KERN COMMUNITY COLLEGE DISTRICT

INVITATION FOR BIDS

FOR

BAKERSFIELD COLLEGE INFRASTRUCTURE (28F792)
CENTRAL PLANT
MATH/SCIENCE COIL REPLACEMENT

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1. SPECIFICATIONS

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01 11 00 Summary of Work
01 25 00 Substitution Procedures
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TECHNICAL SPECIFICATIONS INDEX

DIVISION 23 – HEATING VENTILATING AND AIR CONDITIONING
23 05 49 VARIABLE FREQUENCY DRIVES

2. DRAWINGS

Energy Labs AHU Drawings

ATTACHMENTS

The following Attachments are attached hereto and incorporated by this reference as part of the RFP Documents:

1. PS2 MS_0351_M503_Air Handling Units plans
2. Energy Labs AHU Drawings

End of Table of Contents
1. OWNER: KERN COMMUNITY COLLEGE DISTRICT (KCCD)

2. PROJECT NAME: BAKERSFIELD COLLEGE INFRASTRUCTURE (28F792) CENTRAL PLANT MATH/SCIENCE COIL REPLACEMENT

3. PROJECT LOCATION: 1801 Panorama Dr., Bakersfield, CA 93305

4. PROJECT DESCRIPTION: The following is a brief description of the scope of work as required and indicated on the construction drawing and specifications. Contractor shall determine and verify the entire scope as shown on the drawings and specifications prior to submitting bids.

The project proposal is for the coil replacement at the BC Math/Science Building.

This project is anticipated to start on approximately May 20, 2020 and must be completed by September 30, 2020 (134 calendar days).

5. BID DEADLINE: Bids are due on March 25, 2020 at 2:00PM

6. PLACE OF BID RECEIPT: Bakersfield College
   1801 Panorama Drive
   Measure J Program Management Office
   Bakersfield, CA 93305
   Attn: Bill Ryan bill.ryan@parsons.com

7. METHOD OF BID RECEIPT: Personal delivery, courier, or mailed via United States Postal Service to above address. NO FAX OR EMAIL RESPONSES WILL BE ACCEPTED.

8. PLACE PLANS ARE ON FILE:

   Plan Room Company Name:
   Kern County Builders’ Exchange, Inc.
   Placer County Contractors Association, Inc.
   Central California Builders Exchange
   Tulare & Kings Counties Builders Exchange
   San Luis Obispo County Builders Exchange
   Bid America
   Construct Connect
   Reed Business CMD Group
   Dodge Data & Analytics
   Dodge Data & Analytics (formerly McGraw Hill)
   Construction Bidboard (eBidboard)
   Kern Community College District Website

9. SEALED BID MARKING: BC INFRASTRUCTURE CENTRAL PLANT MATH/SCIENCE COIL REPLACEMENT PACKAGE

10. ALTERNATES: If alternate bids are called for, the contract will be awarded to the lowest responsive and responsible bidder on the basis indicated below:

    ☐ (a) The lowest bid shall be the lowest bid price on the base contract without consideration
01-NOTICE TO CONTRACTORS CALLING FOR BIDS
Invitation for Bids (IFB)

Invitation for Bids (IFB)

☐ (b) The lowest bid shall be the lowest total of the combined bid prices on the base contract and alternates [specify].

☐ (c) The lowest bid shall be the lowest total of the bid prices on the base contract and alternates, taken in order, up to a maximum amount to be publicly disclosed before the first bid is opened.

☐ (d) The lowest bid shall be determined in a manner that prevents any information that would identify any of the bidders or proposed subcontractors or suppliers from being revealed to the public entity before the ranking of all bidders from lowest to highest has been determined.

☐ (e) Not applicable to this project, as no alternates are requested.

11. OPTIONAL JOB WALK: Meet at: Bakersfield College PMO Office Trailers, P14
   Date: March 11, 2020     Time: 10:00AM
   Location: 1801 Panorama Dr., Bakersfield, CA 93305

12. PLAN DEPOSIT REQUIRED: N/A

13. This is a prevailing wage project. OWNER has ascertained the general prevailing rate of per diem wages in the locality in which this work is to be performed for each craft or type of worker needed to execute this contract. These rates are on file at OWNER’s office, and a copy may be obtained upon request, or at www.dir.ca.gov. Contractor shall post a copy of these rates at the job site. ALL PROJECTS OVER $1,000 ARE SUBJECT TO PREVAILING WAGE MONITORING AND ENFORCEMENT BY THE LABOR COMMISSIONER.

   It shall be mandatory upon the contractor to whom the contract is awarded (CONTRACTOR), and upon any SUBCONTRACTOR, to pay not less than the specified rates to all workers employed by them in the execution of the contract.

14. A Payment Bond for contracts over $25,000 and a Performance Bond for all contracts will be required prior to commencement of work. These bonds shall be in the amounts and form called for in the Contract Documents.

15. Pursuant to the provisions of Public Contract Code Section 22300, CONTRACTOR may substitute certain securities for any funds withheld by OWNER to ensure CONTRACTOR’s performance under the contract. At the request and expense of CONTRACTOR, securities equivalent to any amount withheld shall be deposited, at the discretion of OWNER, with either OWNER or a state or federally chartered bank as the escrow agent, who shall then pay any funds otherwise subject to retention to CONTRACTOR. Upon satisfactory completion of the contract, the securities shall be returned to CONTRACTOR.

   Securities eligible for investment shall include those listed in Government Code Section 16430, bank and savings and loan certificates of deposit, interest bearing demand deposit accounts, standby letters of credit, or any other security mutually agreed to by CONTRACTOR and OWNER. CONTRACTOR shall be the beneficial owner of any securities substituted for funds withheld and shall receive any interest on them. The escrow agreement shall be in the form indicated in the
Invitation for Bids (IFB)

Contract Documents.

16. To bid on or perform the work stated in this Notice, CONTRACTOR must possess a valid and active contractor's license of the following classification(s): C-20. No CONTRACTOR or subcontractor shall be qualified to bid on, be listed in a bid proposal, subject to the requirements of § 4104 of the Public Contract Code, for a public works project (submitted on or after March 1, 2015) unless currently registered with the Department of Industrial Relations (DIR) and qualified to perform public work pursuant to Labor Code § 1725.5. No CONTRACTOR or subcontractor may be awarded a contract for public work on a public works project (awarded after April 1, 2015) unless registered with the DIR. DIR's web registration portal is: [www.dir.ca.gov/Public-Works/Contractors.html](http://www.dir.ca.gov/Public-Works/Contractors.html)

17. CONTRACTOR and all subcontractors must furnish electronic certified payroll records (eCPR) to the Labor Commissioner [specify weekly, bi-weekly or monthly] in PDF format. Registration at [www.dir.ca.gov/Public-Works/Certified-Payroll-Reporting.html](http://www.dir.ca.gov/Public-Works/Certified-Payroll-Reporting.html) is required to use the eCPR system.

The following notice is given as required by Labor Code Section 1771.5(b)(1): CONTRACTOR and any subcontractors are required to review and comply with the provisions of the California Labor Code, Part 7, Chapter 1, beginning with Section 1720, as more fully discussed in the Contract Documents. These sections contain specific requirements concerning, for example, determination and payment of prevailing wages, retention, inspection, and auditing payroll records, use of apprentices, payment of overtime compensation, securing workers' compensation insurance, and various criminal penalties or fines which may be imposed for violations of the requirements of the chapter. Submission of a bid constitutes CONTRACTOR's representation that CONTRACTOR has thoroughly reviewed these requirements.

