lettering, white on black background. Pilot lights shall be the push to test type.

5. Smoke Detectors: Furnished and installed by Division 26. Power and fire alarm wiring by Division 28. Control wiring by Division 23. Coordinate with Division 26.

6. Status Sensor: Current sensing status sensor (with sensitivity adjustment for belt loss detection).

7. Electric Actuators:
   a. General: Fully modulating, UL listed. Visual position indicator, manual override and clear weather shield where exposed to weather. 24 volt. Belimo.
   b. Valve Actuators: Provide with factory mounting brackets and linkage to the control valve. Capable of shutting off against a 50 psi differential.
   c. Damper Actuators: Positive position feed back and spring return. OSA dampers shall be spring return closed. Actuators shall be direct mounted onto the damper control shaft without linkage. Damper actuators shall be sized to provide a minimum of 5 in-lbs torque per square foot of damper face area.

8. VFD:
   a. General: The variable frequency drive (VFD) shall be a completely adjustable frequency motor drive system consisting of a pulse width modulated invertor for speed control of NEMA Design B induction motors. Variable frequency drives shall be manufactured by a single source. The VFD manufacturer shall have a minimum of five years experience in VFD design. Asea Brown Boveri (ABB). Alternate manufacturers shall submit names, addresses and phone numbers of at least five installations in the immediate area. Provide factory start-up.
   b. Standards: VFD shall be in accordance with the latest revisions of the following:
      1) IEEE Standard 519, Guide for Harmonic Control and Reactive Compensation for Static Power Converters
      2) UL Standard 508, Electrical Industrial Control Equipment
      3) VFD shall be UL listed and bear the UL label.
   c. Design Requirements: The VFD shall be capable of operating in the following conditions: ambient temperature 0 to 40 degrees C and relative humidity 0 to 95%, noncondensing.

The power section shall allow the following faults to occur without damage to the VFD: single-phase fault, three-phase short circuit, or phase to ground short circuit. VFD shall include the following features: overcurrent protection, overspeed protection, over temperature protection, electronic thermal motor protection. NEMA 1 or 4 enclosures, as applicable. Provide line reactors, 3% impedence, for all VFD's. Provide load reactors where load side circuit lengths exceed 200 feet.

d. Adjustments: VFD adjustments shall be set via menu driven selections accessible from the front panel. The VFD shall operate in the auto or manual mode and shall include the following front panel mounted switches and indicators:
   1) 2 line x 14 character alphanumeric display
   2) Local/ remote switch.
   3) Digital indicator of frequency, current, volts, torque, HP, KW, KWhrs and run hrs.
   4) Manual speed control
   5) Run / stop switch.
   6) Power on and run indicator
   7) Fault indication including: current limit, overvoltage, undervoltage, overload or thermal motor protection.

9. Pressure Independent Control Valves (VAV Boxes):
   a. General: The control valves shall be pressure independent. Fail safe actuator. The control valves shall accurately control the flow from 0 to 100% full rated flow with an operating pressure differential range of 5 to 50 PSI differential across the valve with a valve body accuracy of +/- 5% variance due to differential pressure fluctuation or +/- 10% total assembly error incorporating differential pressure fluctuation, manufacturing tolerances and valve hysteresis. Sensor is powered by the actuator. Belimo ePIV.
   b. Valve Bodies: Forged brass body and sensor housing (nickel plated), rated at no less than 360PSI, stainless steel ball and stem, female NPT union ends, dual EPDM lubricated O-rings and a brass or TEFZEL characterizing disc.
10. Control Valves:
   a. General: Equal percentage or linear flow characteristics. Unless otherwise noted, select for 2-4 psi pressure drop across the valve at the specified flow. Belimo. 2" and smaller shall be screwed connection, globe or ball valve. 2-1/2" and larger shall be flanged connection, globe or butterfly valve.
   b. Ball Valve: Stainless steel ball and stem, teflon seat and O-rings. 400 psi WOG. Packing shall be reinforced teflon seal washer and stuffing box ring. Stem packing gland screw shall be adjustable for wear. Factory flow characterization disk.
   c. Globe Valve: Contoured plugs for linear control. 316 stainless steel stem, replaceable seat and adjustable operating range. Packing shall be molded BUNA-N. Valves controlling terminal units or above ceilings shall be of the packless type with bellow seal, or spring loaded teflon requiring no packing maintenance. 2" and Smaller: Bronze body, 250 psi WOG. 35 psi maximum working pressure differential. 2-1/2" and Larger: Cast iron body, 125 psi WOG. 25 psi maximum working pressure differential.
   d. Butterfly Valve: Cast iron body, full lug style (with lugs drilled and tapped for isolation and removal of downstream piping), one-piece 416 stainless steel stem, aluminum bronze disc and EPDM or BUNA-N seat to match application. 175 psi WOG. Packing shall be molded BUNA-N.
11. Energy Valves (Air Handlers):
   a. General: The control valves shall be pressure independent. Fail safe actuator. The control valves shall accurately control the flow from 0 to 100% full rated flow with an operating pressure differential range of 5 to 50 PSI differential across the valve with a valve body accuracy of +/- 5% variance due to differential pressure fluctuation or +/- 10% total assembly error incorporating differential pressure fluctuation, manufacturing tolerances and valve hysteresis. Sensors are powered by the actuator. Belimo EV.

b. Valve Bodies: Forged brass body and sensor housings (nickel plated), rated at no less than 360PSI, stainless steel ball and stem, female NPT union ends, dual EPDM lubricated O-rings and a brass or TEFZEL characterizing disc. 2-1/2" and larger shall have cast and ductile iron bodies.

12. Mitsubishi Controller. CITY MULTI Controls Network (CMCN) controller with on-site LCD and internet IP accessibility. BACnet interface module.
13. Mitsubishi Room Sensor/Controller: Shall be wall mounted "in-room" wired remote controller.

B. Conduit: Conduit to be a minimum 1" diameter, and to have at least 25% spare capacity, except drops to room sensors may be run in ½" conduit. Conduit shall be run in electrical or mechanical trenches wherever possible. Site conduit (building to building) will be installed (and terminated inside the building) by Division 26.

PART 3 - EXECUTION

3.1 GENERAL INSTALLATION:

A. General: All electrical work shall be in accordance with the California Electrical Code and the Electrical Specification Sections. All electric/electronic systems shall be hardwired in conduit, except as specifically allowed by 1.3, B. Wiring shall be concealed in walls, above the ceilings, or below grade unless otherwise noted. Exposed wiring shall run parallel to room surfaces; location shall be approved by the Architect. No structural member shall be weakened by cutting, notching, boring or otherwise. Provide a 120 volt circuit for each device requiring external power. Dedicated circuits shall be provided where required. Any devices or wiring exposed to the weather shall be protected in weatherproof enclosures such as NEMA 3R and weatherproof conduit.

B. Labeling of System: DDC/EMS Contractor shall provide complete labeling of all terminals at all panels or equipment terminal strips and wiring. Equal to Brady marking on wires and number on terminals in sequence corresponding to control diagram.

C. Programming:
1. The Direct Digital Control and Energy Management System (DDC/EMS) operational program shall be provided by the DDC/EMS Contractor. The DDC/EMS Contractor shall be responsible for programming the system and shall coordinate the scheduling (on/off times) with the Owner. Prior to start-up, the DDC/EMS Contractor shall provide any testing program he feels necessary to fully test the operation of the various components.
2. The DDC/EMS Contractor shall load the operational program into the DDC/EMS controller from his office via the District's network (via VPN) or at the job site via a direct connect cable. Prior to starting up the system, the DDC/EMS Contractor shall:
   a. Confirm that the control system has been connected to the District's LAN/WAN and that the LAN/Wan is working.
   b. Confirm the functionality of the DDC/EMS controllers and all input points by reading the input values, and comparing them with a measured temperature, pressure, voltage, current, or resistance as appropriate. Calibrate all transducers as required.
   c. Confirm the functionality of all digital output points by manual operational of the relay contacts. Use proper discretion in starting and stopping equipment.
   d. Confirm the functionality of all analog output points by manually imposing an adjustable voltage on the appropriate circuit to check proper operation of the controlled device. Calibrate all transducers as required.
   e. The DDC/EMS Contractor shall notify the General Contractor (one week in advance of) when the system will be ready for loading and testing the operational program. The DDC/EMS Contractor's start-up technician shall be present while the program is being

loaded and shall communicate with the programmer prior and after program loading to confirm proper operation.

D. Training: Prior to final acceptance, the DDC/EMS Contractor shall provide operational training to the Owner's personnel. The training sessions shall include a complete demonstration of the system. Dates and times of the training sessions shall be coordinated through the Owner not less than one week prior to session. A total of 40 hours of instruction shall be provided. The DDC/EMS Contractor shall maintain a log of training sessions including dates, times and names/titles of those attending. The DDC/EMS Contractor shall submit a copy of this log on request. Contractor shall provide 1 week factory certified training schedule and class at owners' discretion.

E. Testing and Acceptance: The DDC/EMS Contractor shall furnish a complete and operating system. The DDC/EMS Contractor shall also verify, in the presence of the Owner, the system accuracy and proper function of each controlled device and sensor. The following items shall be successfully demonstrated prior to acceptance by the Owner:
1. All system outputs including controllers, relays, and other control devices shall be addressed and start/stop functions demonstrated.
2. All inputs shall be displayed and all event-initiated functions shall be demonstrated.
3. Demonstrate program integrity and power restore sequence during and after a power failure and restoration.
4. Deliver all Record Drawings, wiring diagrams, equipment specifications, installation and Operation Manuals and other documentation as required to describe the system.
5. Complete operator training in the use, programming, and operation of the system.

F. Start-up of the System:
1. The start-up period starts when the following conditions are met:
   a. The DDC/EMS system and all involved HVAC equipment have been installed, connected to the DDC/EMS system and are ready to operate.
   b. A start-up meeting has been conducted with representative of the General Contractor, Architect/Engineer, maintenance staff, and the DDC/EMS Contractor.
   c. Consensus is reached, by the representatives at the above referenced meeting that it is appropriate for the start-up process to start.
2. The alarm pagers called by the control system during the start-up period shall be the pagers carried by the Mechanical Contractor and/or DDC/EMS Contractor as appropriate. The Mechanical Contractor and DDC/EMS Contractor shall respond to all pages from the control system and work cooperatively to insure that the building environmental standards are maintained.
3. The start-up process shall be completed and the warranty period shall start when the following conditions are met.
   a. All training to be provided as part of the project has been completed.
   b. No "alarm" or "condition reports" are being generated by the DDC/EMS system for seven (7) calendar days (168 hours) due to incomplete or inaccurate installation or programming.
   c. All adjustments and "fine tuning" of the system have been completed.

G. Verification: A written testing and start-up report must be submitted for approval before acceptance. In addition to the DDC/EMS Contractor's testing and start-up report, the Owner may independently verify the test results. The report on test results shall include setpoints and operating ranges of all components.

3.2 SEQUENCE OF OPERATION: The below sequences of operation are to be used as a primary guideline for DDC/EMS control logic sequence development. Any/all variations from the below operation sequences must be approved by the District's DDC/EMS operator prior to implementation. All fans providing ventilation to meet minimum outside

air requirements shall run continuously during occupied hours. Airside equipment (air handlers, etc.) shall start by normally open relay and signal from DDC/EMS.

A. Provide graphics meeting District standards using the existing control sequences for the Central Plant and as indicated below.

B. System Operation Schedule: The central plant shall operate at the schedule set by the District.

C. Packaged Heating Pump(HP): (Heating setpoint 72°F, Cooling setpoint 75°F) The unit shall run per the system operation schedule through the DDC/EMS. Room temperature sensor shall be wall mounted. If the bypass button on the room temperature sensor is activated, the heating/cooling unit shall start for two hours (adj.). The unit setpoint shall be adjustable ± 2°F (adj.) from a switch located on the temperature sensor. Unit fan shall run continuously on start by the DDC/EMS. DDC/EMS shall control the heating/cooling unit to maintain setpoints. On call for cooling, the DDC/EMS shall start the unit cooling at 2°F (adj.) above cooling setpoint and run to 2°F (adj.) below cooling setpoint and then stop the unit cooling. On call for heating, the DDC/EMS shall start the unit heating at 2°F (adj.) below heating setpoint and run to 2°F (adj.) above heating setpoint and then stop the unit heating. The unit shall be capable of economizer operation. The DDC/EMS shall monitor the unit status with a current sensor and the supply air temperature.

D. Split-System Heat Pump (IDU/ODU): Shall be activated by BAS. Unit shall be controlled by integral controls. Provide temperature sensor for the area being controlled and status sensors for indoor and outdoor units.

E. Energy Recovery Ventilator (ERV): Interlock with IDU-1. DDC/EMS shall monitor outside air and exhaust air fans with current sensor (1 each fan).

F. Exhaust Fans: Refer to schedules.

G. Equipment Shut Down: Where noted on schedules, smoke detectors shall shut down units when smoke is detected and signal fire alarm system.

END OF SECTION

SECTION 266000
GENERAL CONDITIONS FOR ELECTRICAL WORK

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of Contract, including General and Supplementary conditions, Divisions 0 and 1, specifications apply to work of this section.

1.2 GENERAL

A. All work must conform to the requirements which fall within the scope of the regulations in the Codes or under the jurisdiction of any of the governing bodies listed.

B. The California Code of Regulations, Titles 19 thru 24.

C. The California Electrical Code as applicable under current state and local regulations (latest edition and supplements).

D. State Board of Health.

E. CAL-OSHA Regulations.

F. Nothing in these Specifications or shown on the plans shall relieve the Contractor from full compliance with applicable portions of any of the above regulations pertaining to work which is installed under this Contract.

1.3 PERMITS AND FEES

A. Pay for and obtain all permits, inspection fees, etc., as required for the completion of all work included in this Contract. Any inspection Certificates required shall be obtained and delivered to the Owner.

1.4 EXAMINATION OF DRAWINGS AND SITE

A. Before submitting the bid, the Contractor shall carefully examine the Architectural, Structural, Mechanical and Plumbing Drawings for this work, along with the Specifications for same in addition to the drawings and specifications governing the work of this trade. The Contractor shall also visit the site of the proposed construction and familiarize himself with all the site conditions. No subsequent allowances will be made to the Contractor because of negligence in complying with the above or alleged inability to understand the requirements.

1.5 CONDUCT OF THE WORK

A. The Contractor shall maintain on the job a competent foreman or a superintendent at all times to superintend the work.

1.6 CONTRACTOR'S RESPONSIBILITY

A. The Contractor shall be responsible for the safety and good condition of all materials and equipment until final acceptance by the Owner. The Contractor shall erect and maintain suitable barriers, protective devices, lights, and warning signs where required for the protection of the public and employees about the buildings. The Contractor shall be fully responsible for any loss or injury to persons or property resulting from neglect or the carelessness and neglect by the Contractor’s employees.

1.7 SUBMITTALS

A. Shop drawings of power, signal, service, and distribution equipment and lighting fixture catalog cuts shall be submitted for approval in electronic format (PDF).

B. All shop drawings shall be submitted at one time in a neat and orderly fashion in electronic format (PDF) with a title sheet including Project, Engineer and Contractor, table of contents. All items shall be identified by the specification paragraph number for which they are proposed. All equipment shall also be identified by the mark number as indicated on drawings.

C. Equipment or material furnished or incorporated in construction without prior approval of the Architect may be rejected and if rejected shall be removed from the structure and replaced with approved equipment or material at the Contractor's expense.

1.8 RECORD DRAWINGS

A. See General Conditions.

1.9 CATALOG DATA AND OPERATING INSTRUCTIONS

A. Upon completion of the work in this Contract, the Architect shall be furnished with a complete set of catalog data which describes each piece of equipment installed under this Contract. The catalog shall be bound in a set and shall be clearly labeled as to each item of equipment used.

PART 2 – PRODUCTS

2.1 LIST OF MATERIALS

A. Within thirty (30) calendar days after the award of the Contract, the Contractor shall submit PDF copies of a complete list of materials to be installed under this Contract, giving, in the case of each item of material to be used, the name of the article. All substitutes must be approved by the Architect as stipulated in Section 01620.

PART 3 - EXECUTION

3.1 GENERAL

A. The work as laid out is to some extent diagrammatic, and the location thereon indicated may be approximate only. The Contractor, therefore, shall install all the equipment, apparatus, conduit runs and the like as follows:

B. Adhere to the location indicated as far as possible.

C. Maintain ample head room in all rooms and passageways, clearance around all apparatus and equipment and under pipelines for unrestricted passage and for easy servicing of all apparatus, equipment, devices and the like.

D. Verify the exact locations of all fixtures and other apparatus or devices as indicated on the drawings. In the event these drawings do not sufficiently indicate the locations for all such fixtures, apparatus or devices, the Contractor shall obtain the exact locations from the Architect.

3.2 VERIFICATION OF DIMENSIONS

A. The Contractor shall, as work progresses, verify the dimensions of the spaces available for the installation of the work and shall assume full responsibility for the proper locations and grading of each portion thereof.

B. Where the work requires connections to be made to equipment that is furnished and set in place by others, the Contractor shall obtain exact locations and rough-in dimensions from the manufacturer of such equipment and shall install the connections in a neat and professional manner.

3.3 CUTTING AND PATCHING

A. This Contractor shall do all cutting and patching of the work for the installation of the equipment and materials as approved by the Architect and/or Engineer. All patching shall accurately match the adjoining work.