18. OWNER will retain 5% of the amount of any progress payments.

19. This Project [ ] requires [ ] does not require prequalification pursuant to AB 1565 of all general contractors and all mechanical, electrical and plumbing subcontractors. If required, a Prequalification package may be obtained by downloading the necessary forms from (THIS IS NOT APPLICABLE). A bid package will not be accepted from any bidder that is required to submit a completed questionnaire and supporting documents pursuant to AB 1565, but has not done so at least ten (10) business days prior to the date fixed for the public opening of sealed bids or that has not been prequalified for at least five (5) business days prior to that date.

Questions concerning this IFB must be in writing and submitted via e-mail not later than March 16, 2020 at 2:00PM.

Please direct any question to the Contracts Administrator, Ralph Burnette, Email: ralph.burnette@parsons.com

Following the questions deadline shown above, all questions and answers will be summarized and posted on the District’s website, [https://www.kccd.edu/current-rfp-listing](https://www.kccd.edu/current-rfp-listing) under the IFB posting.
WARNING: READ THIS DOCUMENT CAREFULLY
DO NOT ASSUME THAT IT IS THE SAME AS OTHER SIMILAR
DOCUMENTS YOU MAY HAVE SEEN EVEN IF FROM THE SAME OWNER

PROJECT TITLE/BID: BAKERSFIELD COLLEGE INFRASTRUCTURE (28F792) CENTRAL PLANT MATH/SCIENCE COIL REPLACEMENT
OWNER: KERN COMMUNITY COLLEGE DISTRICT

1. Preparation of Bid Form.

The Owner invites bids on the form attached to be submitted at the time and place stated in the Notice to Contractors Calling for Bids. Bids shall be submitted on the prescribed Bid Form, completed in full. All bid items and statements shall be properly and legibly filled out. Numbers shall be stated both in words and in figures where so indicated, and where there is a conflict in the words and the figures, the words shall govern. The signatures of all persons shall be in longhand. Prices, wording, and notations must be in ink or typewritten.

2. Form and Delivery of Bids.

The bid must conform to and be responsive to all Contract Documents and shall be made on the Bid Form provided. The complete bid, together with any additional materials required, shall be enclosed in a sealed envelope, addressed and hand-delivered or mailed to the Owner at the address set forth in the Notice to Contractors Calling for Bids, and must be received on or before the time set for the opening of bids. The envelope shall be plainly marked in the upper left-hand corner with the bidder's name, the project designation, and the date and time for the opening of bids. It is the bidder's sole responsibility to ensure that its bid is received prior to the bid deadline. In accordance with Government Code Section 53068, any bid received after the scheduled closing time for receipt of bids shall be returned to the bidder unopened.

At the time set for the opening of bids, the sealed bids will be opened and publicly read aloud at the place indicated in the Notice to Contractors Calling for Bids. However, if this project calls for prequalification of bidders pursuant to Public Contract Code Section 20111.5, only those sealed bids received from bidders who have been prequalified for at least one (1) day prior to bid opening shall be opened and publicly read aloud.


Each bid shall be accompanied by a bid security in cash, a certified or cashier's check, or bid bond in an amount not less than 10 percent of the total bid price payable to the Owner. The bid security shall be given as a guarantee that if awarded the contract the bidder will execute and return the Construction Agreement within 10 working days after award of the contract and will furnish on the prescribed forms a satisfactory Payment (labor and material) Bond and separate Performance Bond, in accordance with the Contract Documents and Civil Code Sections 9550 et seq., and certificates evidencing that the required insurance is in effect in the amounts set forth in the Contract Documents. In case of refusal or failure to timely execute the Construction Agreement and furnish therequired bonds and insurance certificates, the bid security shall be forfeited to the Owner. If the bidder elects to furnish a bid bond as its bid security, the bidder shall use the bid bond form included in the Contract Documents, unless the Owner elects to waive the use of the form provided, in its sole discretion.
4. **Signature.**

At the various times such documents are required to be submitted, the Bid Form, all bonds, the Designation of Subcontractors form, all Information Required of Bidder or prequalification forms, Workers Compensation Certificate, Drug-Free Workplace Certification, Non-Collusion Affidavit, Asbestos and Lead Based Paint Certification, Iran Contracting Act Certification, the Construction Agreement, and all Guarantees must be signed in the name of the bidder and must bear the signature of the person or persons duly authorized to sign these documents. Where indicated, if bidder is a corporation, the legal name of the corporation shall first be set forth, together with two signatures: one from among the chairman of the board, president, or vice president, and one from among the secretary, chief financial officer, or assistant treasurer. Alternatively, the signature of other authorized officers or agents may be affixed, if duly authorized by the corporation. Such documents shall include the title of such signatories below the signature and shall bear the corporate seal. Where indicated, if bidder is a joint venture or partnership, the bidder shall submit with the bid certifications signed by authorized officers of each of the parties to the joint venture or partnership, naming the individual (1) who shall be the agent of the joint venture or partnership, (2) who shall sign all necessary documents for the joint venture or partnership and, (3) should the joint venture or partnership be the successful bidder, who shall act in all matters relative to the resulting contract for the joint venture or partnership. If bidder is an individual, his/her signature shall be placed on such documents.

5. **Modifications.**

Changes in or additions to any of the bid documents, the summary of the work bid upon, or the alternative proposals, or any other modifications which are not specifically called for by the Owner, may result in the Owner’s rejection of the bid as not being responsive. No oral or telephonic modification of any bid will be considered. However, prior to the opening of bids, a telegraphic modification signed by the bidder and postmarked and received prior to the opening of bids, or a facsimile modification duly signed by the bidder received prior to the opening of bids, may be considered if included within a sealed bid.

6. **Erasures, Inconsistent, or Illegible Bids.**

The bid submitted must not contain any erasures, interlineations, or other corrections unless each correction creates no inconsistency and is suitably authenticated and noted by signature of the bidder. In the event of inconsistency between words and figures in the bid, words shall control figures. In the event the Owner determines that any bid is unintelligible, illegible, or ambiguous, the Owner may reject the bid as not being responsive.

7. **Examination of Site and Contract Documents.**

At its own expense and prior to submitting bids, each bidder shall examine all documents relating to the project, visit the site, and determine the local conditions which may in any way affect the performance of the work, including the general prevailing rate of per diem wages and other relevant cost factors. Each bidder shall be familiar with all federal, state, and local laws, ordinances, rules, regulations, and codes affecting the performance of the work, including the cost of permits and licenses required for the work. Each bidder shall make such surveys and investigations, including investigation of subsurface or latent physical conditions at the site or where work is to be performed, as it may deem necessary for performance of the work at the price being bid. Each bidder shall determine the character, quality, and quantities of the work to be performed and the materials and
equipment to be provided, and shall correlate its observations, investigations, and determinations with all requirements of the project.

The Contract Documents show and describe the existing conditions as they are believed to have been used in the design of the work and are only provided as information for the bidder. **The Owner is not making any warranties regarding this information. The Owner shall not be liable for any loss sustained by the successful bidder resulting from any variance between the conditions and design data given in the Contract Documents and the actual conditions revealed during the bidder’s pre-bid examination or during the progress of the work.** Bidder agrees that the submission of a bid shall be incontrovertible evidence that the bidder has complied with and agrees to further comply with all the requirements of this section.

8. **Withdrawal of Bids.**

Any bid may be withdrawn, either personally, by written request, or by telegraphic or facsimile request confirmed in the manner specified above for bid modifications, at any time prior to the scheduled closing time for receipt of bids. In accordance with this paragraph, the bid security shall be returned for bids withdrawn prior to the scheduled closing time for receipt of bids. No bidder may withdraw any bid for a period of 60 days after the award of the contract. A bidder’s unawarded alternative bids remain open for a period of six months after award of contract as irrevocable offers to enter into either change orders or separate contracts for the stated price adjustment.

9. **Agreement and Bonds.**

The Construction Agreement and the form of the Payment and Performance Bonds which the successful bidder as Contractor will be required to execute are included in the Contract Documents and should be carefully examined by the bidder. The Payment Bond shall be in an amount not less than 100 percent of the amount of the contract in accordance with Civil Code section 9554. The successful bidder as Contractor will also be required to furnish a separate Performance Bond in the amount of 100 percent of the contract amount. Sufficient bonds shall be fully executed and returned to Owner with the executed Construction Agreement.

10. **Interpretation of Contract Documents.**

If any bidder is in doubt as to the true meaning of any part of the Contract Documents, or finds discrepancies in or omissions from the drawings and specifications, a written request for an interpretation or correction shall be submitted to the Owner. The bidder submitting the written request shall be responsible for its prompt delivery. Any interpretation or correction of the Contract Documents will be made only by addendum issued by the Owner, and a copy of any addendum will be hand-delivered, mailed, or faxed to each bidder known to have received a set of the Contract Documents. No person is authorized to make any oral interpretation of any provision in the Contract Documents, nor shall any oral interpretation be binding on the Owner. If there are discrepancies on drawings, plans, or specifications, or conflicts between drawings, plans, specifications, terms, or conditions, the interpretation of the Owner shall prevail. Bidder shall become familiar with the plans, specifications, and drawings.

**SUBMISSION OF A BID WITHOUT REQUESTING CLARIFICATIONS SHALL BE INCONTROVERTIBLE EVIDENCE THAT THE BIDDER HAS DETERMINED THAT THE PLANS, SPECIFICATIONS, AND DRAWINGS ARE SUFFICIENT FOR BIDDING AND COMPLETING THE WORK, THAT BIDDER IS CAPABLE OF READING, FOLLOWING AND COMPLETING**
11. **Bidders Interested in More Than One Bid.**

No person, firm, or corporation shall be allowed to make or file or be interested in more than one bid for the same work unless alternate bids are specifically called for by the Owner. A person, firm, or corporation that has submitted a sub-proposal to a bidder, or that has quoted prices of materials to a bidder, is not disqualified from submitting a proposal or quoting prices to other bidders or submitting a bid on the project.

12. **Award of Contract.**

(a) The Owner reserves the right to reject any or all bids, or to waive any irregularities or informalities in any bids or in the bidding process, and to award more than one contract. If two identical low bids are received from responsive and responsible bidders, the Owner will determine which bid will be accepted pursuant to Public Contract Code Section 20117.

(b) If made by the Owner, award of the contract will be by action of the governing board or other governing body to the lowest responsive and responsible bidder. In the event an award of the contract is made to a bidder and that bidder fails or refuses to execute the Agreement and provide the required documents within the time required, the Owner may award the contract to the next lowest responsive and responsible bidder or release all bidders. An election by the Owner to reject all bids does not release the bid security of any bidder who has previously been awarded the contract and failed or refused to execute the Agreement and provide the required documents.

(c) In ascertaining the low bidder, the bids will be examined without reference to any substitutions requested by any bidder, whether or not the substitution request would result in a modification of the contract price.

13. **Alternatives.**

If alternate bids are called for, the contract will be awarded to the lowest responsive and responsible bidder on the basis indicated in the Notice to Contractors Calling for Bids. Owner reserves the right to award or reject any, all, or any combination of the alternates called for in the bid documents, whether or not the alternate(s) was included in the calculations used to identify the low bidder. All bid alternates not part of the contract initially awarded by Owner shall remain open and valid for a period of six months after the contract is awarded as irrevocable offers to enter into either change orders or separate contracts on the items for the price adjustment contained in the bid alternate.

14. **Public Contract Code Section 20111.5—Discretionary Prequalification of Bidders.**

☒ Discretionary Prequalification is not required to bid on this project.
Discretionary Prequalification is required to bid on this project. Prospective bidders are required to submit to the Owner a completed prequalification questionnaire and financial statement, on forms provided by the Owner, no later than five days prior to the date fixed for the public opening of sealed bids. These documents will be the basis for determining which bidders are qualified to bid the project. Bidders will be notified by telephone and mail of their prequalification status within four days after submission of prequalification documents. Bids will not be accepted from any bidder who has not been prequalified at least one day prior to the bid opening. Pursuant to Public Contract Code Section 20111.5, the information in the prequalification questionnaire and financial statement will be kept confidential. Prequalification documents may be obtained by contacting the Owner.

Mandatory Prequalification of general contractors and mechanical, electrical and plumbing subcontractors is not required to bid on this project.

Mandatory Prequalification of general contractors and mechanical, electrical and plumbing subcontractors is required to bid on this project. Prospective bidders holding licenses in classifications A, B, C-4, C-7, C-10, C-16, C-20, C-34, C-36, C-38, C-42, C-43 and C-46 are required to submit to the Owner a completed prequalification questionnaire and financial statement, on forms provided by the Owner, no later than ten (10) working days prior to the date fixed for the public opening of sealed bids. These documents will be the basis for determining which bidders in the listed license categories are qualified to bid the project. Bidders will be notified by telephone, mail or email of their prequalification status within five (5) working days after submission of prequalification documents. Bids will not be accepted from any bidder who is required to prequalify and who has not been prequalified at least five (5) working days prior to the bid opening. Pursuant to Public Contract Code Section 20111.6, the information in the prequalification questionnaire and financial statement will be kept confidential.

Competency of Bidders.

In selecting the lowest responsive and responsible bidder, consideration will be given not only to the financial standing but also to the general competency of the bidder for performance of the work. By submitting a bid, each bidder agrees that in determining the successful bidder and its eligibility for the award, the Owner may consider the bidder’s experience, facilities, conduct, and performance under other contracts, financial condition, reputation in the industry, and other factors relating to or which could affect the bidder’s performance of the project.

The Owner may also consider the qualifications and experience of subcontractors and other persons and organizations (including those who are to furnish the principal items of material and equipment) proposed for those portions of the work. Operating costs, maintenance considerations, performance data, and guarantees of materials and equipment may also be considered by the Owner. In this regard, the Owner may conduct such investigations as the Owner deems necessary to assist in the evaluation of any bid and to establish the responsibility, qualifications, and financial ability of the bidder, proposed subcontractors, and other persons and organizations to do the work to the Owner’s satisfaction within the prescribed time. The Owner reserves the right to reject the bid of any bidder who does not pass any such evaluation to the satisfaction of the Owner, or in the Owner’s sole discretion, to permit substitution of subcontractor(s) found non-responsible.
17. **Listing Subcontractors.**

Each bidder shall submit a list of the proposed subcontractors, including their address, California contractor's license number and DIR Registration number, on the project as required by the Subletting and Subcontracting Fair Practices Act (Public Contract Code Section 4100 and following sections) on the form furnished with the Contract Documents. If alternate bids are called for and the bidder intends to use different or additional subcontractors, a separate list of subcontractors must be submitted for each such alternate bid. The Owner may request that bidder submit information to assess the responsibility of the bidder's proposed subcontractors. The apparent low bidder shall, within 24 hours of the bid opening, provide a complete listing of all subcontractors, including full name, address, telephone numbers, contractor’s license number and type and DIR Registration number.

18. **Workers' Compensation.**

In accordance with the provisions of Labor Code Section 3700, the successful bidder shall secure the payment of compensation to all employees. The successful bidder awarded the contract shall sign and file with the Owner, at the time of returning the executed Construction Agreement, the certificate which is included as a part of the Contract Documents.