3.4 BORING

A. Provide mechanical boring equipment to bore under existing asphalt, concrete, or other surfaces or objects as noted on the drawings. All borings shall be a minimum of 24” under the substrate material unless otherwise authorized by the Architect.

B. Holes shall be bored not to exceed 1” larger diameter than the largest component remaining in the excavation.

C. Water or air pressure jetting are not permitted, unless they comply with the following requirements:

1) All surfaces of the hole can be visually inspected with 6’ maximum length.

2) All objects shall be supported continuously to prevent sagging.

3) The hole shall be filled with compacted damp sand and inspected by the Project Inspector or Materials Testing Lab technician.

3.5 FOUNDATIONS AND SUPPORTS

A. This Contractor shall provide all foundations, supports and hangers, etc., as required to install the equipment as specified or shown on the drawings. All equipment shall be supported, braced and cross-braced in such manner as to prevent sway and/or lateral movement.

3.6 EXCAVATION AND BACKFILLING

A. Excavating required for the installation of the work shall be done by this Contractor. Underground lines outside the buildings shall be installed with a minimum cover of 24" except depth of utility services shall comply with respective utility company requirements.

B. The conduit shall be laid on material described below to afford bearing for the full length of the conduit. Any part of the trench excavated below grade shall be corrected with thoroughly compacted material approved by the Architect.

C. When the bottom uncovered at subgrade is soft and, in the opinion of the Architect, cannot support the conduit, a further depth shall be excavated and refilled to conduit foundation grade as required by the Architect.

D. Backfill:

1) 6" Below, Around, and to 6" Above Conduit: Material shall be sand. Place carefully around and on top of conduit, taking care not to disturb conduit. Consolidate with vibrator.

2) 6" Above Conduit to Grade: Material shall be sandy or silty loam, free of lumps, laid in 6" layers, uniformly mixed to proper moisture, and compacted to required density. If backfill is determined to be suitable and required compaction is demonstrated by laboratory test, water compaction in 6" layers may be used, subject to review by Engineer.

E. No excavation below the level of, or adjacent to, foundations of footings shall be made except in a manner approved by the Architect.

F. A red or yellow tracer tape stating "CAUTION ELECTRIC LINE BURIED BELOW" shall be installed 12" above conduit, full length of trench.

G. Electrical conduit shall not be run in excavations provided for plumbing or heating pipes, unless separated by a minimum of 12 inches.

H. Verify location of all underground lines with Owner and utility companies before starting excavation. If any utility company facilities are identified and located within the perimeter of the building, the Contractor shall stop work, promptly notify the Architect, and secure instructions.

I. Ten (10) days before doing any excavation or trenching, contact "Underground Service Alert," 1-800-642-2444, advise them of work schedule and comply with their recommendations.

3.7 CLEANING UP

A. The Contractor shall keep the premises free from accumulations of waste material or rubbish. At the completion of the work, he shall remove all rubbish, tools, scaffolding and surplus materials from and about the buildings, leaving the premises in a clean condition.

B. All exterior surfaces of exposed equipment and material shall be thoroughly cleaned of all dirt, cement, plaster and other debris, including the exterior surfaces of all conduit, conduit fittings, conduit hangers, insulation and the like.

C. All surfaces to be painted shall be carefully wiped or otherwise cleaned; cracks and corners scraped out clean, grease and oil spots removed so that surfaces may receive paint without further preparation.

D. All fixtures and plated materials shall be thoroughly cleaned and polished.

3.8 DAMAGE BY BREAKS

A. The Contractor shall be responsible for all damage to any part of the premises caused by breaks in conduit or fixtures furnished and/or installed by him under this specification for a period of one (1) year from date of acceptance of the project by the Owner.

3.9 SITE CONDITIONS

A. Where existing utilities are shown on the plans, extreme care shall be exercised in excavating near these utilities to avoid any damage thereto, and the Contractor shall be held responsible for any such damage caused by this operation.

B. The general location and arrangement of conduit, equipment apparatus, etc., as shown in the drawings or herein specified and all installations shall be made in accordance therewith. Information on the drawings relative to existing services is approximate only. Minor deviations required to conform to actual locations shall be made without additional cost to Owner.

C. Should existing utilities, not shown on the plans, be found during excavations, or identified, the Contractor shall promptly notify the Architect for instructions as to further action. Failure to do so will make the Contractor liable for any damage arising from the operations after discovery of such utilities not shown on the plans. These utilities shall be removed or relocated as directed by the Architect. An equitable adjustment in the Contract will be made for the additional work involved.

D. The Contractor shall use special precautions where excavations are made in the areas near electrical ducts since they may be high voltage ducts. All such ducts shall be exposed by careful hand excavation so as not to damage the ducts or cause injury to personnel and shall be suitably marked with warning signs, barricades, etc. as required.

3.10 STANDARD PRACTICE

A. All work not shown in complete details shall be installed in conformance with the best standard practice for the trade.

3.11 INTENT

A. It is the intention to provide systems that are complete in every respect without further cost to the Owner. Anything not shown in drawings, or indicated in the specifications, but required for complete operating systems shall be included as part of this Contract. This shall include all connections to existing services.

3.12 SPECIAL NOTE

A. Attention of Contractor is hereby called to all work covered by notes on the drawings. Work covered by notes must be furnished and installed whether it is specifically mentioned in these specifications or not.

3.13 GUARANTEE

A. Except as otherwise specified, all materials, apparatus equipment furnished and installed under the Electrical Section of this specification shall be new and free from all defects. Should any trouble develop within a period of one (1) year from date of acceptance of the work, due to inferior or faulty material and/or workmanship, the trouble shall be corrected, and material and equipment replaced by the Contractor without expense to the Owner.

3.14 SERVICES

A. The location of any existing utility services shown on the drawings is approximate and shall be checked by this Contractor for exact location. Refer to “EXCAVATION AND BACKFILLING” for additional requirements.

3.15 ACCESS OPENINGS

A. It shall be the responsibility of the Contractor to provide sufficient and convenient access openings, panels, etc., in the building construction where required for the maintenance of, installation and/or removal of all equipment, or other items of the various systems and equipment.

3.16 PURCHASE ORDERS AND ACCEPTANCE

A. The Contractor shall file with the Architect two (2) certified copies of all purchase orders, for materials, equipment, appliances, and rentals thereof within two (2) weeks from date of Notice to Proceed with the Contract if requested by the Architect.

B. The Contractor shall file with the Architect two (2) certified copies of acceptance of purchase orders for materials, equipment, and appliances by the manufacturer, distributor, or wholesale house within six (6) weeks from the date of Notice to Proceed with the Contract if requested by the Architect.

C. Failure to provide same within the stipulated time shall be deemed sufficient cause for the Architect to withhold certificates of payment for work completed or materials and equipment provided by the Contractor or subcontractors toward the completion of their Contracts.

END OF SECTION

SECTION 267000
BASIC ELECTRICAL MATERIALS AND METHODS

FIPART 1 – GENERAL

1.1 REFERENCE STANDARDS

A. UL 845 - Motor Control Centers; Current Edition, Including All Revisions.

B. UL 1449 - Standard for Surge Protective Devices; Current Edition, Including All Revisions.

1.2 RELATED DOCUMENTS

A. Drawings and general provisions of Contract, including General and Supplementary conditions, Divisions 0 and 1 and Section 26 6000 specifications apply to work of this section.

1.3 SCOPE OF WORK

A. This portion of the work includes the furnishing of all labor and materials necessary for the complete wiring system to outlets and all equipment shown on the drawings or covered by this Section of the Specifications and other Division 26 and Division 28 sections of the Specifications. In general, the work includes the following:

1) Complete system of branch circuit wiring, conduit and distribution equipment for lights, receptacles, and power.

2) Furnish and install lighting panelboards, lamps, lighting fixtures, wall switches, convenience outlets, etc. as shown on drawings.

3) All hangers, anchors, sleeves, chases, and supports for fixtures, all electrical equipment and materials.

4) Furnish, install, and connect wire, conduit, and switches, etc. required for other equipment covered by other sections of these Specifications.

5) All excavating and backfill as required for electrical work.

6) The patching and repair of all work modified or damaged by the installation of work under this Contract.

7) Outlet boxes and conduit system for telecommunications (voice and data).

8) Demolition work.

9) Terminal cabinets and backboards.

10) The Contractor shall furnish and install all work necessary to make complete systems, whether or not such details are mentioned in these Specifications or shown on the drawings, but which are necessary in order to make complete working systems, excepting only those portions that are specifically mentioned therein or plainly marked on the accompanying drawings as being installed by other Contractors.

11) Electrical Contractor must coordinate his work with the work of other trades so as to provide raceways, conductors and outlets in the correct location for the equipment served, including all built-in appliances, mechanical, and signal equipment and connect same. Electrical Contractor must provide power of the correct voltage and phase to each item of equipment.

12) Before construction starts, the Electrical Contractor shall arrange a coordination meeting with the General Contractor and all other subcontractors supplying equipment that requires electrical connections. All electrical requirements shall be verified, and any problems shall be immediately reported to the Architect. Equipment items to verify shall include, but not be limited to: Voltage, amps, phase, location, orientation, space requirements, type of connection, starter and disconnect location and provision, control system operation and requirements, etc.

13) The above list is given for the convenience of the Contractor and is not considered all-inclusive.

14) Complete system of conduits, substructures and equipment for power, telephone, and cable television services. The Electrical Contractor shall inform the respective utility companies that the project has been started and confirm that all forms, which are required for the Application for Service, have been completed and submitted to the Utility Company. The Electrical Contractor shall obtain a copy of the approved engineering drawings prior to construction.

1.4 TEMPORARY CONSTRUCTION POWER

A. Provide a temporary construction power system that is adequate for this project. Coordinate requirements and details with the General Contractor. All 120V, 15A and 20A receptacles shall have ground fault circuit interrupter protection.

1.5 WORK NOT INCLUDED

A. A. The furnishing and installation of motors.

B. Access panels.

1.6 COORDINATION WITH MECHANICAL WORK

A. The Mechanical Contractor shall furnish equipment such as motors, starters, thermostats, wiring diagrams, etc. However, the Electrical Contractor shall be responsible for furnishing and installing of all fused disconnect switches, conduits, wire, fittings, etc. for power connections.

B. Install all electrical equipment where it is not already installed as a part of a unit furnished by the Equipment Contractor. (See drawings of respective contractors).

C. The Electrical Contractor shall furnish fused disconnect switches for pumps, motors and air conditioning and handling units, if they are not furnished by others. Fuses shall be dual element, rating per equipment manufacturer's recommendations. Disconnects shall comply with requirements for "Motor Disconnects" as specified earlier in this section.

D. All disconnect switches (whether provided with unit or by Contractor) shall have a circuit identification engraved nameplate as specified under "Motor Disconnects".

E. Thermal overload protection shall be furnished for all motors where such protection is not included as a part of another contract.

F. All motor outlets, disconnect switch locations and control outlets shown on the plans are approximate only. Verify exact location of same with Equipment Contractor.

G. All line and low voltage controls, including conduits, outlets, wiring and connections shall be furnished and installed by the Mechanical Contractor. (Division 23).

H. Furnish and install a weather-resistant duplex receptacle with ground fault circuit interrupter protection within 25 ft. of all rooftop H.V.A.C. units. Provide a diecast weatherproof "while-in-use" lockable cover, Red Dot #CKSUV or equal.

I. Coordinate with General Contractors, Mechanical Contractors and equipment suppliers before bid is submitted and again before rough-in is started to verify that all systems are complete and all components are provided including starters, disconnects, relays, solenoids, control conduit and wire, etc.

PART 2 - MATERIALS

2.1 GENERAL

A. All materials, appliances, and equipment except that furnished by the Owner shall be new, bear U.L. Label and of the make, brand or quality specified or as accepted by the Architect as herein provided. This shall also apply to all parts of the work whether or not this particular paragraph is referred to by number.

B. All apparatus, conduit systems, etc., shall be installed and interconnected so as to form complete systems as herein specified and/or shown on all the accompanying drawings. This Contractor shall furnish and install all work necessary to make complete working systems, excepting only those portions that are specifically mentioned herein or plainly marked on accompanying drawings as being furnished by other contractors.

2.2 MAIN SWITCHBOARD

A. Dead front, dead rear, floor standing, consisting of underground pull section, main section with main circuit breaker and equipment to accommodate power company's current transformer and meter, distribution section and sub-feed circuit breakers as shown on drawings. Main switchboard shall be as manufactured by Square D, General Electric, Eaton, Siemens or approved equal.

B. Circuit breakers shall be molded case type, quick-make, quickbreak, with thermal magnetic trip. Size and rating shall be as shown on the drawings. All circuit breakers shall be bolt-on type. Two and three pole breakers shall have integral internal common trip. All circuit breakers, rated 100 amps and larger, shall be equipped with adjustable instantaneous trip settings.

C. Finish shall be one coat of rust-inhibiting primer and two coats of gray enamel.

D. Full-size buses shall extend the full height of the distribution section. A copper ground bus shall be provided firmly secured to each vertical section structure and shall extend the entire length of the switchboard.

E. Section or sections shall be fully bussed with either copper or tin-plated aluminum bussing with all hardware in place for future devices. The bussing shall be braced to withstand the fault current of 35,000A symmetrical minimum. Filler plates as required shall be supplied with two handles on each plate. Sub-feed devices shall be of the types indicated on the drawings and shall be lockable in the "Open" position. A nameplate shall be supplied for each device in each section of each switchboard affixed to the switchboard trim adjacent to device and indicating name of device as shown one line diagram. Black letters shall be minimum ¾" high on white background.

F. All circuit breakers in the main switchboard shall have short circuit current interrupting capacity exceeding the maximum available at service transformer. Contractor shall be responsible for obtaining fault current information from serving Utility Company prior to fabrication of main switchboard. The main switchboard shall have an integrated short circuit current interrupting rating of a minimum of 35,000A symmetrical, or greater if indicated on drawings.

G. Underground pull sections shall be manufactured by the same manufacturer of the switchboard and per the serving Utility Company's requirements.

H. The Electrical Contractor shall submit electronic PDF copies of the main switchboard shop drawings to the Serving Utility Company for their approval prior to fabrication of the main switchboard. All main service boards shall meet the providing utility's requirements for underground pull sections, meter sections, and main breaker(s) sections.

2.3 PANELBOARDS

A. Existing panelboards: Provide new circuit breakers and/or adjustments as shown on drawings for new electrical OCPDs. Circuit breakers shall be new and match the existing panelboard in style, type and A.I.C. rating.

1) For legacy manufactured existing equipment, contractor shall verify availability of new devices per the drawings. In instances where new devices are not available contractor shall present remanufactured devices for review by A/E team on a case-by-case basis.

B. The panelboards shall be constructed in accordance with the standard set up by the Underwriters' Laboratories, Inc., and as manufactured by Square "D", General Electric, Eaton, Siemens or approved equal, and each shall contain the number and type of circuit breakers as indicated on the drawings. All circuit breakers, rated 100 amps and larger, shall be sub-feed type and equipped with adjustable instantaneous trip settings.

C. The panelboards shall be equipped with a hinged lockable door, piano hinged trim, and typewritten circuit directory. All finish in offices, corridors, or areas subject to public view shall be prime coat for finish coat by painter. In storage rooms, equipment rooms, etc., finish shall be standard factory gray Hammertone. Provide a flush lock on all panelboards.

D. Provide an engraved Bakelite nameplate, fastened with screws or rivets to the face of each panelboard, which will identify it.

E. Electrical contractor shall provide electronic PDF copies of detailed construction drawings for the panelboards and terminal cabinets shall be submitted to the Architect for Approval before their construction is started.

2.4 SURGE PROTECTIVE DEVICES

A. Surge suppressors shall be Surge Protective Device (SPD) AC type, and shall meet or exceed UL 1449, ANSI IEEE C62.41 Categories A, B and C for switchboards and panels and ANSI IEEE C62.41 Categories A and B for duplex receptacles.

B. Provide SPDs at locations as described below:

1) Main and Distribution Switchboards.

2) Suppression shall be included, and factory mounted within the panelboard by the manufacturer of the panelboard, using a direct bus bar connection (cable connection between bus bar and SPD device is not acceptable). SPD equipment shall be Square D "IMA" series (internally) or "EMB" series (external), or approved equal.

3) If indicatd on drawings: Duplex Receptacles - Leviton #8380-IG-O or approved equal.

C. All SPD equipment shall have built-in diagnostics and shall indicate when the equipment is not providing the intended protection.

2.5 MAGNETIC STARTERS

A. Motor Starters shall be across-the-line magnetic type rated in accordance with NEMA Standards, sizes, and horsepower ratings, mounted in general purpose enclosures, or NEMA 3R as required. All starters shall be full voltage, non-reversing, unless otherwise noted. Thermal overload relays on starters shall be non-compensated bimetallic type with selector for either auto or manual reset. Overload heater units shall be provided in each leg of starter unit. Each starter shall have 2 auxiliary interlock contacts.

B. Each starter shall have 120-volt control transformer and HOA selector switch mounted on cover.

2.6 TERMINAL CABINETS

A. Terminal cabinets shall be flush, or surface mounted as indicated with hinged doors and lock. The exterior finish to be same as for panelboards. Provide ¾" plywood backing inside of cabinet. Provide proper number of terminals in cabinets as required.

B. Provide a Bakelite nameplate fastened with screws or rivets to the face of each terminal cabinet, which will identify it.

C. Provide circuit directory and holder on inside of door with one line for each conductor entering and each conductor leaving cabinet.