19. **Contractor's License.**

At the bid opening date and time, if a bidder is not properly licensed and registered to perform the project in accordance with Division 3, Chapter 9, of the California Business and Professions Code, Labor Code section 1725.5 and the Notice Calling for Bids, as required, that bidder's bid will be rejected as non-responsive. Business and Professions Code Section 7028.15 precludes payment for work or materials unless the Registrar of Contractors verifies to the Owner that the bidder was properly licensed at the time the bid was submitted. If this project is federally funded, the bidder must be properly licensed prior to the award of the contract. Any bidder not properly licensed and registered with DIR is subject to penalties under the law and the contract can be considered void. If the license classification specified in these Contract Documents is that of a “specialty contractor” as defined in Business and Professions Code Section 7058, the specialty contractor awarded the contract for this work shall construct a majority of the work in accordance with the provisions of Business and Professions Code Section 7059.

20. **Anti-Discrimination.**

It is the policy of the Owner that in all work performed under contracts there be no unlawful discrimination against any prospective or active employee engaged in the work because of race, color, ancestry, national origin, religious creed, sex, age, marital status, physical disability, mental disability, or medical condition. The successful bidder agrees to comply with applicable federal and state laws, including but not limited to the California Fair Employment and Housing Act, beginning with Government Code Section 12900 and Labor Code Section 1735. In addition, the successful bidder agrees to require like compliance by any subcontractors employed on the work by that bidder.

21. **Hold Harmless.**

The successful bidder awarded the contract shall hold harmless and indemnify various parties as
more clearly set forth elsewhere in the Contract Documents.

22. **Substitutions.**

(a) All bids should be calculated and submitted on the project as described in the bid documents, and on the assumption that substitution requests submitted with the bid will not be approved. Notwithstanding the foregoing, substitution requests submitted with bids will be given due consideration and adjustments to the contract, which may include adjustment to contract price, will be contained in a change order should the request be approved. Bidders not desiring to bid without prior approval of a proposed substitution should follow the procedure contained in this section for pre-bid review of proposed substitutions.

(b) Should the bidder wish to request prior to bid opening any substitution for the specified materials, process, service, or equipment, the bidder shall submit a written request at least ten (10) working days before the bid opening date and time. If the requested substitution is acceptable, the Owner will approve it in an addendum issued to all bidders of record. Requests received less than ten (10) working days prior to bid opening will not be considered prior to the bid date. Extensions of the bid date shall not operate to extend the deadline for requesting substitutions unless the Owner so states in an addendum issued to all bidders of record.

(c) If a substitution is not requested and considered prior to the bid date, the bidder shall submit with the bid all proposed substitutions, if any, on the Substitution Listing form contained in the bid documents.

(d) With respect to any materials, process, service, or equipment listed in the bid, unless the bidder clearly indicates in its Substitution Listing that it is proposing to use an "equal" material, process, service, or equipment, its bid shall be considered as offering the specified material, process, service, or equipment referred to by the brand name or trade name specified.

(e) Unless expressly authorized in the bid documents, no bid may be conditioned on the Owner’s acceptance of a proposed substitution. Any bid containing any such condition may be treated as a non-responsive bid.

(f) It is expressly understood and agreed that the Owner reserves the right to reject any proposed substitution. It is further expressly understood and agreed that in the event the Owner rejects a proposed "equal" item, or any other requested substitution, the specified material, process, service, or equipment designated by brand name or trade name, or other item as specified, will be provided.

(g) No substitution request of any kind or nature may be made after the bid date, except by the express written permission of the Owner and on such terms as Owner may require, or in an emergency, as in the case where a specified material, process, service, equipment, or other item has become unavailable through no fault of the bidder.

(h) These time limitations shall be complied with strictly, and in no case will an extension of time for completion be granted because of the failure to request the substitution of
an item at the times and in the manner set forth herein.

(i) Prior to contract award, the Owner shall notify the bidder of the Owner’s decision concerning proposed substitutions of “equal” items submitted with the bid. The Owner shall notify bidder of the Owner’s decision on any other proposed substitutions as those decisions are made. Notification of all decisions by the Owner shall be in writing, and no proposed substitution shall be deemed approved unless the Owner has confirmed it in writing.

(j) With respect to all proposed substitutions, the requirements applicable to the Contractor in the Contract Documents shall be applicable to all bidders requesting substitutions.

23. **Surety Qualifications.**

Bid bonds executed by a surety insurer admitted in the State of California for purposes of issuance of such bonds will be accepted by Owner as sufficient.

Payment and/or performance bonds executed by a surety insurer admitted in the State of California with a minimum “A minus, VIII” rating (A minus V” when the price stated in the Contract Documents is less than $500,000) as rated by the current edition of Best’s Key Rating Guide published by A.M. Best Company, Oldwick, New Jersey 08858, shall be presumed by Owner to be sufficient for the issuance of such bonds. In the alternative, any admitted surety company which satisfies the requirements set forth in Code of Civil Procedure Section 995.660 shall be accepted and approved for the issuance of bonds, and documents demonstrating satisfaction of the requirements of Section 995.660 with respect to the bid bond must be submitted with the bid. No personal sureties will be accepted.

24. **Liquidated Damages.**

All work must be completed within the time limits set forth in the Contract Documents. Bidders must understand that the goodwill, educational process, and other business of the Owner will be damaged if the project is not completed within the time limits required. Should the work not be completed within the specified time for completion, the successful bidder awarded the contract may be liable for liquidated damages and for expenses incurred by the Owner for failure to timely complete the project. Such damages shall be deducted from any payments due or to become due to the successful bidder.

SUBMISSION OF A BID ON THIS PROJECT SHALL BE TAKEN AS CONCLUSIVE AND IRREFUTABLE EVIDENCE THAT BIDDER AGREES WITH THE REQUIREMENTS OF THIS SECTION.

25. **Drug-Free Workplace Certification.**

Pursuant to Government Code section 8350 and following, the successful bidder will be required to execute and return to Owner the Drug-Free Workplace Certificate contained in the Contract Documents with the executed Construction Agreement. The bidder will be required to take positive measures outlined in the certificate to ensure the presence of a drug-free workplace. Failure to abide with the conditions set forth in the Drug-Free Workplace Act could result in penalties, including termination of the Construction Agreement or suspension of payment under the
Construction Agreement.

26. **Non-Collusion Declaration.**

In accordance with the provisions of Public Contract Code section 7106, each bid must be accompanied by a Non-Collusion Declaration executed under penalty of perjury under the laws of the State of California.

27. **Implementation of Disabled Veteran Business Enterprises Requirements.**

In accordance with Education Code Section 17076.11, the Owner has a participation goal for disabled veteran business enterprises of at least three percent per year of the overall dollar amount of funds allocated to the Owner by the State Allocation Board pursuant to the Leroy F. Greene School Facilities Act of 1998 for construction or modernization and expended each year by the Owner. Prior to and as a condition precedent for final payment under any contract for this project, the successful bidder will be required to provide appropriate documentation to the Owner identifying the amount paid to disabled veteran business enterprises in conjunction with the contract, so the Owner can assess its success at meeting this goal.

28. **Asbestos and Lead-Based Paint Certification.**

The form of Contractor's Certificate Regarding Non-Asbestos Containing Materials and Exclusion of Lead Products, as contained in the Contract Documents, shall be executed and submitted with the bid.

29. **Fingerprinting Requirements.**

The successful bidder and all subcontractors at any level will be required to comply with any applicable laws on fingerprinting construction workers. Minimum requirements are set forth in the Contract Documents, and the form for certification of compliance is contained in the Contract Documents. The successful bidder must complete and return this form when directed by Owner.

30. **California Products.**

Price, fitness, and quality being equal with regard to supplies, the Owner may prefer supplies grown, manufactured, or produced in California. The Owner may next prefer supplies partially grown, manufactured, or produced in California. Where the Owner has a preference, the bids of the suppliers or the prices quoted by them (i) must not exceed by more than five percent the lowest bids/prices quoted by out-of-state suppliers, (ii) the major portion of the manufacture of the supplies is not done outside of California, and (iii) the public good will be served. Refer to specifications for indications of Owner preferences. Government Code Sections 4330-4334.

31. **Contractor License And DIR Registration Required.**

To perform the work required for this project, Bidder must possess the type of contractor's license specified in the Notice to Contractors Calling for Bids, and must be registered with the Department of Industrial Relations (DIR) as a public works contractor. Contractor registration can be accomplished through the portal [https://efiling.dir.ca.gov/PWCR/](https://efiling.dir.ca.gov/PWCR/). No CONTRACTOR or subcontractor shall be qualified to bid on, be listed in a bid proposal, subject to the requirements of § 4104 of the Public Contract Code, for a public works project (submitted on or after March 1, 2015).
unless currently registered with the DIR and qualified to perform public work pursuant to Labor Code § 1725.5. No CONTRACTOR or subcontractor may be awarded a contract for public work on a public works project (awarded after April 1, 2015) unless registered with the DIR.

32. **Post-Bid Credits.**

Should any bidder or proposed subcontractor to any bidder issue any credit or otherwise reduce its bid or quote pertaining to the work of this project, the value of the credit or other reduction shall be passed on to the Owner less only the applicable markups for profit and overhead as specified in the Contract Documents on change orders.

33. **Contents of Bid.**

The bid will include the following documents: Bid Form, List of Subcontractors, Substitution Listing form, Non-collusion Declaration, Exclusion of Asbestos and Lead Based Paint Products Certification, Contractors’ Qualification Questionnaire (if required) Mandatory Prequalification Package (if required), Iran Contracting Act Certification (if required), and Bid Bond or other bid security.:

34. **Bid Protests.**

Any bidder having submitted a bid on the project may file a protest against the proposed contract award or challenging the validity of other bids. The protest must meet all of the following requirements:

(a) The protest shall be submitted in writing and shall contain all the materials required by these provisions; one that does not contain all the required material shall not be recognized.

(b) The protest shall be received by the Owner no later than close of business on the second business day after bid opening; one received after that time shall not be recognized.

(c) Each protest shall contain the following:

   (i) Identification by name, address, and telephone number of the protesting person(s), company and/or organization and identification of the project to which the protest pertains.

   (ii) The protest shall set forth in detail all grounds for the protest, including without limitation all facts, identification by name of any other bids or bidders involved in the protest, all supporting documentation, together with any legal authorities and/or argument in support of the grounds for the protest. Any matters not set forth in the written protest shall be deemed waived. All factual contentions must be supported by competent, admissible, and credible evidence.

(d) Any protest not conforming to the requirements of this section shall be rejected as invalid.

(e) Where a protest is filed in conformity with this section, the Owner’s staff, or such
individual(s) as may be designated by the Owner, shall review and evaluate the basis of the protest and provide a written decision to the protesting bidder. The written decision shall either concur with or deny the protest.

(f) Submission of a written protest to and receipt of a written decision from the Owner staff shall be considered an administrative remedy, and failure to follow this procedure shall be a bar to any legal action.

(g) The written decision by the Owner’s staff may be appealed to the Owner. The appeal must be filed with the Owner’s governing board or other governing body within two business days of the protest bidder’s receipt of the written decision of the Owner’s staff.

(h) The appeal must clearly state the reasons and basis for appealing the decision of the Owner’s staff, making specific reference to any portions of the material submitted with the protest required.

(i) A hearing on the appeal shall be held before the Owner’s governing board or other governing body within 45 days of receipt of the appeal.

(j) The Owner’s governing board or other governing body will make a decision within seven days following the hearing. The decision of the Owner’s governing board or other governing body is not subject to arbitration, mediation, reconsideration, or further appeal.

(k) Submission of an appeal to and receipt of a decision from the Owner’s governing board or other governing body shall be considered an administrative remedy, and failure to follow this procedure shall be a bar to any legal action.

35. Procedure for Protesting Being Deemed A Non-Responsible Bidder.

Any bidder or prospective bidder deemed non-responsible after having submitted a bid may file an appeal of the action to the Owner’s governing board or other governing body. The protest must meet all of the following requirements:

(a) The appeal shall be submitted in writing, and shall contain all the materials required by these provisions; one that does not contain all the required material shall not be recognized.

(b) The appeal must be received by the Owner’s governing board or other governing body within two business days of the action by Owner giving rise to the protest; one received after that time shall not be recognized.

(c) A hearing on the appeal shall be held before the Owner’s governing board or other governing body prior to the award of contract.

(d) The decision of the Owner’s governing board or other governing body is not subject to arbitration, mediation, reconsideration, or further appeal.

(e) Submission of a protest to and receipt of a decision from the Owner’s governing
board or other governing body shall be considered an administrative remedy, and
failure to follow this procedure shall be a bar to any legal action.

36. **All Projects Over $1,000 Are Subject to Prevailing Wage Monitoring and Enforcement By the Labor Commissioner**

The project is subject to prevailing wage monitoring and enforcement by the DIR, as indicated in the Notice Calling for Bids. The successful bidder and all subcontractors will be subject to the requirements of Subchapter 4.5 of Chapter 8 of Title 8 of the California Code of Regulations. The successful bidder and all subcontractors will be required to furnish certified payroll records to the Labor Commissioner on the frequency specified in the Notice Calling for Bids using the DIR’s eCPR system. To access the DIR’s eCPR system and to obtain additional information and assistance, bidders may go to DIR website [www.dir.ca.gov/Public-Works/Certified-Payroll-Reporting.html](http://www.dir.ca.gov/Public-Works/Certified-Payroll-Reporting.html). Failure to timely submit certified payroll records may result in debarment from public works projects by the Labor Commissioner for a period of one to three years.
Name of Bidder: ________________________________

Project: BAKERSFIELD COLLEGE INFRASTRUCTURE (28F792) CENTRAL PLANT
MATH/SCIENCE COIL REPLACEMENT

To: KERN COMMUNITY COLLEGE DISTRICT, referred to as "OWNER."

A. In compliance with your Notice to Contractors Calling for Bids and related documents, the undersigned bidder, having familiarized itself with the terms of the contract, the local conditions affecting the performance of the contract, the cost of the work at the place where the work is to be done, and the drawings and specifications and other contract documents, proposes and agrees to perform the contract within the time stipulated, including all of its component parts and everything required to be performed, and to provide and furnish any and all of the labor, materials, tools, expendable equipment, and all applicable taxes, utility, and transportation services necessary to perform the contract and complete in a workmanlike manner all of the work required in connection with the above-referenced project, including sheeting, shoring, and bracing, or equivalent method for protection of life and limb in trenches and open excavation in conformance with applicable safety orders, within the time limits set for completion of all work, all in strict conformity with the drawings and specifications and other contract documents, including Addenda Nos. _______ on file at the office of OWNER for the Base Bid sum of:

[written in words]
$ ___________________________.

B. If any of the following alternate bids are utilized and awarded, the undersigned agrees to make price adjustments, as indicated, to the Base Bid.

ALTERNATE BID 1: (N/A)

[description of alternate]

State the amount to be □ added □ deducted to/from the Base Bid for Alternate Bid 1.

[select one]

[written in words]
$ ___________________________.

ALTERNATE BID 2: (N/A)

[description of alternate]

State the amount to be □ added □ deducted to/from the Base Bid for Alternate Bid 2.

[select one]
03-BID FORM

_______________________________ dollars.
[written in words]

$_____________.
[written in numbers]

ALTERNATE BID 3: (N/A)
[description of alternate]

State the amount to be □ added □ deducted to/from the Base Bid for Alternate Bid 3.  
[select one]

_______________________________ dollars.
[written in words]

$______________.
[written in numbers]

REFER TO ANY ATTACHMENTS TO THIS BID FORM FOR ADDITIONAL ALTERNATES

C. The Bidder agrees that upon written notice of acceptance of this bid, he will execute the contract and provide all bonds and other required documents within ten (10) working days after contract award.