2.7 RACEWAYS AND FITTINGS

A. Shall be manufactured by Allied Tube and Conduit Corporation, AFC Cable Systems, Inc., Carlon, Cantex, PW Pipe or approved equal.

B. Galvanized rigid steel conduits (RSC) may be used in all locations.

C. For underground runs in direct contact with earth, conduit shall be wrapped with PVC tape or shall have factory applied PVC coating.

D. Galvanized intermediate metallic conduit (IMC) may be used in indoor locations not in direct contact with earth.

E. Galvanized electrical metallic tubing (EMT) may be used in indoor dry locations in which it is:

1) Not subject to physical damage.

2) Not in direct contact with earth.

3) Not in concrete slabs.

4) Not in hazardous areas.

5) On roof or walk cover when specifically shown on drawings.

6) In masonry walls, not in the same cells as rebars.

F. Non-metallic rigid conduit shall be PVC Schedule 40 and may be used:

1) Underground.

2) Below concrete slab on grade.

3) In concrete slab on floors above grade.

4) In masonry walls, not in same cells as rebars.

G. Flexible steel conduit may be used in dry locations for final connections to:

1) Motors, transformers, and other mechanical equipment, not to exceed 18 inches.

2) Lighting fixtures, not to exceed 72 inches.

3) Facilitate wiring in tight locations, when approved by Engineer.

H. Flexible aluminum conduit may be used in walls or in attics to facilitate wiring in tight locations, when approved by the Engineer.

I. Liquidtight flexible steel conduit shall be used in outdoor or wet locations for final connection to motors or other mechanical equipment, not to exceed 18 inches.

J. Fittings:

1) For rigid and intermediate steel conduits, fittings shall be:

a) Galvanized rigid steel threaded type.
b) Provide insulated grounding bushings at switchboard enclosures and panel enclosures for feeders.

2) For electrical metallic tubing (EMT), fittings shall be:

a) Zinc plated steel set screw type in dry locations.
b) Zinc plated steel compression type for conduits larger than 1”, in wet locations and in masonry walls.
c) All connectors shall have an insulated throat.

3) For non-metallic conduits, fittings shall be PVC Schedule 40 type. Use PVC schedule 40 adapters at all boxes and panelboards.

4) Brush or dauber apply PVC cement.

5) For flexible metallic conduits, fittings shall be zinc plated steel/malleable iron squeeze type.

6) For liquidtight flexible metallic conduits, fittings shall be zinc plated steel/malleable iron compression type.

7) Use of the following is prohibited:

a) Crimp-on, tap-on or indenter type fittings.
b) Spray (aerosol) PVC cement.

2.8 PULL BOXES

A. Pull Boxes shall meet all code requirements as to size for conduits terminating therein and to thickness of material used in fabrication.

B. Fabricated sheet steel pull boxes shall be installed only in dry, protected locations and shall be furnished with knockouts and removable screw cover. The box shall be finished with one coat of zinc chromate and a coat of primer sealer and where exposed to public view shall be painted to match the surrounding surface.

C. Weatherproof sheet steel pull boxes shall be fabricated of code gauge galvanized sheet steel with two coats of rust resistant finish and shall be furnished with gasket and made completely weathertight.

D. Approved manufacturers for metal boxes are Cooper B-Line, Milbank, Hoffman or approved equal.

E. Weatherproof concrete pull boxes, junction boxes and telephone boxes shall be manufactured by Christy Concrete Products, Utility Vault or approved equal. All pull boxes shall be H/20 rated and be equipped with H/20 rated galvanized steel checker plate cover with the inscription "Electric, Lighting, Fire Alarm or Signal".

2.9 TIME SWITCHES

A. Time switch shall be minimum two-circuit digital time clock with photo control input, battery back-up and a surface enclosure. Provide a flush enclosure when indicated. Intermatic ET90000 Series or approved equal.

2.10 OUTLET BOXES

A. All outlet boxes shall be standard one or two piece galvanized knockout outlet boxes. Raco, Appleton, Thomas and Betts or approved equal.

B. All outlet box covers, rings or other fittings shall be standard galvanized. Raco, Appleton, Thomas and Betts or approved equal.

C. No outlet box shall be smaller than four inches (4") square and 1 ½" in depth, except in concrete block construction where Thomas and Betts concrete masonry boxes are approved.

D. Floor outlets on grade shall be fully adjustable type floor boxes, suitable for use in concrete floors. Wiremold #RBA6C30 with a Wiremold #8CTC2NKTR Evolution cover assembly. Where floor box is installed in a bare concrete floor, provide a Bare Concrete and Terrazzo ring, Wiremold #RFB6E-CTR with a Wiremold #8CT2NKTR Evolution cover assembly.

E. Cover shall be die-cast aluminum with nickel finish, unless otherwise noted on drawings. For 120V power, provide an industrial specification grade 20A 125V duplex receptacle with internal duplex receptacle bracket #RFB6DP, quantity as shown on drawings. For data/telephone, provide a decorator style receptacle bracket #RFB6GFI for mounting frame to accept the modular telephone/data jacks, unless otherwise noted on drawings. Any unused device compartments shall be covered with internal blank bracket #RFB6B.

F. All special outlets shall be as hereinafter specified or as shown on drawings.

G. Thru boxes are not permitted.

H. Any unused boxes shall be equipped with a blank cover plate.

2.11 RECEPTACLES

A. Furnish and install an industrial specification grade 20A, 125-volt, 3 wire grounding type duplex receptacle with one piece brass mounting strap at all receptacle outlets as indicated on drawings. Leviton #5362-W or equal as manufactured by Hubbell, Pass and Seymour, Cooper, or other approved manufacturers.

B. Device color shall be white.

C. Isolated ground duplex receptacles shall also provide TVSS (Transient Voltage Surge Suppression) as follows: Surge protection 320 Joules hot-neutral, ground-neutral, hot-ground, RFI and EMI noise filtration of 7:1 reduction. A LED shall indicate surge protection unit is in operation. Receptacle shall be 20A, 125V NEMA 5-20R, Leviton #8380-IG-O or approved equal.

D. G.F.C.I. duplex receptacles shall be provided for 15- and 20-amp 125-volt circuits where required by the C.E.C. #210.8 and #590.6. At indoor locations, provide a Leviton #G5362-00W or equal. At exterior

locations, provide weather-resistant type G.F.C.I. duplex receptacles, Leviton #G5362-WTW or equal. At damp locations, provide a diecast weatherproof lockable cover, RACO # 5028-0 or equal. At wet locations, provide a diecast weatherproof "while-in-use" lockable cover, Red Dot #CKSUV or equal.

2.12 LOCAL SWITCHES

A. Furnish and install industrial specification grade, quiet type toggle switches, 20 AMP rated 120/277V AC only, controlling wall and ceiling outlets as indicated on the drawings. Leviton #1221-2W or equal as manufactured by Hubbell, Pass and Seymour, Cooper or other approved manufacturers.

B. Where two or more switches are in proximity they shall be ganged in the same box, and they will be set under one plate. Switches controlling lights and/or outlets on emergency power shall be kept entirely independent of all other switches not on emergency power by mounting in a separate box.

C. Special receptacles or switches shall be as noted on the drawings.

D. Where key switches are noted on the drawings, provide Leviton #1221-2KL.

E. Device color shall be white.

F. When a switch is used as a disconnecting means, it shall be mounted in a readily accessible location.

2.13 WALL PLATES

A. All wall plates for electrical outlets and devices shall be smooth stainless steel, non-magnetic type 302S.

B. All telephone outlet plates shall be blanked plates, same as device plates.

2.14 CONDUCTORS (WIRE)

A. All wire installed in this contract shall be of a standard manufacturer as approved by the National Board of Fire Underwriters and be of the size as indicated on the drawings. All wire shall bear the Underwriters' label and shall be brought to the job in unbroken packages and approved by the Job Inspector before it is installed.

B. All power conductors #10 AWG and smaller shall be type THWN copper, unless otherwise noted. All conductors #8 AWG and larger shall be type THWN-2 copper, unless otherwise noted.

C. All underground conductors in a 480V or 480/277-volt power system shall be type XHHW-2 copper, unless otherwise noted.

D. Number 12 AWG wire shall be the smallest gauge wire used, except for signal circuits, which shall be as shown on plans or as specified under other sections of these specifications.

E. All wire #8 AWG gauge or larger shall be stranded.

F. The neutral conductor of all lighting feeders shall be of the same size as the phase conductors.

G. Splices on all wire less than #8 gauge shall be with insulated spring connectors Ideal "Wing Nuts", 3M "Scotchlok", or equal.

H. Splices in wires #8 gauge and larger shall be made with crimp on solderless connector, 3M Scotch, Burndy or equal. Connectors to switches or bus bar shall be made with one-piece lugs for all wires, sized for conductors as shown on the plans.

I. Each branch circuit shall be marked with the circuit number at the panel and at the first outlet nearest the panel. E-Z Code Markers (Thomas and Betts) or equal shall be used to label the circuits.

2.15 LIGHTING FIXTURES

A. This Contractor shall submit for approval electronic portfolios, PDF format, with full description and manufacturer data sheets of all fixtures (including ballasts and lamps), that are proposed to use.

B. This Contractor shall furnish and install all lighting fixtures and lamps as indicated on the Electrical Drawings and in accordance with these specifications.

C. This Contractor shall be held responsible for the complete equipment of all fixture outlets with fixtures of the proper design as shown.

D. All fixtures shall be securely anchored to prevent any possible chance of their falling.

E. Continuous runs of fixtures shall be installed straight and true.

F. Recessed fixtures shall be complete with plaster frames, supporting brackets and hanger wires.

G. Stem lengths shall be adjusted to meet conditions where required. Furnish aligners to ensure vertical alignment (ball aligner).

H. Electrical Contractor shall coordinate outlets with Acoustic Tile Contractor and other trades and locate outlets in the center or at intersections of acoustical tile in all acoustical tile ceilings.

I. Recessed fixtures in t-bar ceilings shall be attached to t-bar ceiling with integral

J. t-bar clips, two at each end of fixture.

K. When the light fixture is equipped with an integral emergency battery pack, the light fixture shall be connected so that it is controlled via the room light switch and is automatically energized when power has fails.

2.16 PHOTO CONTROL

A. Compatible with Time Clock / Lighting Controls, Intermatic or equal, adjustable type.

2.17 MOTOR DISCONNECTS

A. Disconnects shall be fused safety switches with dual element fuses. Heavy Duty rated with quick-make, quick-break operating mechanism. Fuse rating shall comply with motor manufacturer's recommendations. Switch shall be UL listed. Disconnects shall have an external operating handle, lockable in the open or closed position.

B. Disconnect switches shall be located so as not to obscure any part of the HVAC unit's nameplate data.

C. Each disconnect switch shall have an engraved Bakelite nameplate identifying the panel and circuit number that feeds the motor. Nameplates shall comply with specifications for "Identification of Switches and Apparatus".

2.18 DRY TYPE TRANSFORMERS

A. Transformer shall be Class H insulation with temperature rise not exceeding 115 degrees C., in a maximum ambient of 40 degrees C., with rated nameplate load connected to the secondary side, at rated voltage. Unless otherwise noted, the transformer shall comply with the Energy Efficiency levels mandated by the Department of Energy.

B. Transformer shall be built in accordance with the latest revised IEEE, ANSI and NEMA standards.

C. Case temperature shall not exceed 35 degrees C., above ambient.

D. Designs shall incorporate built-in vibration dampening systems.

E. Terminal compartment shall be located to ensure termination of cable leads in temperature levels not to exceed 60 degrees C., and to provide for side or bottom entrance of conduit. Enclosures shall be weatherproof and rodent proof. Ventilation openings shall be louvered type. Screening will not be acceptable.

F. Transformer shall be furnished with 2 taps above and below rated voltage, each 2 ½%.

G. Transformer shall be suitable for non-linear loads and have a U.L. rating of K-4, when indicated on the drawings.

H. Acceptable manufacturers shall be Square "D", General Electric, Eaton, Siemens or approved equal.

2.19 TELEPHONE CABLES

A. When telephone cables are indicated on drawings, they shall be Category 3, 24 AWG, unshielded twisted pairs with 4 pairs minimum, COMMSCOPE #3504 or equal. If in a plenum, use plenum rated cable, COMMSCOPE #35N4 or equal.

PART 3 - EXECUTION AND INSTALLATION

3.1 CONDUIT SYSTEMS

A. A concealed conduit system shall be installed for all interior wiring including controls. Conduit shall be run continuously between outlets, etc., and with the minimum number of bends.

B. PVC 40 shall be used for underground runs.

C. Where underground conduit cannot be run below building footings and the Contractor shall provide PVC-80 sleeves through the footings (Contractor shall obtain approval for all sleeve sizes and locations with the Structural Engineer before installation).

D. All conduit shall be delivered to the site of construction in their original bundles. Each length of conduit shall bear the label of the National Board of Fire Underwriters. All conduit subjected to rough usage while on the job before installation and not acceptable to the Architect shall be removed from the premises upon notice.

E. Conduit installed in masonry walls shall be rigid steel galvanized conduit, PVC or EMT, not in same cell as re-bars.

F. The joints in all conduits installed under concrete slabs on the ground, or underground, or exposed to the weather, shall be made liquid and gas tight. All underground conduit outside of the buildings shall be buried to a depth of not less than 24" below finish grade. Utility services shall comply with utility company requirements. Two or more conduit runs installed in a common trench shall be separated horizontally by at least four inches (4"). Electrical conduit runs installed in a common trench with other utility lines shall be separated horizontally from such lines by at least twelve inches (12"). Provide a detectable warning tape, 12" above the top of the conduit and the full length of trench.

G. Changes in direction shall be made with conduit elbows or long radius bends made on the job. Where two or more conduits are grouped in exposed locations, the sweeps shall be struck from the same center forming concentric arcs.

H. All joints in conduit shall be made with standard coupling. In making joints, conduits must be truly and accurately cut and threaded (where applicable) with straight thread, smoothly reamed and squarely butted. All conduit shall be kept corded and dry during construction, using plastic caps or conduit pennies held in place with conduit bushings. Should dirt or moisture collect in any conduit, the Contractor shall swab them out to the satisfaction of the Architect.

I. Conduits ending at the motors shall be carried as close as possible to the terminal blocks making allowance for the movement of the motors when they are equipped with slide rails. The connection between the conduit terminals on the motor and the conduit shall be made with liquid-tight flexible conduit using the proper fittings.

J. All conduits where they enter panel enclosures, pull boxes, or outlet boxes shall be secured in place by galvanized locknut inside of box.

K. Where conduits are run exposed, they shall be installed straight and true with reference to the adjacent construction.

L. Any conduit installed under the building shall be under the slab. The top of any conduit below floor slab shall be a minimum of 4" below the bottom of the concrete slab.

M. All boxes for bracket outlets shall be equipped with a 3/8" "No-Bolt" fixture stud. These boxes shall be so set that when in place the fixture shall be at right angles to the ceiling or walls.

N. All empty conduit shall be equipped with a nylon pull rope continuous from outlet-to-outlet or end-to-end.

O. Flexible conduit will be permitted for connecting lighting fixtures to junction boxes.

P. Flexible connections in outdoor and damp locations shall be flexible liquid-tight metal conduit or non-corrosive seamless metallic tubing with watertight connections.

Q. Install roof jacks for this construction in accordance with other sections of this Specification.

R. The maximum allowed length of flex conduit at equipment connections is 18".

S. Expansion joints for conduit shall be provided where required to compensate for thermal expansion and contraction.

T. At all sub-panels and terminal cabinets, stub two 1"C and two ¾"C into the accessible attic space. If the attic space is not accessible, stub conduits to a location as directed by Architect or Engineer. Provide additional conduit stubs when indicated on the drawings.

U. Support conduits on roof with prefabricated pipe supports (B-Line "Dura-Blok Series" or equal), spaced 8 ft. O.C. maximum. Minimum clearance from roof to framing channel shall be 4". Framing channel length shall be as required plus 50% spare length. Installation shall comply with manufacturer's recommendations.

V. Any conduit entering underground pull boxes shall be sealed to prohibit water from entering the conduit. Conduits with conductors shall be sealed with a sealing compound after all conductors have been installed. All spare (empty) conduits shall be identified with either the "origination" or "destination" (example: to pull box 150' to the south, from Main Switchboard, etc.). The contractor

shall use a scrap piece of ¾" PVC conduit, approximately 5" in length and tie the nylon pull string thru it. Write the description on the conduit using an indelible/permanent marker.

3.2 OUTLETS

A. In general, the locations of electrical outlets shall be as shown on the drawings; however, the Contractor shall make any changes necessary to suit conditions on the job or rearrangement of built-in fixtures and equipment as directed by the Architect or his representative.

B. The Contractor shall study the general building plans with relation to spaces surrounding each outlet in order that his work may fit the work of others and that when fixtures or other equipment are installed, they will be symmetrically located according to room layout. Refer all conflicts and discrepancies promptly to the Architect.

3.3 OUTLET BOXES

A. Outlets for concealed wiring shall be flush with the finished wall or ceiling surfaces. Pull boxes, junction boxes and all others to which no fixture or device is to be attached, shall be fitted with blank cover plates, and painted to match surroundings. In order to reduce noise transmission between rooms, outlet boxes shall not be installed back-to-back. Where outlets are side by side and faced into opposite rooms, the boxes shall be at least 6" apart, except in fire rated walls space boxes at least 24" apart. If the boxes are connected together, the connection shall be flexible and shall have openings packed with fiberglass.