D. Attached is bid security not less than 10 percent of the bid, in the amount of $______, in the form of □ (cash) □ (bid bond) □ (certified check) □ (cashier's check).  
[check one]

E. The Bidder acknowledges that OWNER reserves the right to accept or reject any and/or all Base Bids and alternate bids. This entire bid shall remain open and active for sixty (60) days after bid opening, and any alternate bids not initially awarded shall remain active, as an irrevocable offer by the Bidder to enter into either a change order or separate contract, for up to six months after award of the contract.

F. It is understood and agreed that if written notice of the acceptance of this bid is mailed, telegraphed, or delivered to the Bidder after the opening of the bid, and within the time this bid is required to remain open, or at any time after that before this bid is withdrawn, the Bidder will execute and deliver to OWNER the Agreement and will also furnish and deliver to OWNER the Performance Bond and a separate Payment Bond as specified, certificates of insurance, and other required documents.

G. It is understood and agreed that should the Bidder fail or refuse to return executed copies of the Construction Agreement, bonds, insurance certificates, and other required documents to OWNER within the time specified, the bid security shall be forfeited to OWNER.

H. In submitting this bid, the Bidder offers and agrees that if the bid is accepted it will assign to 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. Section 15) or under the Cartwright Act (Business & Professions Code Section 16700 and following sections) arising from purchases of goods, materials, or services by the Bidder for sale to OWNER pursuant to the bid. Such assignment shall be made and become effective at the time OWNER tenders final payment under the contract. (Public Contract Code Section 7103.5; Government Code Section 4552.)

I. The Bidder hereby certifies that it is, and at all times during the performance of work under the Contract Documents shall be, in full compliance with the provisions of the Immigration Reform and Control Act of 1986 (“IRCA”) in the hiring of its employees, and the Bidder shall indemnify, hold harmless, and defend OWNER against any and all actions, proceedings, penalties, or claims arising out of the Bidder’s failure to comply strictly with the IRCA.

J. The Bidder understands that a licensed contractor shall not submit a bid to a public agency unless the Bidder’s contractor’s license number appears clearly on the bid, the license expiration date is stated, and the bid contains a statement that the representations made therein are made under penalty of perjury. Any bid not containing this information, or a bid containing information which is subsequently proven false, may be considered non-responsive and may be rejected by the public agency.

K. Bidder’s contractor’s license is: ________________________________________________

[number] [class] [expires]

[DIR registration number] [expires]

L. Attached is Bidder’s AB 1565 Prequalification Questionnaire Validation Form (if required by the Notice to Contractors Calling for Bids, paragraph 20, and the Instructions to Bidders, paragraph 15).

M. The undersigned hereby declares that all of the representations of this bid, including all documents comprising the bid package, are true and are made under penalty of the perjury laws of the State of California.

INDIVIDUAL/DBA

*Signature: ____________________________________________

Print Name: ____________________________________________

Business Address: ______________________________________

___________________________________

Date:        Telephone:

PARTNERSHIP

Partnership Name: ________________________________

*By: _________________________________________________, Partner
03-BID FORM

Print Name: ___________________________________________

Business Address: ______________________________________

Date:        Telephone: ________________________________

Names of Other Partners: ________________________________

CORPORATION

Corporation Name: ___________________________, a __________________Corporation.
(State of Incorporation)

Business Address: ______________________________________

Date:        Telephone: ________________________________

*By:  _______________________________________
     [Required] [Seal]
     (President/Chief Executive Officer/Vice President) [Circle One]

Print Name: __________________________________________

*By:  _______________________________________
     [Required] [Circle One]
     (Secretary/Treasurer/Chief Financial Officer/Assistant Treasurer)

Print Name: ______________________________________

JOINT VENTURE

Joint Venturer Name: ________________________________

*Signed by:  _______________________________________
             (Joint Venturer)

Print Name: _______________________________________

Business Address: __________________________________

Date:        Telephone: ______________________________

Other Parties to Joint Venture: __________________________

If an individual joint venturer:

*By:  _______________________________________
     (Signature)
Print Name: ________________________________

If a DBA joint venturer:

*By: ________________________________
   (Signature)

Print Name: ________________________________

If a partnership joint venturer:

*By: ________________________________
   (Signature)

Print Name: ________________________________

If a Corporation joint venturer:

[Seal]

______________________________
   (Name)

______________________________
   (State of Incorporation)

*By: ________________________________

Print Name: ________________________________

Title: ________________________________

*Important Notice: Labor Code § 1771.1(a) provides that “A contractor or subcontractor shall not be qualified to bid on, be listed in a bid proposal, subject to the requirements of Section 4104 of the Public Contract Code, or engage in the performance of any contract for public work, as defined in this chapter, unless currently registered and qualified to perform public work pursuant to Labor Code Section 1725.5. It is not a violation of this section for an unregistered contractor to submit a bid that is authorized by Section 7029.1 of the Business and Professions Code or by Section 10164 or 20103.5 of the Public Contract Code, provided the contractor is registered to perform public work pursuant to Section 1725.5 at the time the contract is awarded.” Please go to http://www.dir.ca.gov/Public-Works/PublicWorks.html for more information and to register. This project is subject to monitoring by the Department of Industrial Relations.
TO: KERN COMMUNITY COLLEGE DISTRICT ("OWNER")

1. Pursuant to bidding and contract requirements for the work titled:

   **Project Title/Bid #: BAKERSFIELD COLLEGE INFRASTRUCTURE (28F792)**
   **CENTRAL PLANT MATH/SCIENCE COIL REPLACEMENT**

The contract sum, proposed by the undersigned on the Bid Form, is for the work as shown on the drawings, described in the specifications, and otherwise defined in the Contract Documents. However, the undersigned proposes the following substitutions for the Owner’s consideration. Should the Owner accept any or all of the proposed substitutions, the Bidder agrees to reduce the contract sum by the amount shown. Proposed substitutions must be submitted not later than 10 working days prior to the date of bid opening in order for such request to be reviewed before bidding. All substitutions must be listed on this form and submitted prior to or with the bid or they will not be reviewed.

2. Please complete, attaching additional sheets as necessary:

   Bidder proposes [check one]:
   - [ ] no substitutions.
   - [ ] the following substitutions:

<table>
<thead>
<tr>
<th>Specified Product or Material</th>
<th>Drawing Number or Specification Section</th>
<th>Proposed Substitution</th>
<th>Proposed Price Reduction</th>
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3. All bids should be calculated and submitted on the assumption that substitution requests will not be approved.

4. Bidder hereby certifies that the requested substitutions are equal or better in all respects to what is specified, unless otherwise noted.

SIGNATURE MUST BE IDENTICAL TO THAT PROVIDED ON BID FORM

BIDDER: ___________________________
By: ______________________________
Print Name: ______________________
05-LIST OF SUBCONTRACTORS
TO BE SUBMITTED WITH BID

PROJECT TITLE: BAKERSFIELD COLLEGE INFRASTRUCTURE (28F792) CENTRAL PLANT
MATH/SCIENCE COIL REPLACEMENT

OWNER: KERN COMMUNITY COLLEGE DISTRICT

A. In compliance with the Subletting and Subcontracting Fair Practices Act (Public Contract Code Section 4100 and following sections) and any amendments to the Act, each Bidder shall set forth below:

1. The name, location of the place of business California contractor license number and DIR registration number of:
   a. Each subcontractor who will perform work or labor or render service to the Bidder in or about the construction of the work or improvement to be performed under the Construction Agreement;
   b. Each subcontractor licensed by the State of California who, under subcontract to the Bidder, specially fabricates and/or 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 one percent of the Bidder's total bid or Ten Thousand Dollars ($10,000), whichever is greater;

2. The portion of the work which will be done by each subcontractor.

B. The Bidder shall list only one subcontractor for each such portion as is defined by the Bidder in this bid.

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

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

E. Violations of any provision of the Subletting and Subcontracting Fair Practices Act may be deemed by the OWNER to make the bid non-responsive and/or the Bidder non-responsible.
F. Attach additional sheets, as necessary.