B. The Electrical Contractor shall inform himself of wall thickness throughout the building and shall provide outlet boxes of suitable depth that can be flush mounted and yet will be deep enough to contain the particular apparatus involved. The location of exposed pull or junction boxes will be subject to the Architect's approval.

C. Outlets from which lights are suspended shall have approved 3/8" fixture studs fastened through from back of box. All outlet boxes and particularly those supporting fixtures shall be securely anchored in place in an approved manner. Support outlet boxes and fixtures in acoustic ceiling areas from building structures, not from acoustic ceilings. All lighting fixture outlets shall be coordinated with mechanical, architectural, or other equipment to eliminate conflicts and provide a workable, neat installation.

D. Where more than one switch occurs at the same location, use multiple gang outlet boxes covered by a single plate; provide box partitions as required by the C.E.C. Switches controlling lights and/or outlets on emergency power shall be kept entirely independent of all other switches not on emergency power by mounting in a separate box.

E. Outlet box extensions shall be UL listed and shall be attached to box with threaded metal screws. "Flash guards" are not permitted to be used as box extensions.

3.4 LOCATIONS OF OUTLETS

A. The Architect reserves the right to make reasonable changes in the indicated locations before work is roughed in without additional charge to the Owner.

B. Where wainscot occurs at the 4'-6" level, the switch shall be mounted lower in the wainscot as near the 4'-0" level as possible, but in no case, shall the switch be partially in the wainscot and partially in the wall. It shall be the Electrical Contractor's responsibility to verify all door swings. Switches, unless specifically noted, shall be on the strike side of the door. If switch is indicated on hinged side of door, verify location with Architect.

3.5 CONDUCTOR IDENTIFICATION AND INSTALLATION

A. The drawings indicate the arrangement of outlets on each branch circuit and the circuit tags show the number of the circuit, and the board to which it will be connected.

B. Circuits indicated with the same numbers shall be connected to the same breaker on the panelboard.

C. All feeders and branch circuits shall be tagged in all pull boxes and in the gutters of all panels to which they connect.

D. All wiring shall be done in identified neutrals.

E. No wire shall be installed until all work of other contractors that might cause injury to the said wire has been completed. Care shall be used to pull wires to ensure that no damage occurs to the insulation. A wire lubricant shall be used for pulling in wires.

F. In making the connection of all branch circuits to the terminals of switches, base plugs, etc., the wires shall be looped around the binding screws or be fitted with connecting lugs. At the ceiling outlets, this Contractor shall leave not less than 6” of free ends on each wire for connections to the fixtures.

G. No splices shall be permitted except in outlet boxes, and in panelboard gutters.

H. Switches and receptacles shall be securely fastened to the outlet box. Where the outlet box covers are back of the finished walls the switch or receptacle shall be built out from the same with washers so that it is rigidly held in place to the box. The floating of any switch or receptacle will not be permitted.

I. All signal and communications conductors shall be identified in terminal cabinets as to type of system e.g.: clock, bell, fire alarm, etc. and location of other end of conductor by room number or name as directed by Owner. Identification shall be by numbers at terminal strips and a numbered directory in cardholder inside terminal cabinet.

J. Fire alarm system cabling and wiring shall be color-coded as follows:

1) Initiating Devices: Addressable cable, red jacket.

2) Signaling Devices: Black and Red wires for horns, strobes or horn strobes.

3) Speaker cable, blue jacket for speakers.

K. All power wiring size #6 AWG and smaller, shall be factory color-coded. For larger than #6, mark conductors on each end and at all junction and/or pull boxes with a 1” bank of colored pressure-sensitive plastic tape. For isolated ground wires, mark with a 1” band of green tape, followed by a 1” band of yellow tape, followed by a 1” band of green tape. Colors for each phase and the neutral shall be consistent throughout the system. Color code shall be as follows:

L. The white or gray conductor shall be the neutral at each outlet. All switches shall be installed in “hot” leg. On all lighting circuits the switch leg shall be purple from switch to fixture. All travelers from switch to switch on 3 and 4-way switches shall be pink. This color code shall be followed by Contractor for all fixture whips except for factory-manufactured whips. When factory manufactured whips are used, color code shall apply to all wiring except the factory whip.

M. Conductors having white, gray or green covering shall not be used to indicate anything other than neutral or grounding. This limitation applies to all power, lighting, and control circuits.

N. Installation of conductors shall be made in a neat and workmanlike manner to meet Code requirements and shall be run continuous without weld, splice or joint between boxes. Do not install

wires in conduit unless the entire system of conduit and outlet boxes is permanently in place. All conductors shall be pulled using a UL approved wire lubricant.

O. Make all terminations at motors using 3M Series 5300 Motor Lead/Cable Splicing Kits. Make connections per 3M written installation procedures.

P. On all bolted electrical connections, the Contractor shall use Belleville washers.

Q. All wiring to be neatly bundled and tied with nylon cord or plastic straps.

R. When approved by the Electrical Engineer, splices in underground pull boxes shall be made with crimp on compression connectors and insulated with heat shrink sleeves or with splice kits listed by the manufacturer for wet locations. Wire nuts are not permitted. Cables and/or conductors for fire alarm and signals systems shall not be spliced.

3.6 GROUNDING

A. The conduit system supports, cabinets, switchboards, etc., and neutral conductors must be permanently and effectively grounded, in accordance with Title 24 of the California Code of Regulations. The neutral shall only be grounded at the main service location unless specifically noted otherwise on the drawings or required by the California Electrical Code.

B. This Contractor shall exercise every precaution to obtain good contacts at all panel boxes, pull boxes, etc.: where it is not possible to obtain good contacts, the conduits shall be bonded around the boxes with a #6 AWG gauge conductor with ground clamps.

C. All equipment cases, motor frames, etc. shall be completely grounded to satisfy applicable code requirements.

D. At each building, the interior hot and cold-water piping and the interior aboveground gas piping shall be bonded to the building service equipment per C.E.C. #250.104.

E. Do not use underground gas piping as a grounding electrode.

F. Pull a green equipment ground conductor in all power conduits, both metallic and non-metallic.

G. Pull a separate isolated ground wire to isolated ground receptacles, insulated green with yellow stripe, in addition to the equipment ground conductor.

H. Isolated ground conductor shall begin at the isolated ground bus in the panel in the building served and shall not be connected to any neutral conductor or any item not isolated from the system ground. All isolated ground circuits shall have a separate neutral conductor (not used for more than one circuit). The isolated ground conductor cannot extend upstream from the building served.

I. Each disconnect switch shall have a ground connector (lay in wire type) which shall be used for grounding the disconnect enclosure. The ground wire shall continue and be connected to the enclosure of the equipment served.

J. Where there is more than one building supplied from a common service, provide a grounding electrode at each building per C.E.C. #250.32.

K. At each telephone backboard and/or data backboard, provide a power distribution block (one pole with two primary openings and six secondary openings) and mount at + 18” A.F.F. unless otherwise noted. Run ¾”C - 1 #6 AWG to the ground bar of the nearest panel or the ground bus of the main switchboard. Power distribution block shall be Square D #LBA 163206 or equal.

3.7 MOUNTING HEIGHTS OF EQUIPMENT

A. A. Unless otherwise specified elsewhere or shown on the plans, the following mounting shall apply:

1) Panelboards: 6’-0” top of box

2) Disconnect Switches: 4’-0” to center line

3) Contactors: 4’-0” to center line

3.8 IDENTIFICATION OF SWITCHES AND APPARATUS

A. All switchboard circuits, externally operated switches and apparatus used for the operation of or control of circuits, appliances, or equipment shall be properly identified with an engraved Bakelite nameplates, 1” x 3”, black letters on white background. All such nameplates shall be of the self-adhesive type and attached onto the apparatus by screws or rivets. Card holders in any form are not acceptable.

3.9 EARTHQUAKE PROOFING OF LIGHT FIXTURES

A. Fixtures weighing more than 50 pounds shall be supported independently of the outlet box.

B. Pendant type fixtures shall be designed so that they may swing horizontally in any direction a minimum of 45 degrees from the vertical. Pendant shall have ball aligner at top, and swivel connection at fixture. If there is an obstruction within the 45 swing of the fixture the Contractor shall provide a State approved restraint to keep fixture from swinging into the obstruction.

C. All fixtures mounted in or on suspended ceilings shall be fastened to the ceiling-framing members in accordance with C.E.C. #410.36(B). Recessed fixtures in t-bar ceilings shall be provided with integral t-bar clips, one near each corner to attach it to the t-bar ceiling frame.

D. Recessed fixtures in T-bar ceilings shall be attached to the building structure above with #12 Ga. slack safety wire at two diagonal corners of each fixture (two wires per fixture).

3.10 FIRE RATED AREAS

A. Where light fixtures, conduit, cabinets, or boxes penetrate fire rated ceilings, walls or floors provide a fire rated enclosure or fire stop. Rating of enclosure or fire stop shall match or exceed rating of area penetrated. Verify location of fire rated areas with architectural drawings and with General Contractor.

B. Where outlet boxes are recessed on opposite sides of a fire rated wall, boxes shall be separated by a horizontal distance of at least 24 inches. Where the wall opening for a steel electrical outlet box exceeds 16 sq. inches in area, or an aggregate of more than 100 sq. inches for any 100 sq. feet of wall or partition area, fire stopping is required.

C. Penetrations in walls, floors or ceilings requiring protected openings shall be fire-stopped.

D. Fire-stopped shall be of an approved material, securely installed and be in conformance with the 2022 C.B.C, Section 714.3.

E. All required fire-stopping and joint sealants as a result of the work in Divisions 26, 27 and 28 is the responsibility of each individual trade. Refer to Sections 07 8400 and 07 9210, respectively.

3.11 MISCELLANEOUS EQUIPMENT

A. Contractor shall be responsible for electrical hook up and connections to all electrical equipment whether furnished by this Contractor or others, including wiring, conduit, disconnects, circuit breakers etc., even if not shown on drawings. Verify all locations and requirements with equipment supplier before rough-in.

B. When there are fire sprinklers, the Electrical Contractor shall connect bell, flow and tamper switches and other electrical devices as required by Sprinkler Contractor and local and state fire marshal. Verify requirements with General Contractor before bid.

3.12 INTERRUPTION OF SERVICE

A. Interruption of service in existing buildings shall not be made at a time which will inconvenience the Owner. Before making any final connections to the existing buildings or doing any other work that will interrupt the service, the Contractor shall consult with the Owner and schedule the work at Owner's convenience even if it is necessary to make such connections after regular working hours.

B. This Contractor shall do all rerouting and reconnecting of existing electrical facilities made necessary by this construction. Care shall be taken not to disrupt existing facilities. If any facilities are disrupted, this Contractor shall replace or repair them at his expense and to the satisfaction of the Architect.

3.13 CHANGES

A. Electrical Contractor shall consider the number of outlets for electric equipment shown on plans as final, but the Architect reserves the right to shift same, within reason, to a location and position which will meet more completely final requirements.

3.14 GUARANTEE AND TESTS

A. All electrical equipment testing, and related costs shall be included in the Contractor's bid.

B. Contractor shall obtain approval from the Architect of proposed independent testing agencies before any testing is started.

C. Equipment of all kinds installed by this Contractor shall be tested to determine whether it fulfills the requirements of these specifications. The Contractor shall furnish all labor necessary to adjust the operation of the apparatus and make the connections for the tests. After the tests have been completed, the Contractor shall restore all connections, apparatus, etc., to their original condition.

D. Should any piece of apparatus or any material or work fail in any of these tests, it shall be immediately removed and be replaced with new material by this Contractor at his expense and the portion of the work replaced be again tested by the Contractor.

E. All circuit breakers, 100 amps or more, shall be tested by an independent testing agency in accordance with NETA specifications and a report submitted to the Architect. Any circuit breaker that does not pass the test shall be replaced.

F. The entire installation shall be free from short circuits and improper grounds. Panels and circuits shall be tested for grounds and shorts. Each individual circuit shall be tested at the panel with the equipment connected for proper operation. Ground tests shall meet the requirements of the California Electrical Code. Upon completion of the work, a final inspection by the Architect and other interested authorities shall be conducted. This Contractor shall guarantee to repair or replace at his expense any material or equipment that develops defects or is determined not to be in conformance with the plans and specifications, during a period of one year after work is accepted by the Owner.

G. The grounding electrode system at the main electrical service equipment shall be tested by an independent testing agency in accordance with the three-point fall of potential method as specified in IEEE Standard 81-1983. Maximum ground resistance shall be 25 OHMS. A copy of the test report shall be submitted to the Architect and Engineer of record.

H. All feeder cables #2 and larger shall be tested for insulation resistance. Test report must include number of cable per phase & type of cable insulation.

I. Three copies of the test report shall be submitted to the Electrical Engineer prior to the final job walk.

J. The independent testing agency performing the above-mentioned tests shall be NETA or NICET certified or approved by the electrical engineer.

3.15 GROUND FAULT SYSTEMS TEST PROCEDURE (TESTS REQUIRED FOR 480V MAIN DISCONNECT)

A. Visual and Mechanical Inspection: VISUAL AND MECHANICAL INSPECTION:

1) Inspect for physical damage and compliance with plans and specifications.

2) Inspect neutral main bonding connection to assure:

a) Zero sequence sensing system is grounded.
b) Ground strap sensing systems are grounded through sensing device.
c) Ground connection is made ahead of neutral disconnect link on zero sequence sensing system.
d) Grounded conductor (neutral) is solidly grounded.

3) Inspect control power transformer to ensure adequate capacity for system.

4) Monitor panels (if present) shall be manually operated for:

a) Trip test
b) No trip test
c) Non-automatic reset

5) Proper operation and test sequence shall be recorded.

6) Inspect zero sequence systems for symmetrical alignment of core balance transformers about all current carrying conductors.

7) Verify ground fault device circuit nameplate identification by device operation.

8) Set pickup and time delay settings in accordance with the project Electrical Engineer’s provided settings.

3.16 ELECTRICAL TESTS

A. Measure system neutral insulation resistance to ensure no shunt ground paths exist. Remove neutral-ground disconnect link. Measure neutral insulation resistance and replace link.

B. Determine the relay pickup current by primary injection at the sensor and operate the circuit-interrupting device.

C. Test the relay timing by injecting one hundred fifty percent (150%) and three hundred percent (300%) of pickup current, or as specified by manufacturer.

D. Test the system operation at fifty-seven percent (57%) rated voltage.

E. Test zone interlock systems by simultaneous sensor current injection and monitoring zone blocking function.

3.17 TEST PARAMETERS

A. System neutral insulation shall be a minimum of one hundred (100) ohms.

B. Relay pickup current shall be set to a value between 20% and 25% of the rating of the main circuit breaker. The setting shall be the in-service setting unless otherwise specified.

C. Relay time delay shall be the closest possible calibrated setting to .1 seconds. This shall be the in-service setting unless otherwise specified.

3.18 DEMOLITION

A. Remove and/or relocate electrical facilities as required to clear areas for new construction.

END OF SECTION

SECTION 271000
STRUCTURED CABLING

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Communications system design requirements.

B. Copper cable and terminations.

C. Communications outlets.

D. Communications identification.

1.2 REFERENCE STANDARDS

A. BICSI N1 - Installation Practices for Telecommunications and ICT Cabling and Related Cabling Infrastructure, 1st Edition; 2019.

B. NFPA 70 - National Electrical Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.

C. TIA-568 (SET) - Commercial Building Telecommunications Cabling Standard Set; 2024.

D. TIA-568.2 - Balanced Twisted-Pair Telecommunications Cabling and Components Standards; 2024e.

E. TIA-569 - Telecommunications Pathways and Spaces; 2019e, with Addendum (2022).

F. TIA-606 - Administration Standard for Telecommunications Infrastructure; 2021d.

G. TIA-607 - Telecommunications Bonding and Grounding (Earthing) for Customer Premises; 2024e.

H. UL 444 - Communications Cables; Current Edition, Including All Revisions.

I. UL 514C - Nonmetallic Outlet Boxes, Flush-Device Boxes, and Covers; Current Edition, Including All Revisions.

J. UL 1863 - Communications-Circuit Accessories; Current Edition, Including All Revisions.

1.3 ADMINISTRATIVE REQUIREMENTS

A. Coordination:

1) Coordinate requirements for service entrance and entrance facilities with Communications Service Provider.

2) Coordinate the work with other trades to avoid placement of other utilities or obstructions within the spaces dedicated for communications equipment.

3) Coordinate arrangement of communications equipment with the dimensions and clearance requirements of the actual equipment to be installed.

4) Notify Architect of any conflicts with or deviations from Contract Documents. Obtain direction before proceeding with work.

1.4 SUBMITTALS

A. Product Data: Provide manufacturer's standard catalog pages and data sheets for each product.

B. Evidence of qualifications for installer.

C. Manufacturer's Installation Instructions: Indicate application conditions and limitations of use stipulated by product testing agency. Include instructions for storage, handling, protection, examination, preparation, installation, and operation of product.

D. Field Test Reports.

E. Operation and Maintenance Data: List of all components with part numbers, sources of supply, and operation and maintenance instructions; include copy of project record documents.

1.5 QUALITY ASSURANCE

A. Installer Qualifications: A company having at least 3 years experience in the installation and testing of the type of system specified, and:

1) Employing a BICSI Registered Communications Distribution Designer (RCDD).

2) Supervisors and installers factory certified by manufacturers of products to be installed.

B. Products: Listed, classified, and labeled as suitable for the purpose intended.

1.6 WARRANTY

A. Correct defective Work within a 2 year period after Date of Substantial Completion.

PART 2 PRODUCTS

2.1 SYSTEM DESIGN

A. Provide a complete permanent system of cabling and pathways for voice and data communications, including cables, conduits and wireways, pull wires, support structures, enclosures and cabinets, and outlets.

1) Comply with TIA-568 (SET) (cabling) and TIA-569 (pathways) (commercial standards).

2) Provide fixed cables and pathways that comply with NFPA 70 and TIA-607 and are UL listed or third party independent testing laboratory certified.

3) Provide connection devices that are rated for operation under conditions of 32 to 140 degrees F (0 to 60 degrees C) at relative humidity of 0 to 95 percent, noncondensing.

4) In this project, the term plenum is defined as return air spaces above ceilings, inside ducts, under raised floors, and other air-handling spaces.

B. System Description:

1) Offices and Work Areas: Provide minimum 2-data network drops per outlet location unless noted otherwise in each work area.

2) Provide additional outlets where indicated on drawings.

C. Main Distribution Frame (MDF): Centrally located support structure for terminating horizontal cables that extend to telecommunications outlets, functioning as point of presence to external service provider.

1) Locate main distribution frame as indicated on the drawings.

2) Capacity: As required to terminate all cables required by design criteria plus minimum 25 percent spare space.

D. Cabling to Outlets: Specified horizontal cabling, wired in star topology to distribution frame located at center hub of star; also referred to as "links".

2.2 COPPER CABLE AND TERMINATIONS

A. Manufacturers:

1) Belden: www.belden.com/#sle.

2) CommScope: www.commscope.com/#sle.

3) General Cable Technologies Corporation: www.generalcable.com/#sle.

4) Siemon Company: www.siemon.com/#sle.

5) Or approved equal.

B. Copper Horizontal Cable:

1) Description: 100 ohm, balanced twisted pair cable complying with TIA-568.2 and listed and labeled as complying with UL 444.

2) Cable Type - Voice and Data: TIA-568.2 Category 6 UTP (unshielded twisted pair); 23 AWG.

3) Cable Capacity: 4-pair.

4) Cable Applications:

a) Plenum Applications: Use listed NFPA 70 Type CMP plenum cable.
b) Riser Applications: Use listed NFPA 70 Type CMR riser cable or Type CMP plenum cable.
c) General Purpose Applications: Use listed NFPA 70 Type CM/CMG general purpose cable, Type CMR riser cable, or Type CMP plenum cable.

5) Cable Jacket Color - Voice and Data Cable: Blue.

C. Copper Cable Terminations: Insulation displacement connection (IDC) type using appropriate tool; use screw connections only where specifically indicated.

D. Jacks and Connectors: Modular RJ-45, non-keyed, terminated with 110-style insulation displacement connectors (IDC); high impact thermoplastic housing; suitable for and complying with same standard as specified horizontal cable; UL 1863 listed.

1) Performance: 500 mating cycles.

2) Voice and Data Jacks: 8-position modular jack, color-coded for both T568A and T568B wiring configurations.

E. Copper Patch Cords:

1) Description: Factory-fabricated 4-pair cable assemblies with 8-position modular connectors terminated at each end.

2) Patch Cords for Patch Panels:

a) Quantity: One for each pair of patch panel ports.
b) Length: As required for network switch connection.

2.3 COMMUNICATIONS OUTLETS

A. Outlet Boxes: Comply with Section 260533.16.

1) Provide depth as required to accommodate cable manufacturer's recommended minimum conductor bend radius.

2) Minimum Size, Unless Otherwise Indicated:

a) Data or Combination Voice/Data Outlets: 5S size to accoommodate 1-1/4" conduit size.

B. Wall Plates:

1) Comply with system design standards and UL 514C.

2) Accepts modular jacks/inserts.

3) Capacity:

a) Data or Combination Voice/Data Outlets: 2-ports UON.
4) Wall Plate Material/Finish - Flush-Mounted Outlets: Type 302 stainless steel.

2.4 IDENTIFICATION PRODUCTS

A. Comply with TIA-606.

2.5 ACCESSORIES

A. Hook-and-Loop Cable Ties:

1) Description: Single-component, self-engaging fastener with hook on one side and engageable loop backing.

PART 3 EXECUTION

3.1 INSTALLATION - GENERAL

A. Comply with latest editions and addenda of TIA-568 (SET) (cabling), TIA-569 (pathways), TIA-607 (grounding and bonding), BICSI N1, NFPA 70, and SYSTEM DESIGN as specified in PART 2.

B. Comply with Communication Service Provider requirements.

C. Grounding and Bonding: Perform in accordance with TIA-607 and NFPA 70.

3.2 INSTALLATION OF PATHWAYS

A. Install pathways with the following minimum clearances:

1) 48 inches (1220 mm) from motors, generators, frequency converters, transformers, x-ray equipment, and uninterruptible power systems.

2) 12 inches (300 mm) from power conduits and cables and panelboards.

3) 5 inches (125 mm) from fluorescent and high frequency lighting fixtures.

4) 6 inches (150 mm) from flues, hot water pipes, and steam pipes.

B. Outlet Boxes:

1) Coordinate locations of outlet boxes provided under Section 267000 as required for installation of telecommunications outlets provided under this section.

a) Mounting Heights: Unless otherwise indicated, as follows:
Telephone and Data Outlets: 18 inches (450 mm) above finished floor.
Telephone Outlets for Forward-Reach Wall-Mounted Telephones: 48 inches (1.2 m) above finished floor to top of telephone.
b) Orient outlet boxes for vertical installation of wiring devices unless otherwise indicated.
c) Provide minimum of 24 inches (600 mm) horizontal separation between flush mounted outlet boxes installed on opposite sides of fire rated walls.

3.3 INSTALLATION OF EQUIPMENT AND CABLING

A. Cabling:

1) Do not bend cable at radius less than manufacturer's recommended bend radius; for unshielded twisted pair use bend radius of not less than 4 times cable diameter.

2) Do not over-cinch or crush cables.

3) Do not exceed manufacturer's recommended cable pull tension.

4) When installing in conduit, use only lubricants approved by cable manufacturer and do not chafe or damage outer jacket.

B. Service Loops (Slack or Excess Length): Provide the following minimum extra length of cable, looped neatly:

1) At Distribution Frames: 120 inches (3000 mm).

2) At Outlets - Copper: 12 inches (305 mm).

C. Copper Cabling:

1) Category 5e and Above: Maintain cable geometry; do not untwist more than 1/2 inch (12 mm) from point of termination.

2) For 4-pair cables in conduit, do not exceed 25 pounds (110 N) pull tension.

3) Use T568B wiring configuration.

D. Identification:

1) Use wire and cable markers to identify cables at each end.

2) Use manufacturer-furnished label inserts, identification labels, or engraved wallplate to identify each jack at communications outlets with unique identifier.

3.4 FIELD QUALITY CONTROL

A. See Section 014000 - Quality Requirements, for additional requirements.

B. Comply with inspection and testing requirements of specified installation standards.

C. Visual Inspection:

1) Inspect cable jackets for certification markings.

2) Inspect cable terminations for color coded labels of proper type.

3) Inspect outlet plates and patch panels for complete labels.

D. Testing - Copper Cabling and Associated Equipment:

1) Category 5e and Above Backbone: Perform near end cross talk (NEXT) and attenuation tests.

2) Category 5e and Above Links: Perform tests for wire map, length, attenuation, NEXT, and propagation delay.

E. Final Testing: After all work is complete, including installation of telecommunications outlets, and telephone dial tone service is active, test each voice jack for dial tone.

END OF SECTION

SECTION 284600
FIRE DETECTION AND ALARM

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Fire alarm system and associated components, including control units, related equipment, initiating devices, and notification appliances.

1.2 REFERENCE STANDARDS

A. 36 CFR 1191 - Americans with Disabilities Act (ADA) Accessibility Guidelines for Buildings and Facilities; Architectural Barriers Act (ABA) Accessibility Guidelines; current edition.

B. ADA Standards - 2010 ADA Standards for Accessible Design; 2010.

C. NECA 1 - Standard for Good Workmanship in Electrical Construction; 2023.

D. NECA 305 - Standard for Fire Alarm System Job Practices; 2018.

E. NFPA 70 - National Electrical Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.

F. NFPA 72 - National Fire Alarm and Signaling Code; Most Recent Edition Cited by Referring Code or Reference Standard.

G. NFPA 90A - Standard for the Installation of Air-Conditioning and Ventilating Systems; 2024.

H. UL 38 - Standard for Manual Signaling Boxes for Fire Alarm Systems; Current Edition, Including All Revisions.

I. UL 864 - Control Units and Accessories for Fire Alarm Systems; Current Edition, Including All Revisions.

J. CFC - California Fire Code (Latest Edition)

1.3 ADMINISTRATIVE REQUIREMENTS

A. Coordination:

1) Coordinate arrangement of equipment with dimensions and clearance requirements of actual equipment.

2) Coordinate placement of devices and notification appliances with potential conflicts or view obstructions.

3) Coordinate work to provide power for equipment at required locations (e.g., smoke dampers, type of actuators, line or local control transformer, zoning, grouping and circuit activations).

4) Coordinate requirements for branch circuit protection, identification, and shunt trip if applicable.

5) Coordinate reflected ceiling plans to avoid conflicting placements; maintain minimum diffuser and detector clearances as indicated.

6) Coordinate submittals to confirm equipment and associated components are capable of indicated settings, and manufacturer documentation identifies required compatible product listings.

7) Notify Architect of conflicts with or deviations from Contract Documents. Obtain direction before proceeding with work.

1.4 SUBMITTALS

A. Evidence of designer qualifications.

B. Comply with NFPA 72 chapter "Documentation," including noting names of installers, owners, and system classification information.

C. Design Documents: Submit all information required for plan review and permitting by AHJ, including floor plans, riser diagrams, and description of operation.

1) Copy (if any) of list of data required by AHJ.

2) NFPA 72 "Record of Completion", filled out to extent known at time.

3) Clear and concise description of operation, with input/output matrix similar to that shown in NFPA 72 Appendix A, and complete listing of software required.

4) Manufacturer's detailed product data sheet for each component, including wiring diagrams, and circuit length limitations. Catalog pages and product descriptions include ratings, dimensions, finishes, service conditions, and included features.

5) Certification by manufacturer of FACU that system design complies with Contract Documents.

6) Certification by Contractor that system design complies with Contract Documents.

D. Manufacturer's Installation Instructions: Indicate application conditions and limitations of use stipulated by product testing agency. Include instructions for storage, handling, protection, examination, preparation, and installation of product.

E. Evidence of installer qualifications.

F. Inspection and Test Reports:

1) Submit inspection and test plan prior to closeout demonstration.

2) Submit documentation of satisfactory inspections and tests.

3) Submit NFPA 72 "Inspection and Test," filled out.

G. Operating and Maintenance Data: See Section 01 7800 for additional requirements; revise and resubmit until acceptable; have one set available during closeout demonstration:

1) Complete set of specified design documents, as approved by AHJ.

2) Additional printed set of project record documents and closeout documents, bound or filed in same manuals.

3) Contact information for firm that will be providing contract maintenance and trouble call-back service.

4) List of recommended spare parts, tools, and instruments for testing.

5) Replacement parts list with current prices, and source of supply.

6) Detailed troubleshooting guide and large scale input/output matrix.

7) Preventive maintenance, inspection, and testing schedule complying with NFPA 72; provide printed copy and computer format acceptable to Owner.

8) Detailed but easy to read explanation of procedures require recording of system trouble events by qualified personnel, such as when routine testing is being conducted for fire drills and when entering into contracts for building renovations.

H. Project Record Documents: See Section 01 7800 for additional requirements, have one set available during closeout demonstration:

1) Complete set of floor plans showing actual installed locations of components, conduit, and zones.

2) "As installed" wiring and schematic diagrams, with final terminal identifications.

3) "As programmed" operating sequences, including control events by device, and updated input/output chart.

I. Closeout Documents:

1) Certification by manufacturer that system has been installed in compliance with manufacturer's installation requirements, is complete, and is in satisfactory operating condition.

2) NFPA 72 "Record of Completion," filled out completely and signed by installer and authorized representative of AHJ.

1.5 QUALITY ASSURANCE

A. Designer Qualifications: NICET Level III (three) or Level IV (four) certified fire alarm technician or registered fire protection engineer, employed by FACU manufacturer, Contractor, or installer, with experience designing fire alarm systems in jurisdictional area of AHJ.

B. Installer Qualifications: Firm with minimum three years documented experience installing fire alarm systems of specified type and providing contract maintenance service as regular part of their business.

1) Authorized representative of FACU manufacturer; submit manufacturer's certification that installer is authorized; include name and title of manufacturer's representative making certification.

2) Installer Personnel: At least two years of experience installing fire alarm systems.

3) Supervisor: Level III (three) or Level IV (four) certified fire alarm technician; furnish name and address.

C. Manufacturer Qualifications: Company specialized in manufacturing products specified in this section with at least three years of documented experience.

1.6 FIELD CONDITIONS

A. Maintain field conditions within manufacturer's required service conditions during and after installation.

B. Do not exceed maximum ambient temperature requirements for batteries at any time, which reduces battery service life. Replace batteries exposed to temperatures in excess of manufacturer's requirements.

C. Do not install or otherwise handle thermoplastic-insulated conductors at temperatures lower than 14 degrees F (minus 10 degrees C), unless otherwise permitted by manufacturer's instructions. When installation below this temperature is unavoidable, notify Architect and obtain direction before proceeding with work.

D. Existing Conditions:

1) Existing Fire Alarm System: Remove existing components indicated and incorporate remaining components into new system. Comply with NFPA 70.

a) Maintain existing under warranty as if new; do not take existing portions of system out of service until new portions are fully operational, tested, and connected.

2) Modifications to Existing System:

a) Remove inactive or abandoned cables and components from existing fire alarm system.
b) Remove unused existing components and materials from site and dispose according to local and federal requirements.

1.7 WARRANTY

A. Fire Alarm Manual Pull Stations: Provide minimum 1-year manufacturer warranty covering repair or replacement due to defective materials or workmanship.

B. Fire Alarm System Detectors: Provide minimum 1-year year manufacturer warranty covering repair or replacement due to defective materials or workmanship.

C. Fire Alarm System Notification Appliances: Provide minimum 1-year year manufacturer warranty covering repair or replacement due to defective materials or workmanship.

PART 2 PRODUCTS

2.1 FIRE ALARM SYSTEM

A. General Requirements:

1) Provide modifications and extensions to existing fire alarm system complying with NFPA 70, NFPA 72, NFPA 90A, and consisting of required equipment, conduit, cabinets, outlet boxes, wiring, connectors, hardware, supports, accessories, components, software, and system programming as necessary for complete operating system that provides functional intent indicated.

2) Comply with the following; where requirements conflict, order of precedence of requirements is as listed:

a) 36 CFR 1191 and ADA Standards.
b) Requirements of AHJ.
c) Applicable local codes.
d) Contract Documents.
e) NFPA 72; "should" is mandatory; where conflicts between requirements require deviation, identify deviations clearly on design documents.

3) Fire Alarm System Products:

a) Listed, classified, and labeled as suitable for purpose intended.
b) Installation Environments: Provide products suitable for their respective indoor and outdoor applications.

4) Fire Alarm System Design Information:

a) Building Code: Comply with applicable building code.
Principle Occupancy: As indicated on Architect code summary drawings.
Principle Use: As indicated on Architect code summary drawings.
Occupant Evacuation Method: Total building.
Fire Suppression System: Fully sprinkled.
(a) Types:
b) NFPA 72 Fire Alarm System Classification: Remote supervising station.
c) Smoke and Heat Detector Coverage: Not required in accordance with NFPA 72.
d) Notification Appliance Zones:
See fire alarm system floor plans on drawings.

5) Provide fire alarm circuits in accordance with NFPA 70.

a) Comply with methods of interconnecting FACUs in accordance with NFPA 72 and NFPA 70.
b) Power Sources:
Comply with requirements for power supplies of emergency systems in accordance with NFPA 70.
Primary: Dedicated branch circuits from facility power distribution system.
Secondary: Storage batteries with capacity to operate system for period specified by NFPA 72.
c) Wiring and Wiring Methods:
General Requirements:
(a) Comply with requirements for wiring and wiring methods in accordance with NFPA 70.
(b) Conductors and Cables Installed Exposed in Spaces Used for Environmental Air (only where specifically permitted): Plenum-rated, listed and labeled as suitable for use in return air plenums.
(c) Comply with NFPA 70 for wire and cable plenum, riser, general-purpose, limited-use, undercarpet, and underground applications.
Fire Alarm Circuits:
(a) Comply with NFPA 70 for conditions and types required for multiconductor cable systems.
(b) Non-Power-Limited Fire Alarm (NPLFA) Circuits:
(1) Provide dedicated NPLFA non-GFCI branch circuits for fire alarm equipment and marked by red identification in accordance with NFPA 70.
(c) Power-Limited Fire Alarm (PLFA) Circuits:
(1) Provide identification for PLFA circuits in accordance with NFPA 70.

6) Provide pathway class designations and pathway survivability, as defined in NFPA 72.

a) Provide monitoring of conductors and other signaling channels for integrity and circuit performance.
b) Pathway Class Designations:
Unless otherwise indicated or required, pathways to meet the following requirements:
(a) SLCs: Class B (star, tee-tap, multi-tap, with no return).
(b) IDCs: Class B (daisy-chain with EoL resistor device installed at end of circuit).
(c) NACs: Class B (daisy-chain with EoL resistor device installed at end of circuit).
c) Pathway Survivability:
Unless otherwise indicated or required, pathways to meet requirements for Pathway Survivability Level 0 (nonrated cable, no required provisions for pathway survivability).