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<tr>
<th>SUBCONTRACTOR’S NAME &amp; LOCATION</th>
<th>DESCRIPTION OF PORTION TO BE SUBCONTRACTED</th>
<th>CALIFORNIA CONTRACTOR LICENSE NO.</th>
<th>DIR REGISTRATION NUMBER</th>
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Firm Name: ____________________________

By: ________________________________

[Signature must match that on bid]

Print Name: ____________________________
06-BID BOND

IF USED BY BIDDER, MUST BE COMPLETED AND SUBMITTED WITH BID

PROJECT TITLE/BID #: BAKERSFIELD COLLEGE INFRASTRUCTURE (28F792)
CENTRAL PLANT MATH/SCIENCE COIL REPLACEMENT

OWNER: KERN COMMUNITY COLLEGE DISTRICT

KNOW ALL MEN BY THESE PRESENTS, that we, __________________ as Principal, and ___________________ as Surety, are held and firmly bound unto the Kern Community College District (referred to as Owner) in the sum of _______ percent of the total amount of the bid of the Principal submitted to the Owner for the work and obligations described below for the payment of which sum in lawful money of the United States, well and truly to be made, we jointly and severally bind ourselves, our heirs, executors, administrators, successors, and assigns.

The condition of this obligation is such that whereas the Principal has submitted the accompanying bid dated ____________________, 2020, for: $____________.

NOW, THEREFORE, if the Principal shall not withdraw said bid within the period specified therein after the opening of the same, or if no period be specified, within 60 days after said opening; and if the Principal is awarded the contract, and shall within the specified period, or if no period is specified, within five working days after the award of the contract, enter into a written contract with the Owner in accordance with the bid as accepted and give bonds with good and sufficient surety or sureties as may be required for the faithful performance and proper fulfillment of such contract and for the payment of labor and materials used for the performance of the contract, provide certificates evidencing the required insurance is in effect (in the amounts required in the contract documents), and provide any other documents required under the contract documents to be submitted at the time the contract is executed, then the above obligation shall be void and of no effect, otherwise to remain in full force and effect.

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

In the event suit is brought upon this bond by the Owner and judgment is recovered, the Surety shall pay all costs incurred by the Owner in such suit, including a reasonable attorney’s fee to be fixed by the court.
IN WITNESS WHEREOF, the parties have executed this instrument under their several seals this day of , 20 , the name and corporate party being hereto affixed and duly signed by its undersigned authorized representative.

DATED: PRINCIPAL

By: __________________________

Title: __________________________

DATED: SURETY

By: __________________________

Title: __________________________

Note: Signatures of those executing for the Surety must be properly acknowledged.
07-NONCOLLUSION DECLARATION
TO BE EXECUTED BY BIDDER AND SUBMITTED WITH BID

PROJECT TITLE/BID #:  BAKERSFIELD COLLEGE INFRASTRUCTURE (28F792)
CENTRAL PLANT MATH/SCIENCE COIL REPLACEMENT

OWNER:  KERN COMMUNITY COLLEGE DISTRICT

The undersigned declares:

I am the ________________ of _____________________, the party making the foregoing 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 has not directly or indirectly induced or solicited any other bidder to put in a false or sham bid. The bidder has not directly or indirectly colluded, conspired, connived, or agreed with any bidder or anyone else to put in a sham bid, or to refrain from bidding. The bidder has not in any manner, directly or indirectly, sought by agreement, communication, or conference with anyone to fix the bid price of the bidder or any other bidder, or to fix any overhead, profit, or cost element of the bid price, or of that of any other bidder. All statements contained in the bid are true. The bidder has not, directly or indirectly, submitted his or her bid price or any breakdown thereof, or the contents thereof, or divulged information or data relative thereto, to any corporation, partnership, company, association, organization, bid depository, or to any member or agent thereof, to effectuate a collusive or sham bid, and has not paid, and will not pay, any person or entity for such purpose.

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

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

Contractor: __________________________________

By__________________________________________

Title: ________________________________________
Signature:______________________________________
08-EXCLUSION OF LEAD AND ASBESTOS PRODUCTS

TO BE EXECUTED BY BIDDER AND SUBMITTED WITH BID

PROJECT TITLE/BID #: BAKERSFIELD COLLEGE INFRASTRUCTURE (28F792)
CENTRAL PLANT MATH/SCIENCE COIL REPLACEMENT
OWNER: KERN COMMUNITY COLLEGE DISTRICT

Pursuant to the provisions of the California Education Code for construction, modernization, or renovation of school facilities, lead based paint, lead plumbing, and solders, or other potential sources of lead contamination shall not be utilized in the construction of any new school facility or the modernization or renovation of any existing school facility.

The Contractor agrees that sources and potential sources of lead contamination, whether in products or materials, will not be used in performing work under the Agreement.

In addition, the Contractor agrees that asbestos containing products or materials will not be used in performing work under the Agreement.

At completion of work under the Agreement, the Contractor will warrant and represent to the Owner the following:

1. That no asbestos containing products or materials, or sources or potential sources of lead contamination, were used in performing work under the Agreement.

2. That should any asbestos containing products, or sources or potential sources of lead contamination, be found to have been used by the Contractor or any subcontractor, supplier, or vendor on the Project, the Contractor will replace them, together with all related materials, at no cost to the Owner.

3. That should the replacement require any interruption in the normal operation of the school, the Contractor will pay all costs necessarily incurred to keep the school functioning with the least possible disruption to its day-to-day operations.

Executed at , California, on , 20 .

Firm Name:

By: _______________________________

Title: ___________________________

Signed: ____________________________

[Signature must match that on bid]
09-CONSTRUCTION AGREEMENT

THIS AGREEMENT, dated _______, in the County of Kern, State of California, is by and between the KERN COMMUNITY COLLEGE DISTRICT (KCCD) ("OWNER") and ("CONTRACTOR").

For the consideration stated in this Agreement, OWNER and CONTRACTOR agree as follows:

1. **Contract Documents.** The complete Agreement includes all of the Contract Documents as defined in the General Conditions and any other documents comprising any portion of the bid package, and all modifications, addenda, and amendments of or to any of these documents, all of which are incorporated by reference into this Agreement. The Contract Documents are complementary, and what is called for by any one shall be as binding as if called for by all.

2. **Scope of Performance.** CONTRACTOR shall perform within the time set forth in Paragraph 4 of this Agreement everything required to be performed, and shall provide and furnish all labor, materials, necessary tools, expendable equipment, and all utility and transportation services described in the Contract Documents and required for construction of BAKERSFIELD COLLEGE INFRASTRUCTURE (28F792) CENTRAL PLANT MATH/SCIENCE COIL REPLACEMENT.

All of the work to be performed and materials to be furnished shall be completed in a good workmanlike manner in strict accordance with the Plans, Drawings, Specifications and all provisions of the Contract Documents as defined above. CONTRACTOR shall be liable to OWNER for any damages arising as a result of a failure to fully comply with this obligation, and CONTRACTOR shall not be excused with respect to any failure to so comply by any act or omission of OWNER, the Architect, Engineer, Inspector, Division of State Architect, or representative of any of them, unless such act or omission actually prevents CONTRACTOR from fully complying with the requirements of the Contract Documents, and unless CONTRACTOR protests at the time of the alleged prevention that the act or omission is preventing CONTRACTOR from fully complying with the Contract Documents. The protest shall not be effective unless reduced to writing and filed with OWNER within three working days of the date of occurrence of the act or omission preventing CONTRACTOR from fully complying with the Contract Documents.