B. Fire Alarm System Interfaces and Control Functions:

1) UL 864 listed unless otherwise indicated.

2) Descriptions below are intended to provide means for interface. See project SOOs, narrative, and input/output matrix for execution requirements.

3) Provide initiating devices, interfaces, and control functions for emergency control function interfaces in accordance with NFPA 72.

4) Provide monitoring of interconnected systems. Coordinate notification appliance alternate markings as indicated on drawings.

2.2 FIRE ALARM CONTROL UNITS AND RELATED EQUIPMENT

A. Fire Alarm Control Units and Related Equipment: Listed and labeled as complying with UL 864.

B. Provide cabinets and enclosures as indicated or as required to house system components.

2.3 FIRE ALARM SYSTEM INITIATING DEVICES

A. General Requirements:

1) Addressable Systems:

a) Addressable Devices: Individually identifiable by addressable FACU; suitable for connection to FACU SLCs.

b) Conventional/Nonaddressable Devices: Provide addressable interface modules as indicated or as required for connection to addressable FACU. Unless devices are explicitly permitted to be connected together as one zone, provide separate addressable monitoring point for each device in order to be individually identifiable by addressable FACU.

2) Provide devices and associated accessories suitable for intended application and location to be installed. Unless otherwise indicated, use addressable devices and addressable interface modules only in clean, dry, indoor, nonhazardous locations.

3) Surface-Mounted Devices: Provide manufacturer's accessory surface mount backboxes or suitable outlet/device box.

4) Devices for Outdoor and Damp/Wet Locations: Weatherproof, suitable for outdoor use; provide manufacturer's accessory backboxes or enclosures in accordance with product listing.

5) Devices for Hazardous/Classified Locations: Listed and labeled as suitable for classification of installed location.

B. Manual Fire Alarm Boxes/Pull Stations:

1) Description: Noncoded manual signaling boxes listed and labeled as complying with UL 38.

2) Alarm Initiation: Configured for general alarm initiation unless otherwise indicated; presignal stations (where indicated) require use of key to initiate general alarm.

3) Operation: Dual-action unless otherwise indicated or required.

a) Dual-Action Operation: First requires pushing, pulling, or lifting, then pulling of lever.

4) Color: Red, in accordance with NFPA 72.

5) Station Reset: Requires use of key or tool.

2.4 FIRE ALARM SYSTEM NOTIFICATION APPLIANCES

A. General Requirements:

1) Provide signaling notification appliances listed for fire-protective service and intended operating mode, public or private; suitable for connection to FACU notification appliance circuits.

2) Provide notification appliances and associated accessories suitable for intended application and location to be installed. Use notification appliances only according to listed mounting (e.g. ceiling, wall).

3) Surface-Mounted Notification Appliances: Provide manufacturer's accessory surface mount backboxes or suitable outlet/device box.

4) Concealed Notification Appliances:

   a) Upon activation from fire alarm system, expose device for operation; return to concealed position upon system deactivation; motor-driven.
   b) Provide door position monitoring system for remote indication of concealed and exposed positions.

5) Exterior Notification:

   a) In addition to required occupant notification, provide notification appliances on exterior of building.

6) Notification Appliance Derating: Include device derating adjustments in accordance with listing where applicable, including the following.

   a) Where accessory protective guards or enclosures are utilized.
   b) Where required by field conditions (e.g., ambient temperature and sound).

7) Notification Appliance Color:

   a) Wall-Mounted: Red.
   b) Ceiling-Mounted: White.
   c) See drawings for mounting configuration indicated by symbols on floor plans, system interconnection diagrams, and details.

2.5 WIRE AND CABLE

A. General Requirements:

1) Comply with NFPA 70 listing and marking requirements for cables.

2) Substitution of fire alarm listed cables for communication wiring, in accordance with NFPA 70, is permitted, by substitution procedures.

B. Power-Limited Fire Alarm Cables (PLFA):

1) Comply with applications of listed cables in accordance with Chapter 7 of NFPA 70.

   a) Fire alarm cable substitutions in accordance with NFPA 70: Permitted.

2.6 ACCESSORIES

A. Provide components as indicated or as required for connection of fire alarm system to devices and other systems indicated.

B. Provide EoL resistors as required for wiring supervision.

C. Terminal Cabinets:

1) Cabinet: Steel, with red finish; keyed to match fire alarm system equipment.

2) Terminal Strips: Rated for 20 A at 250 VAC.

3) Termination Points: Rated for 12 AWG conductors; quantity as indicated on drawings or as required for application with minimum 25 percent spare capacity.

D. Documentation Cabinets:

1) Provide cabinets, size as indicated or as required to comply with on-site documentation storage required by NFPA 72.

2) Cabinet: Steel with red finish; keyed to match fire alarm system equipment unless otherwise required by AHJ.

PART 3 EXECUTION

3.1 EXAMINATION

A. Verify that system capacities listed in manufacturer instructions align with designed system.

B. Verify that mounting surfaces are ready to accept components and equipment, with suitable support frames and anchors installed where required.

C. Verify ratings, configurations, and characteristics of system components.

D. Verify rough-ins for field connections.

E. Verify that work likely to damage fire alarm system has been completed.

F. Verify that interior of building has been protected from weather.

G. Perform preinstallation tests and inspections per manufacturer's instructions and in accordance with NECA 305.

H. Verify that system bonding is in accordance with Section 260526.

I. Do not energize system until deficiencies have been corrected.

J. Verify that branch circuit wiring installation is completed, tested, and ready for connection to fire alarm system. Overcurrent protection ratings are consistent with circuit voltage and manufacturer's recommendations and nameplate data for equipment.

3.2 PREPARATION

A. Prior to installation, confirm environment of installation area is clean, and with ambient temperature, humidity, and ventilation requirements are per manufacturer’s written instructions.

1) Clean and vacuum in accordance with manufacturer's written instructions. Confirm equipment ventilation holes are absent of obstructions and free for air flow.

2) Clean pathways thoroughly to remove foreign materials before installing conductors and cables.

3) Clean dirt, debris, plaster, and other foreign materials from equipment enclosures, cabinets, and outlet boxes.

4) Clean surfaces to receive adhesive products according to manufacturer's instructions.

B. Follow tool requirements for installation, including torquing adjustments, as listed in manufacturer documentation.

C. Remove detector dust covers prior to system energization.

3.3 INSTALLATION

A. Install field-devices, components, FACU and related equipment, and accessories in accordance with the following:

B. Field Locations:

1) Obtain Owner's approval of locations of devices and notification appliances before installation.

2) Arrange equipment to provide minimum operational clearances and required maintenance access in accordance with manufacturer's instructions and NFPA 70.

3) Conceal wiring, conduit, outlet boxes, and supports where installed in finished areas; maintain code-required access.

C. Raceways and Supports:

1) Coordinate locations of outlet boxes as required for installation. Only install boxes and equipment at locations based on application standards indicated in NFPA 72.

2) Secure and support raceways at intervals complying with NFPA 70. Provide supports where vertical rise exceeds permissible limits.

3) Install firestopping to preserve fire resistance rating of partitions and other elements.

D. Wiring and Connections:

1) Maintain separation of Class 1, Class 2, Class 3 remote-control, signaling, fire alarm circuits, and power-limited circuits in accordance with cable insulation class and NFPA 70.

2) Maintain circuit pathway and class designations in accordance with NFPA 72 for configuration, separation, and survivability.

3) Comply with permitted and not permitted installations for wires, cables, cable routing assemblies, communications circuits, and fire alarm circuits in accordance with NFPA 70.

4) Secure and support conductors and cables in accordance with NFPA 70 using suitable supports and methods approved by AHJ. Provide independent support from building structure and suspended ceiling systems. Do not provide support from raceways, piping, ductwork, or other systems.

5) Provide grounding and bonding in accordance with Section 260526.

6) Comply with manufacturer's minimum cable sizes or ratings.

7) Do not exceed manufacturer's recommended maximum power, signal, or network cable lengths between components.

8) Provide network wiring in accordance with NFPA 70.

9) Neatly train and bundle conductors inside boxes, wireways, and cabinets.

10) See manufacturer's instructions for batteries.

E. Fire Alarm System Components:

1) Install field-installed devices, components, relays, notification appliances, accessories, and when applicable EoL resistors.

a) Install wiring to supervisory devices and associated EoL resistors as required for supervision of hardwired connections

2) Install Wall-Mounted Equipment: Assemble component hardware within (e.g., card bays, sub-bays, expansion bays, signal cards, other card frames, networking, signal transmission, application modules, tamper monitoring devices, interconnecting modules, and auxiliary power supplies), including space for required spare capacity, and configure settings.

3) Install Interconnect Wiring: Connect system cabinets, install processor and cards, cabling, connectors, terminations, and bonding.

F. Branch Power:

1) After installation confirmations, follow manufacturer instructions to connect branch circuit power cables to premises fire alarm system components; comply with NFPA 70.

2) Where accessories require auxiliary power, provide control power source and monitoring as indicated or as required to complete installation.

3) Install auxiliary power supplies, including indicated monitoring, and connections necessary for remote equipment.

G. System Identification:

1) Identify devices, notification appliances, components, cables, and equipment in accordance with approved submittals. See Section 260553.

2) Confirm fire alarm system programming meets requirements of SOO and sub-system SOOs.

3) Mark location of disconnecting means for NPFLA circuits.

4) Coordinate to provide red branch power circuit protective devices or identify them accordingly as required by NFPA 72 and NFPA 70.

5) Mark date of batteries installed on inside cover of panels and formal maintenance logs.

H. Troubleshooting and Installer Checks:

1) Field test connectivity periodically during installation process to avoid unexpected troubleshooting.

2) Check system operation for notification, FACU functions, circuit supervision, alarm initiating devices, supervisory initiating devices, dress panels/doors/covers, and programming before performing field tests.

I. Fire Alarm System Tests:

1) Perform required tests of NFPA 72. Record measured values during operational checks.

2) Confirm functional testing of fire alarm system is as indicated in Contract Documents.

3.4 FIELD QUALITY CONTROL

A. Provide services of manufacturer's authorized representation to observe installation and assist in inspection, testing, and adjusting. Include manufacturer's detailed testing procedures and field reports and with submittals.

B. Provide equipment, two-way radios for testing personnel use, tools, and supplies required to accomplish inspection and testing.

C. Notify Owner and Architect at least two weeks prior to scheduled inspections and tests.

D. Inspect and test in accordance with manufacturer's instructions.

E. Inspect wiring and components for damage and defects.

F. Batteries and Power Supplies: Perform inspections and tests listed in manufacturer installation instructions.

G. Perform additional requirements related to testing and inspection during system startup.

H. Test for interface with other systems.

I. Test shunt trips to verify operation.

J. Correct defective work, adjust for operation, and retest until entire system complies with Contract Documents.

K. Submit detailed reports indicated inspection and testing results, corrective actions taken, and as-found and final adjusted settings.

3.5 SYSTEM STARTUP

A. Obtain Owner approval prior to performing system startup.

B. Prepare and start equipment and systems in accordance with manufacturer's instructions and recommendations.

3.6 ADJUSTING

A. Adjust tightness of mechanical and electrical connections to manufacturer's recommended torque settings.

B. Adjust initiating device and notification appliance settings to achieve desired operation as indicated in submittals.

C. Measure power supply primary and secondary voltages, log values for records, and make appropriate adjustments.

D. Adjust alignment of equipment covers and doors. Provide keys and spare keys to Owner.

E. Reprint and reinstall damaged or misinstalled labels; maintain neat and square to installed location good workmanship - see NECA 1; maintain consistent placements for identification on products of similar type.

F. Adjust devices or notification appliances and associated bases to be flush and level.

G. Program system parameters according to requirements of Owner.

3.7 CLEANING

A. Check tightness of electrical connections. Replace damaged components and provide closure plates for vacant positions. Provide circuit directory updates for related power branch circuits.

B. Clean and repair existing materials and equipment that remain or are indicated for reuse.

C. Clean dirt, debris, plaster, and other foreign materials from outlet boxes and fire alarm system equipment and components.

D. Clean fire alarm system equipment and components according to manufacturer's instructions and NECA 305.

E. Clean surfaces and interiors of boxes and device cover plates in accordance with manufacturer's instructions to remove dirt, fingerprints, debris, plaster, and other foreign materials.

F. Repair scratched or marred exposed surfaces to match original factory finish.

G. Comply with federal (EPA), state, and local regulations for battery handling and disposal. Do not spill battery fluids down plumbing drains. Only use containers safe for transportation marked 'nonspillable.'

3.8 INSPECTION AND TESTING FOR COMPLETION

A. Notify Owner 7 days prior to beginning completion inspections and tests.

B. Notify AHJ and comply with their requirements for scheduling inspections and tests and for observation by their personnel.

C. Provide services of installer's supervisor or person with equivalent qualifications to supervise inspection and testing, correction, and adjustments.

D. Prepare for testing by ensuring that work is complete and correct; perform preliminary tests as required.

E. Provide tools, software, and supplies required to accomplish inspection, testing, and document results.

F. Perform inspection and testing in accordance with NFPA 72 and requirements of AHJ; document each inspection and test.

G. Correct defective work, adjust for operation, and retest until entire system complies with Contract Documents.

3.9 CLOSEOUT ACTIVITIES

A. Closeout Demonstration: Demonstrate operation of all functions to Owner.

1) Be prepared to conduct any of required tests.

2) Have minimum one copy of operation and maintenance data, preliminary copy of project record drawings, input/output matrix, and operator instruction chart(s) available during demonstration.

3) Have authorized technical representative of FACU manufacturer present during demonstration.

4) Demonstration may be combined with inspection and testing required by AHJ; notify AHJ with enough time to schedule demonstration.

5) Repeat demonstration until successful.

B. Occupancy will not occur prior to Substantial Completion.

C. Substantial Completion of project cannot be achieved until inspection and testing is successful and the following:

1) Approved operating and maintenance data has been delivered.

2) All aspects of operation have been demonstrated to Owner.

3) Final acceptance of fire alarm system has been given by AHJ.

3.10 PROTECTION

A. Protect installed fire alarm system from subsequent construction operations.

END OF SECTION

SECTION 31 1000 - SITE CLEARING

PART 1 - GENERAL

1.1 SUMMARY

A. Clear and grub the site as shown on the Drawings and specified in this Section.

B. Related Sections:
1. Documents affecting work of this Section include, but are not necessarily limited to, General Conditions, Supplementary Conditions, and Sections in Division 1 of these Specifications.
2. Section 31 2000: Earthwork.
3. Section 02 4100: Selective demolition.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Provide materials, not specifically described but required for proper completion of the work of this Section, as selected by the Contractor subject to the approval of the Architect.

PART 3 - EXECUTION

3.1 SURFACE CONDITIONS

A. Examine the areas and conditions under which work of this Section will be performed. Correct conditions detrimental to timely and proper completion of the Work. Do not proceed until unsatisfactory conditions are corrected.

3.2 PROTECTION

A. Protect existing utilities indicated or made known.

B. Protect trees and shrubs, where indicated to remain, by providing a fence around the tree or shrub of sufficient distance away and of sufficient height so trees and shrubs will not be damaged in any way as part of this Work.

C. Protection of persons and property:
1. Barricade open depressions and holes occurring as part of this Work, and post warning lights on property adjacent to or with public access.
2. Operate warning lights during hours from dusk to dawn each day and as otherwise required.
3. Protect structures, utilities, sidewalks, pavements, and other facilities from damage caused by settlement, lateral movement, undermining, washout, and other hazards created by operations under this Section.
4. Barricade and post or backfill all open trenches outside of fenced areas when not on job site.

D. Use means necessary to prevent dust becoming a nuisance to the public, to neighbors, and to other work being performed on or near the site.

E. Maintain access to the site at all times.

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3.3 CLEARING

A. Prior to earthwork operations, strip entire site of vegetation, organic topsoil. Clear surface and subsurface obstructions and miscellaneous debris from the proposed building, exterior concrete, and paving areas.
   1. Stripping: Approximately 4" deep. The actual depth of stripping will be reviewed by the responsible inspecting Geotechnical Engineer.

B. Clear organic matter, vegetation, rubbish, debris, and loose soil deposits from the banks and bottoms of the irrigation canal and ditch.

3.4 CONSERVATION OF TOPSOIL

A. Stockpile the stripped organic topsoil in an area clear of new construction in order to provide topsoil for areas shown on the Drawings to be turfed or planted, and to fill planters, without contamination with subsoils.

B. Maintain the stockpile in a manner which will not obstruct the natural flow of drainage.
   1. Maintain stockpile free from debris and trash.
   2. Keep the topsoil damp to prevent dust and drying out.

3.5 DISPOSAL

A. Remove brush, grass, roots, trash, and other material from clearing operations. Dispose of away from the site in a legal manner.

B. Do not store or permit debris to accumulate on the job site.

C. Dispose of any excess topsoil after fine grading has been accepted by the Architect.

D. Do not burn debris at the site.

E. Excavated Soils and Land Clearing Debris: 100% of trees, stumps, rocks, and associated vegetation and soils resulting primarily from land clearing shall be reused or recycled, except for reuse, either on site or off site of vegetation or soil contaminated by disease or pest infestation.
   1. Refer to Section 01 7425.

3.6 UTILITIES

A. Coordinate with utility companies and agencies as required. See Section 02 3100.

B. Where utility cutting, capping, or plugging is required, perform such work in accordance with requirements of the utility company or governmental agency having jurisdiction.

END OF SECTION 31 1000

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SECTION 31 2000 - EARTHWORK

PART 1 - GENERAL

1.1 SUMMARY

A. In accordance with pertinent provisions of this Section, trench, excavate, fill, backfill, compact, and grade the site to the elevations shown on the Drawings and as needed to meet the requirements of the construction shown in the Contract Documents.

B. The work of this Section includes, but is not limited to, the following:
1. Preparation of sub-grade for buildings, walks, pavements, and landscaping.
2. Site grading, cut, fill, and finish, off-haul or import of soil necessary to meet finish grades indicated on the Drawings.
3. Excavation, backfill and compaction for filling construction and trenches.

C. Related Sections:
1. Documents affecting work of this Section include, but are not necessarily limited to, General Conditions, Supplementary Conditions, and Sections in Division 1 of these Specifications.
2. Section 01 4520: Testing and inspection requirements.
3. Section 01 5725: Storm Water Pollution Protection Plan.
4. Section 01 7120: Field engineering.
5. Section 22 0000: Excavation and backfill for plumbing work.
6. Section 26 6000: Excavation and backfill for electrical work.
7. Section 31 1000: Site clearing, removal and storage of top soil.

1.2 QUALITY ASSURANCE

A. Use equipment adequate in size, capacity, and numbers to accomplish the work in a timely manner.

B. In addition to complying with requirements of governmental agencies having jurisdiction, comply with the directions of the geotechnical engineer.

C. Verify all grade and trench elevations as specified in Section 01 7120.

D. All improvements within property owned by a City, County or State Entity shall be in accordance with the Standard Specifications of the authority having jurisdiction.

1.3 TRENCHING AND EXCAVATION SAFETY

A. All trenches and excavation in excess of 4'-0" in depth and areas of visibly unstable soils shall be shored or otherwise stabilized in conformance with current local or state codes, ordinances and requirements. In addition, the Contractor shall notify the Owner of suspected hazardous waste or other unusual physical conditions as provided by law.

B. All open trenches and excavations outside the fenced construction area shall be properly barricaded for public and worker safety. Trenches shall be adequately covered or backfilled prior to ceasing work or leaving the work site.

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C. Slope height, slope inclination, and excavation depths (including utility trench excavations) must in no case exceed those specified in local, state, or federal safety regulations, (e.g., OSHA Health and Safety Standards for Excavations, 29 CFR Part 1926, or successor regulations).

1.4 EXISTING UTILITIES

A. Field verify the location of all existing underground utilities prior to beginning any earthwork. Work around and protect all existing utilities during the course of the Work. Raise or lower each existing utility box flush with new finish surface.

B. Where existing utilities are indicated on the drawings, extreme care shall be exercised in excavating near these utilities to avoid damage, and the Contractor will be held responsible for any damage caused by construction operations.

C. Should utilities not indicated on the drawings be found during construction, the Contractor shall promptly notify the Architect for instructions as to further action. Failure to do so will make the Contractor liable for any damage arising from construction operations after discovery of these utilities.

PART 2 - PRODUCTS

2.1 MATERIALS, GENERAL

A. Products specified are for establishing the type, design, and quality required. Products of equal or better type, design, and quality produced by other manufacturers will be considered provided the request for substitution is submitted in accordance with Section 01 2500.

2.2 SOIL MATERIALS

A. Fill and Backfill Materials: Fill shall consist of select material. Native soil, free from organic matter and rocks or cobbles larger than 3", may be used as fill at the site as follows:
   1. Satisfactory Soil Materials: Are defined as those complying with ASTM D2487 Soil Classification Groups GW, GP, GM, SM, SW, and SP.
   2. Unsatisfactory Soil Materials: are defined as those complying with ASTM D2487 Soil Classification Groups GC, SC, MH, ML, CL, CH, OL, OH, and PT.

B. Import Material: Import material, if required, shall consist of homogenous, non-corrosive, non-expansive, inorganic granular soils free of toxic materials and conforming to the following criteria:
   1. Gradation:
      a. 3" Sieve: 100% passing
      b. 3/4" Sieve: 80-100% passing
      c. No. 4 Sieve: 60-100% passing
      d. No. 200 Sieve: 20-70% passing
   2. Plasticity Index, ASTM D4318:
      a. Liquid limit: < 25
      b. Plasticity index: < 12
   3. Expansion Index: < 15
   4. Organic Content: < 3% by dry weight.
   5. Minimum "R" Value (pavement area): 40
   6. Corrosivity:
      a. pH: 6 to 8
      b. Minimum resistivity (ohm-cm): > 2,000

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c. Soluble sulfate (ppm): < 2,000
d. Soluble chloride (ppm): < 500

7. Import fill material shall be approved by the geotechnical engineer prior to transport to the site and provided at no additional cost to the Owner.

C. Engineered Fill Materials:
1. Satisfactory Soil Materials as defined in paragraph 2.2.A.1 above, or
2. Import Material defined in 2.2.B above.

D. Sand for Utility Bedding: Natural river or bank sand; washed; free of silt, clay, loam, friable or soluble materials, and organic matter.

E. Toxic Testing of Import Fill Material:
1. The Contractor shall notify the Owner, Architect, and Testing Laboratory for the project, of the location and origin of all fill material intended for this project. Such notification shall be not less than 21 days prior to transport of the material.
2. Both native and stockpile soils shall be subject to testing to determine suitability of the soil as related to toxic substances on school sites.
3. The Owner will pay for only one passing test from one import source. Additional tests, and retests of failed material shall be paid by the Contractor.
4. Should testing indicate toxic substances at levels above those acceptable on school sites by the State of California, Department of Toxic Substance Control (DTSC), the subject soil will not be permitted on the proposed school site.
5. Any delay caused by materials found not to be compliant, shall not be accepted as justification for contract time extension or related claims.

2.3 TOPSOIL

A. Topsoil:
1. Friable, fertile soil of loamy character, containing an amount of organic matter normal to the region, capable of sustaining healthy plant life, and reasonably free from subsoils, roots, heavy or stiff clay, stones and gravel, noxious weeds, sticks, brush, litter, and other deleterious matter.
2. Provide from stockpile developed on site as specified in Section 31 1000.

2.4 ACCESSORY MATERIALS

A. Utility Identification Tape: 2" wide metallic plastic material inscribed with caution message related to the buried utility below (i.e., **ELECTRICAL LINE BURIED BELOW, SEWER LINE BURIED BELOW**, etc.) by McMaster-Carr or approved equal.

B. Provide a dry, free-flowing, dust-free chemical compound, soluble in water, capable of inhibiting growth of vegetation, and approved for use on this Work by governmental agencies having jurisdiction.

PART 3 – EXECUTION

3.1 SURFACE CONDITIONS

A. Examine the areas and conditions under which work of this Section will be performed. Correct conditions detrimental to timely and proper completion of the Work. Do not proceed until unsatisfactory conditions are corrected.

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3.2 FINISH ELEVATIONS AND LINES

A. Comply with pertinent provisions of this Section, Section 01 7120, and the Grading Plan.

3.3 DEWATERING AND WATER CONTROL

A. Water Control:
1. Establish and construct storm drainage features at the earliest stages of site development, and throughout construction grade the construction area to provide positive surface water runoff away from the construction activity and/or provide temporary ditches, swales, and other drainage features and equipment as required to maintain dry soils.
2 Completely drain construction site during periods of construction to keep soil materials sufficiently dry.
3. Temporary excavations for the project construction should be left open only for as short a time as possible and should be protected from water runoff.

B. Dewatering:
1. Remove all water, including rain water, encountered during trench and substructure work to an approved location by pumps, drains, and other approved methods.
2. Keep excavations and site construction area free from water.
3. Prevent surface water and subsurface or ground water from flowing into excavations and from flooding project site and surrounding area.
4. Do not allow water to accumulate in excavations. Remove water to prevent softening of foundation bottoms, undercutting footings, and soil changes detrimental to stability of subgrades and foundations.
5. Provide and maintain pumps, well points, sumps, suction and discharge lines, and other dewatering system components necessary to convey water away from open excavations, unfinished fills, or other low areas to prevent softening of exposed surfaces.
6. Dispose of water away from the work in a suitable manner without damage to adjacent property or menace to public health.
7. Protect existing storm drain system from silt and debris resulting from construction activities. If contamination occurs, remove contamination at no cost to the Owner.

C. Unsuitable Soil Support: When unsuitable working platforms for equipment operation and unsuitable soil support for subsequent construction features develop, remove unsuitable material and provide new soil material as specified.

3.4 DUST CONTROL

A. The San Joaquin Valley Air Pollution Control District regulates all dust control and emission standards throughout the Central Valley. Regulation VIII – Fugitive PM10 Prohibitions requires that a Dust Control Plan be completed for a large majority of construction projects.

B. The Contractor shall implement all measures listed in the Dust Control Plan as required for the project.

C. Construction work shall not commence until the Dust Control plan is completed and approved by the District.

D. Whether a Dust Control Plan is required for the project or not, the Contractor shall be responsible for complying with the requirements of Rule 8021.

3.5 PROCEDURES

A. Utilities:

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1. Unless shown to be removed, protect active utility lines shown on the Drawings or otherwise made known to the Contractor prior to excavating. If damaged, repair or replace at no additional cost to the Owner.
2. If active utility lines are encountered, and are not shown on the Drawings or otherwise made known to the Contractor, promptly take necessary steps to assure that service is not interrupted.
3. If service is interrupted as a result of work under this Section, immediately restore service by repairing the damaged utility at no additional cost to the Owner.
4. If existing utilities are found to interfere with the permanent facilities being constructed under this Section, immediately notify the Architect and secure his instructions.
5. Do not proceed with permanent relocation of utilities until written instructions are received from the Utility Company.

B. Protection of Persons and Property:
1. Barricade open holes and depressions occurring as part of this Work, and post warning lights on property adjacent to or with public access.
2. Operate warning lights during hours from dusk to dawn each day and as otherwise required.
3. Protect structures, utilities, sidewalks, pavements, and other facilities from damage caused by settlement, lateral movement, washout, and other hazards created by operations under this Section.

C. Use means necessary to prevent dust becoming a nuisance to the public, to neighbors, and to other work being performed on or near the site.

D. Maintain access to adjacent areas at all times.

3.6 BORING

A. Provide mechanical boring equipment to bore under existing asphalt, concrete, or other surfaces or objects as noted on the drawings. All borings shall be a minimum of 24" under the substrate material unless otherwise authorized by the Architect.

B. Holes shall be bored not to exceed 1" larger diameter than the largest component remaining in the excavation.

C. **Water or air pressure jetting** are not permitted, unless they comply with the following requirements.
1. All surfaces of the hole can be visually inspected with 6' maximum length and,
2. All objects shall be supported continuously to prevent sagging and,
3. The hole shall be filled with compacted damp sand and inspected by the Project Inspector or Materials Testing Lab technician.

D. Comply with requirements of Section 01 7330.

3.7 SITE PREPARATION

A. Preparation at Asphalt Pavement and Aggregate Base Pavement:
1. After clearing, scarify the top 8" of subgrade at asphalt pavement areas and recompact at a moisture content that will permit proper compaction to 95 percent of maximum density; ASTM D1557.
2. Extend compaction 2'-0" beyond the outer limits of pavement areas.

B. Preparation at Site Concrete:
1. After clearing, scarify the top 8" of subgrade at site concrete areas and recompact at a moisture content that will permit proper compaction to 90 percent of maximum density; ASTM D1557.
2. Extend compaction 2'-0" beyond the outer limits of site concrete at new construction. No extension is required at areas of site concrete removal and replacement.

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3.8 EXCAVATION

A. Perform excavation of every type of material encountered within the limits of the Work to the lines, grades, and elevations indicated and specified herein.

B. Earth excavation includes excavation of pavements and other obstructions visible on ground surface; underground structures, utilities and other items indicated to be demolished and removed; together with earth and other materials encountered that are not classified as rock or unauthorized excavation.

C. Rock excavation in trenches and pits includes removal and disposal of materials and obstructions encountered which cannot be excavated with a 1.0 cubic yard (heaped) capacity, 42" wide bucket on a track-mounted power excavator equivalent to Caterpillar Model 215, rated at not less than 90 HP flywheel power and 30,000 lb. drawbar pull. Trenches in excess of 10'-0" in width and pits in excess of 30'-0" in either length or width are classified as open excavation.

D. Surplus Materials: Dispose of unsatisfactory excavated materials, and surplus satisfactory excavated material, away from the site at disposal areas arranged and paid for by the Contractor.

E. Additional Excavation: When excavation has reached required subgrade elevations, notify Architect who will make an inspection of conditions. If unsuitable bearing materials are encountered at required subgrade elevations, carry excavations deeper and replace excavated material as directed by Architect/Engineer. Removal of unsuitable material and its replacement as directed will be paid on basis of contract conditions relative to changes in work.

F. Excavate and backfill in a manner and sequence that will provide proper drainage at all times.

G. Unauthorized Excavation:
   1. Unauthorized excavation consists of removal of materials beyond indicated subgrade elevations or dimensions without specific instruction from the Architect or the geotechnical engineer.
   2. Under footings, foundations, or retaining walls:
      a. Fill unauthorized excavation by extending the indicated bottom elevation of the footing or base to the excavation bottom, without altering the required top elevation.
      b. When acceptable to the geotechnical engineer, lean concrete (minimum 2000 psi) may be used to bring bottom elevations to proper position.
   3. Elsewhere, backfill and compact unauthorized excavations as specified for authorized excavations, unless otherwise directed by the geotechnical engineer.

H. Benching Slopes: Horizontally bench existing slopes greater than 1:4 to key fill material to slope for firm bearing.

I. Stability of Excavations:
   1. Slope sides of excavation to comply with local codes and ordinances having jurisdiction.
   2. Shore and brace where sloping is not possible because of space restrictions or stability of the materials being excavated.
   3. Maintain sides and slopes of excavations in a safe condition until completion of backfilling.

J. Shoring and Bracing:
   1. Provide materials for shoring and bracing as may be necessary for safety of personnel, protection of work, and compliance with requirements of governmental agencies having jurisdiction.
   2. Maintain shoring and bracing in excavations regardless of the time period excavations will be open.
   3. Carry shoring and bracing down as excavation progresses.

K. Use of Explosives: **NOT PERMITTED**.

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3.9 FILLING AND BACKFILLING

A. Backfill excavations as promptly as progress of the Work permits, but not until:
   1. Acceptance of construction below finish grade:
   2. Inspecting, testing, approving, and recording locations of underground utilities;
   3. Concrete formwork is removed;
   4. Shoring and bracing are removed, and voids have been backfilled with satisfactory materials;
   5. Trash and debris have been removed; and
   6. Horizontal bracing is in place on horizontally supported walls.

B. Placing and Compaction:
   1. Place backfill and fill materials in layers not more than 8" in loose depth.
   2. Before compacting, moisten or aerate each layer as necessary to provide the optimum moisture content.
   3. Compact each layer to required percentage of maximum density for the area.

C. Moisture Content:
   1. When the moisture content of fill material is below the lower limit specified by the Geotechnical Engineer, add water until the moisture content is as specified.
   2. When the moisture content of fill material is above the upper limit specified, the material shall be aerated by blading or other satisfactory methods until the moisture content is as specified.
   3. Do not place, spread, or compact fill while it is frozen or thawing or during unfavorable weather conditions. When work is interrupted by weather conditions, do not resume fill operations until moisture content and density of previously placed fill are satisfactory.
   4. Where soil has been softened or eroded by flooding, by placement during unfavorable weather, remove damaged areas and recompact as described for fill and compaction.
   5. Do not fill over porous, wet, frozen or spongy subgrade surfaces.
   6. Where subgrade is spongy or pumping due to conditions beyond the Contractor's control, and aeration or other methods do not bring moisture content within specified levels, stop work and contact the Architect and Geotechnical Engineer for further direction.

3.10 TOPSOIL

A. Place topsoil to the following compacted thicknesses:
   1. Areas to be seeded: 6"
   2. Areas to be sodded: 4"
   3. Shrub beds: 18"
   4. Flower beds: 12"

B. Topsoil Placement:
   1. Where topsoil is to be placed, scarify surface to depth of 6".
   2. Place topsoil during dry weather.
   3. Remove roots, weeds, rocks, and foreign material while spreading.
   4. Fine grade topsoil to eliminate uneven areas and low spots. Maintain profiles and contour of subgrade.
   5. Roll placed topsoil.

3.11 TRENCHING

A. Trenching:
   1. Notify Architect of unexpected subsurface conditions and discontinue affected Work in area until notified to resume work.
   2. Slope banks of excavations deeper than 4 feet to angle of repose or less until shored.

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3. Do not interfere with 45 degree bearing splay of foundations.
4. Cut trenches wide enough to allow inspection of installed utilities.
5. Hand trim excavations. Remove loose matter.
6. Remove large stones and other hard matter that could damage piping or impede consistent backfilling or compaction.
7. Remove lumped subsoil, boulders, and rock up to 1.0 cu yd measured by volume.
8. Remove excavated material that is unsuitable for re-use from site.
9. Stockpile excavated material to be re-used in area designated on site in accordance with this Section 31 2000.
10. Remove excess excavated material from site.

B. Preparation for Utility Placement:
1. Cut out soft areas of subgrade not capable of compaction in place. Backfill with engineered fill.
2. Compact subgrade to density equal to or greater than requirements for subsequent fill material.
3. Until ready to backfill, maintain excavations and prevent loose soil from falling into excavation.

C. Backfilling:
1. Backfill to contours and elevations indicated using unfrozen materials.
2. Employ a placement method that does not disturb or damage other work.
3. Systematically fill to allow maximum time for natural settlement. Do not fill over porous, wet, frozen or spongy subgrade surfaces.
4. Maintain optimum moisture content of fill materials to attain required compaction density.
5. Slope grade away from building. Make gradual grade changes. Blend slope into level areas.
6. Correct areas that are over-excavated.
7. Reshape and re-compact fills subjected to vehicular traffic.

D. Utility Installation: Install underground utilities according to the manufacturer's written recommendations. In addition to the manufacturer's recommendations, install underground utilities as follows:
1. Underground Utility Line Cover: No less than 12".
2. Bedding: Minimum of 6" compacted sand bedding under the pipe or conduit.
3. Envelope: Compacted sand extending 6" above and around the pipe or conduit.
4. Backfill Material: Remaining backfill material may consist of native soil or engineered fill material as described above.
5. Place and compact utility trench backfill in accordance with the requirements for engineered fill.

E. Utility Identification:
1. Utility Identification Tape: 2" wide metallic plastic material inscribed with a CAUTION message related to the buried utility.
2. Identify each utility pipe or conduit by the use of a continuous underground warning tape.
3. Locate tape 12" directly above the pipe or conduit, but not more than 12" below or not less than 6" below the finished grade.
    a. Where the top of the pipe or conduit exceeds 4'-0" below finish surface, locate one tape 12" directly above the pipe or conduit and one tape not less than 6" below the finished grade.
4. Provide one strip of identification tape for each 18" of trench width, horizontally.

3.13 GRADING

A. General: Uniformly grade the areas within limits of grading under this Section, including adjacent transition areas. Smooth the finished surfaces within specified tolerance.

B. Finish Grading Outside Building Lines:
1. Grade areas adjacent to buildings to achieve drainage away from the structures, and to prevent ponding.

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2. Finish the surfaces to be free from irregular surface changes, and:
   a. Shape the surface of areas scheduled to be under walks to line, grade, and cross-section, with finished surface not more than 0.10 foot above or below the required subgrade elevation.
   b. Shape the surface of areas scheduled to be under pavement to line, grade, and cross-section, with finished surface not more than 0.10 feet above or below the required subgrade elevation.
   c. Shape finish grade adjacent to building to slope a minimum of 2% away from the exterior footings and wall, for a distance of 5'-0".

3.14 COMPACTION

A. Control soil compaction during construction to provide the minimum percentage of density specified for each area as determined according to ASTM D1557.

B. Moisture Control: Where subgrade or layer of soil material must be moisture-conditioned before compacting, uniformly apply water to surface of subgrade or layer of soil material to prevent free water appearing on surface during or subsequent to compacting operations.

C. Densities: Provide not less than the following maximum density of soil material compacted at each layer of soil material in place, and as approved by the geotechnical engineer.
   1. **Buildings, Asphalt Paving and Site Concrete:** As specified in paragraph 3.7.
   2. **Lawn and unpaved areas:** Compact the top 6" of subgrade and each layer of fill material or backfill material at 85% of maximum density;
   3. **Trenches:** Provide a minimum of 3" of compacted sand bedding under pipe or conduit, and provide envelope extending 12" above pipe or conduit. Compact remaining backfill to 90% of maximum density except the upper 24" of those trenches located within structures, walks, and pavement areas which shall be compacted as specified in section 3.7.

3.15 FIELD QUALITY CONTROL

A. Secure the Geotechnical Engineer's inspection and approval of subgrades and fill layers before subsequent construction is permitted thereon.

B. The Owner's testing laboratory will provide at least the following tests:
   1. At paved areas, at least 1 field density/moisture test for every 10,000 sq. ft. of paved area, but not less than 3 tests.
   2. In each compacted underlying fill layer, 1 field density/moisture test for every 7,500 sq. ft. of overlaying paved area, but not less than 3 tests.
   3. In building areas, at least 1 field density/moisture test for every 2,000 sq. ft. of building coverage.
   4. At least 1 field density/moisture test per every 200 lineal foot of trench over 3'-0" of trench depth.

C. If, in the Geotechnical Engineer's opinion based on reports of the testing laboratory, subgrade or fills which have been placed are below specified density, provide additional compacting and testing under the provisions of Section 01 4520 of these Specifications.

END OF SECTION 31 2000

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SECTION 32 1210 - ASPHALT PAVING

PART 1 - GENERAL

1.1 SUMMARY

A. Provide asphalt paving, aggregate base, and wheel stops where shown on the Drawings, as specified herein, and as needed for a complete and proper installation.

1. The Work of this Section includes patching and repair of asphaltic concrete paving removed for installation of underground utilities.
2. The work of this Section includes patching and repair of asphaltic concrete paving removed for installation of new work.

B. Related Sections:
1. Documents affecting work of this Section include, but are not necessarily limited to, General Conditions, Supplementary Conditions, and Sections in Division l of these Specifications.
2. Section 31 2000: Earthwork
3. Section 32 1720: Pavement Marking

1.2 SUBMITTALS

A. Submit in accordance with Section 01 3300.
1. Manufacturer's descriptive literature and product specifications for each product. Include data to indicate compliance with the specified requirements.
2. Certificates, signed by the asphaltic concrete paving materials producer and the asphaltic concrete paving subcontractor, stating that materials meet or exceed the specified requirements.

1.3 QUALITY ASSURANCE

A. All improvements within property owned by a City, County or State Entity, shall be in accordance with the Standard Specifications of the authority having jurisdiction.

1.4 SPECIAL WARRANTY

A. In addition to the warranty requirements of the Contract Documents, provide a material and workmanship warranty signed by an authorized representative of the installing subcontractor and cosigned by the Contractor with an extended warranty correction period of 2-years.

PART 2 - PRODUCTS

2.1 GENERAL

A. Products specified are for establishing the type, design, and quality required. Products of equal or better type, design, and quality produced by other manufacturers will be considered provided the request for substitution is submitted in accordance with Section 01 6200.

B. All materials and products shall be in conformance with the current construction standards and construction specifications of the governing jurisdiction.

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2.2 ASPHALT CONCRETE

A. Asphalt Concrete: Type B; Standard Specifications Section 39, California Department of Transportation, 2010 edition.

B. Aggregate: 1/2" maximum (medium).

C. Asphalt Binder: Steam refined paving asphalt classified as PG 64-10; Section 92 of the State of California Standard Specifications, 2010 edition.

2.3 AGGREGATE BASES, SUBBASES, AND RECYCLED BASES

A. Aggregate Bases:
1. Class 2 conforming to Section 26 of the Caltrans Specifications, 2010 edition.
2. Gradation: As specified for 3/4" maximum aggregate.

B. Aggregate Subbase:
1. Conform to Section 25 of the Caltrans Specifications, 2010 edition.
2. Class as noted on the Drawings.

C. Recycled Base and Subbase Courses: Aggregate base or subbase may be composed of salvaged oiled earth and asphalt concrete from the existing roadway recycled and mixed with imported materials to meet the requirements of the base or subbase class noted on the Drawings.
1. Contractor shall be responsible for paying for “R” Value testing and other required testing of the salvaged materials.
2. Contractor must show that “R” Value and other properties of the salvaged material meets or exceeds the requirements of the base or subbase class noted on the Drawings.
3. The amount of recycled/reclaimed material in the mix may be up to 100 percent of the total volume of the aggregate used.

2.4 OTHER MATERIALS

A. Weed Killer: SFM 75 by Alligare.

B. Wheel Stops: 6"x6"x48" reinforced precast concrete with two 3/4"x24" steel anchor pins set in epoxy.

PART 3 - EXECUTION

3.1 SURFACE CONDITIONS

A. Examine the areas and conditions under which work of this Section will be performed. Correct conditions detrimental to timely and proper completion of the Work. Do not proceed until unsatisfactory conditions are corrected.

3.2 FINAL PREPARATION OF SUBGRADE

A. After preparation of subgrade as specified in another Section of these Specifications, thoroughly scarify and sprinkle the entire area to be paved, and then compact to a smooth, hard, even surface of 95% compaction to receive the aggregates.

B. Apply the specified weed killer to the entire area to be paved. Adhere to the manufacturer's application recommendations.

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3.3 PLACEMENT OF BASE COURSES

A. Base:
1. Spread specified base material to a thickness providing the compacted thickness indicated.
2. Place in lifts not exceeding 8" in thickness.
3. Compact to 95%.

B. Moisture Content: Use only the amount of moisture needed to achieve the specified compaction.

3.4 PLACEMENT OF ASPHALTIC CONCRETE PAVING

A. Install the specified headers and stakes to achieve the arrangement of paving indicated.

B. Remove all loose materials from the compacted base.

C. Apply the specified prime coat, and tack coat where required, and allow to dry, in accordance with the manufacturer's recommendations.

D. Adjust frames and covers, if so required, to meet final grades.

E. Receipt of Asphaltic Concrete Materials:
1. Do not accept material unless it is covered with a tarpaulin until unloaded, and unless the material has a temperature of not less than 280 degrees F.
2. Do not commence placement of asphaltic concrete materials when the atmospheric temperature is below 50 degrees F, nor during fog, rain, or other unsuitable conditions. Begin placement only when temperature is above 51 degrees F **and rising**.

F. Spreading:
1. Spread material in a manner which requires the least handling.
2. Where thickness of finished paving will exceed 2.5", spread in two or more layers, with top layer no thinner than 1.5". No lift shall exceed 2.5".
3. Provide compacted thicknesses shown on the Drawings within a tolerance of minus 0.0" to plus 0.5".

G. Rolling:
1. After the material has been spread to the proper depth, roll until the surface is hard, smooth, unyielding, and true to the thickness and elevations shown on the Drawings.
2. Roll in at least two directions until no roller marks are visible.
3. Finished paving smoothness tolerance:
    a. Free from birdbaths.
    b. No deviations greater than 1/8" in 6 feet.
    c. Compact to a maximum relative compaction of 97%, with no single test value being below a minimum relative compaction of 91% based on a 50 blow Marshall maximum density.
    d. **Percentage of voids shall not exceed 9%**

3.5 FLOOD TEST

A. Perform a flood test in the presence of the Architect.

B. Method: Flood the entire asphaltic concrete paved area with water by use of a tank truck or hoses.
1. If a depression is found where water ponds to a depth of more than 1/8" in six feet, fill or otherwise correct to provide proper drainage.
2. Feather and smooth the edges of fill so that the joint between fill and original surface is invisible.

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3.6 INSTALLING WHEEL STOPS

A. Install the specified precast concrete wheel stops as shown on the Drawings, driving the approved 3/4" dia. anchor pins not less than 2'-0" through the paving into the earth.

3.7 FIELD QUALITY CONTROL

A. Secure the geotechnical engineer's inspection and approval of subgrades before subsequent construction is permitted thereon.

B. In-Place Density: Owner's testing laboratory will take samples of uncompacted paving mixtures and compacted pavement according to ASTM D 979.
   1. Reference maximum theoretical density will be determined by averaging results from four samples of hot-mix asphalt-paving mixture delivered daily to site, prepared according to ASTM D 2041, and compacted according to job-mix specifications.
   2. In-place density of compacted pavement will be determined by testing core samples according to ASTM D1188 or ASTM D2726.
      a. One core sample will be taken for every 1000 sq. yd. or less of installed pavement, with no fewer than 3 cores taken.
      b. Field density of in-place compacted pavement may also be determined by nuclear method according to ASTM D2950 and correlated with ASTM D1188 or ASTM D2726.

C. In-place Compacted Thickness: Owner's testing laboratory will determine compacted thickness according to ASTM D3549.

D. Repair or remove and replace unacceptable paving as directed by the Architect.

E. Replace and compact asphalt where core tests were taken.

END OF SECTION 32 1210

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SECTION 32 1720 - PAVEMENT MARKING

PART 1 - GENERAL

1.1 SUMMARY

A. Provide pavement marking in the types and arrangements shown on the Drawings, as specified herein, and as needed for a complete and proper installation.
   1. Crosswalk, striping and graphics.
   2. Parking lot striping and graphics.
   3. Other lines and graphics as indicated.

B. Related Sections:
   1. Documents affecting work of this Section include, but are not necessarily limited to, General Conditions, Supplementary Conditions, and Sections in Division l of these Specifications.

1.2 SUBMITTALS

A. General: Submit in accordance with Section 01 3300.
   1. Product Data: Submit manufacturer's descriptive literature and product specifications for each product. Include data to indicate compliance with the specified requirements.
   2. Installation Procedures: Submit manufacturer's recommended installation procedures.
   3. Shop Drawings: Photographs, scale drawings, or other data acceptable to the Architect, showing types of graphics proposed to be used.

PART 2 - PRODUCTS

2.1 MATERIALS GENERAL

A. Products specified are for establishing the type, design, and quality required. Products of equal or better type, design, and quality produced by other manufacturers will be considered provided the request for substitution is submitted in accordance with Section 01 2500.

2.1 PAVEMENT MARKING PAINT

A. Provide paint specifically formulated for use as pavement marking in automobile traffic areas, and in the colors selected by the Architect from standard no lead colors of the approved manufacturer.
   1. Slip-resistant coefficient of friction ≥ 0.6; ADA Standard A4.5.1, for all paint.
   2. Blue at accessible parking to be color #15090; Federal Standard 595B or equal.

B. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products which may be incorporated in the work include, but are not limited to, the following
   1. Zoneline by PPG Architectural Coatings; 100% acrylic.
   2. SetFast Acrylic Waterborne Traffic Marking Paint by Sherwin-Williams.
   3. Vin-L-Stripe W801 Series by Dunn-Edwards.
   4. 506 Traffic Paint by Frazee; 100% acrylic.

2.2 OTHER MATERIALS

A. Provide other materials, not specifically described but required for a complete and proper installation, as selected

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by the Contractor subject to the approval of the Architect.

PART 3 - EXECUTION

3.1 SURFACE CONDITIONS

A. Examine the areas and conditions under which work of this Section will be performed. Correct conditions detrimental to timely and proper completion of the Work. Do not proceed until unsatisfactory conditions are corrected.

B. Allow a minimum of 24 hours before applying striping over asphalt paving fog seal.

3.2 APPLICATION

A. Secure the Architect's approval of graphics design and layout prior to start of application.

B. Using proper masking, stencils, and application equipment recommended for the purpose by the manufacturer of the approved paint, apply the approved paint in strict accordance with its manufacturer's recommendations.

C. **Provide 2 coats** of paint material at all markings.

3.3 PROTECTION

A. Provide traffic cones, barricades, and other devices needed to protect workmen and the paint until it is sufficiently dry to with-stand traffic.

3.4 CLEANUP

A. When paint is thoroughly dry, visually inspect the entire application, touchup as required to provide clean, straight lines and surfaces throughout.

B. Using a permanently opaque paint identical in color to the surface on which the paint was applied, block out and eliminate all traces of splashed, tracked, and/or spilled pavement marking paint from the background surfaces.

END OF SECTION32 1720

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SECTION 32 1725 - TACTILE WARNING SURFACES

PART 1 - GENERAL

1.1 SUMMARY

A. Provide tactile warning surface mats and accessories in the types and arrangements shown on the Drawings, as specified herein, and as needed for a complete and proper installation.

B. Related Sections: Documents affecting work of this Section include, but are not necessarily limited to, General Conditions, Supplementary Conditions, and Sections in Division l of these Specifications.

1.2 SUBMITTALS

A. General: Submit in accordance with Section 01 3300.
1. Product Data: Submit manufacturer's descriptive literature and product specifications for each product. Include data to indicate compliance with the specified requirements.
2. Installation Procedures: Submit manufacturer's recommended installation procedures.
3. Samples: Submit 3 samples of each kind or type of tile.

1.3 QUALITY ASSURANCE

A. Americans with Disabilities Act (ADA): Provide tactile warning surfaces which comply with the detectable warnings on walking surfaces section of the ADA (Title 49, CFR Transportation, Part 37.9 Standards for Accessible Transportation Facilities, Appendix A, Section 4.29.2 Detectable Warnings on Walking Surfaces.

B. Applicable provisions of California Building Code.

PART 2 - PRODUCTS

2.1 TACTILE WARNING TILE

A. Acceptable Manufacturers: "In-line" pattern, ADA/CBC compliant detectable warning mat and accessories from one manufacturer. Subject to compliance with requirements, manufacturers offering products which may be incorporated in the work include, but are not limited to, the following;
1. Ada Solutions, Inc., (800) 372-0519.
2. Engineered Plastics Inc., (800) 682-2525.
3. Advantage Tactile Systems Inc., (800) 679-4022.
4. Products specified are for establishing the type, design, and quality required. Products of equal or better type, design, and quality produced by other manufacturers will be considered provided the request for substitution is submitted in accordance with Section 01 2500.

B. Color: Yellow conforming to Federal Color No. l 33538.

C. Accessories:
1. Adhesive: Manufacturer’s recommended adhesive.
2. Anchors: Color matched, corrosion-resistant, flat-head drive anchor; 1/4" diameter by 1-1/2" long provided by manufacturer.
3. Sealant: Manufacturer’s recommended sealant.

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PART 3 - EXECUTION

3.1 INSTALLATION

A. Install tactile warning surfaces, adhesive, anchors, and sealant in accordance with the manufacturer's written installation instructions.

B. Set tactile warning surfaces true and square to the curb ramp area.

END OF SECTION 32 1725

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