3. **Contract Price.** Subject to any additions or deductions as provided in the Contract Documents, as full consideration for the faithful performance of the contract OWNER shall pay to CONTRACTOR the sum of $_ .

4. **Construction Period.** The work shall be commenced on or before the ________ day after receiving OWNER’s Notice to Proceed and shall be completed within ________ consecutive calendar days from the date specified in the Notice to Proceed.
5. **Liquidated and Other Damages.** All work must be completed within the time limits set forth in the Contract Documents. If the work is not completed in accordance with the time limits set forth in this Agreement, in accordance with Government Code Section 53069.85, CONTRACTOR shall pay to OWNER as fixed and liquidated damages, and not as a penalty, the sum of $ for each calendar day of delay until work is completed and accepted.

Detailed requirements concerning liquidated damages and other damages which may be assessed if CONTRACTOR fails to complete the project within the time period provided in this Agreement are contained in the General Conditions.

6. **Insurance.** Prior to commencing the work, CONTRACTOR shall take out and maintain during the life of this contract, and shall require all subcontractors, if any, whether primary or secondary, to take out and maintain all insurance as required in the General Conditions.

7. **Substitution of Securities.** Public Contract Code Section 22300 permits the substitution of securities for any monies withheld by a public agency to ensure performance under a contract. At the request and expense of CONTRACTOR, securities equivalent to the amount withheld shall be deposited with the public agency, or with a state or federally chartered bank in California as the escrow agent, who shall then pay such monies to CONTRACTOR. OWNER retains the sole discretion to approve the bank selected by CONTRACTOR to serve as escrow agent. Upon satisfactory completion of the contract, the securities shall be returned to CONTRACTOR. Securities eligible for investment shall include those listed in Government Code Section 16430 or bank or savings and loan certificates of deposit. CONTRACTOR shall be the beneficial owner of any securities substituted for monies withheld and shall receive any interest thereon.

In the alternative, under Section 22300, CONTRACTOR may request OWNER to make payment of earned retentions directly to the escrow agent at the expense of CONTRACTOR. Also at CONTRACTOR's expense, CONTRACTOR may direct investment of the payments in securities, and CONTRACTOR shall receive interest earned on such investment upon the same conditions as provided for securities deposited by CONTRACTOR. Upon satisfactory completion of the contract, CONTRACTOR shall receive from the escrow agent all securities, interest, and payments received by escrow agent from OWNER pursuant to the terms of Section 22300. Not later than 20 days after receipt of such payment, CONTRACTOR shall pay to each subcontractor the respective amount of interest earned, net of costs attributed to retention withheld from each subcontractor, on the amount of retention withheld to ensure performance of CONTRACTOR.

8. **Corporate Status and Authorization.** If CONTRACTOR is a corporation, the undersigned hereby represents and warrants that the corporation is duly incorporated and in good standing in the State of , and that , whose title is , is authorized to act for and bind the corporation.

9. **Posting.** Contractor shall be responsible to post job site notices prescribed by Title 8 CCR § 16451 (d) pertaining to prevailing wage monitoring by the Department of Industrial Relations.
10. **Entire Agreement.** This Agreement, including the Contract Documents incorporated by reference, constitutes the final, complete, and exclusive statement of the terms of the agreement between the parties pertaining to construction of the project. It supersedes all prior and contemporaneous understandings or agreements of the parties. No party has been induced to enter into this Agreement by, nor is any party relying on, any representation or warranty outside those expressly set forth in this Agreement. The Agreement can only be modified by an amendment in writing, signed by both parties and approved by action of OWNER’s governing board or other governing body.

11. **Parties in Interest.** Nothing in this Agreement, whether express or implied, is intended to confer any rights or remedies under or by reason of this Agreement on any person other than the parties to this Agreement and their respective successors and assigns. Nothing in this Agreement, whether express or implied, is intended to relieve or discharge the obligation or liability of any third person to any party to this Agreement, nor shall any provision give any third person any right of subrogation or action against any party to this Agreement.

12. **Severability.** If any provision of this Agreement is held by a court of competent jurisdiction to be invalid or unenforceable, the remainder of the Agreement shall continue in full force and effect and shall in no way be impaired or invalidated.

13. **Governing Law.** The rights and obligations of the parties and the interpretation and performance of this Agreement shall be governed by the laws of California, excluding its conflict of laws rules.

The parties have executed this Agreement by the signatures of their authorized representatives effective the date indicated above.

DISTRICT

By: ___________________________
  Signature
  Print Name Above
  Print Title Above

CONTRACTOR

*By: ___________________________
  Signature
  Print Name Above
  Print Title Above

[Continued on Following Page]
Contractor's License No.

Tax ID/Social Security No.

DIR Registration No.

*Important Notice:* Labor Code § 1771.1(a) provides that “A contractor or subcontractor shall not be qualified to bid on, be listed in a bid proposal, subject to the requirements of Section 4104 of the Public Contract Code, or engage in the performance of any contract for public work, as defined in this chapter, unless currently registered and qualified to perform public work pursuant to Labor Code Section 1725.5. It is not a violation of this section for an unregistered contractor to submit a bid that is authorized by Section 7029.1 of the Business and Professions Code or by Section 10164 or 20103.5 of the Public Contract Code, provided the contractor is registered to perform public work pursuant to Section 1725.5 at the time the contract is awarded.” Please go to [http://www.dir.ca.gov/Public-Works/PublicWorks.html](http://www.dir.ca.gov/Public-Works/PublicWorks.html) for more information and to register. This project is subject to monitoring by the Department of Industrial Relations.
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PROJECT TITLE: BAKERSFIELD COLLEGE INFRASTRUCTURE (28F792) CENTRAL PLANT MATH/SCIENCE COIL REPLACEMENT

OWNER: KERN COMMUNITY COLLEGE DISTRICT

ARTICLE 1 DEFINITIONS

A. Action of the Governing Board or Other Governing Body: An official act of the governing board or other governing body of OWNER.

B. Approve: The term “approve,” where used in conjunction with the Architect's action on the CONTRACTOR'S submittals, applications, and request, is limited to the responsibilities and duties of the Architect stated in General and Supplementary Conditions. Approval shall not release CONTRACTOR from responsibility to fulfill Contract Document requirements, unless otherwise provided in the Contract Documents.

C. Architect: The person, persons, or entity selected by OWNER to provide architectural services to the Project. Architect is an independent contractor and is not an agent of OWNER.

D. Contract Documents: All contract documents, including all official documents on this Project, including the Notice Calling for Bids, Instructions to Bidders, Bid Form, Designation of Subcontractors, Workers' Compensation Certificate, Performance Bond, Payment Bond, Change Orders, Shop Drawings and their Transmittals, Information Required of Bidder, all prequalification forms submitted pursuant to Public Contract Code sections 20111.5 or 20111.6, if any, Substitution Listing form on any approved substitutions, Non-Collusion Declaration, Insurance Certificates, Guarantees, Contractor’s Certificate Regarding Non-Asbestos and/or Lead Containing Materials, if any, Labor Compliance Program documents, General Conditions, Supplemental General Conditions, if any, Iran Contracting Act Certification, if any, Special Conditions and/or Requirements, if any, Plans, Drawings, Specifications, the Construction Agreement, and all Modifications, addenda, and amendments of those documents.

E. Modification:

1. A written amendment to the Contract Documents signed by both parties;

2. A fully executed Change Order;

3. A written interpretation made by the ARCHITECT and issued by the Project Management Team (PMT); or

4. A written order for a minor change in the Work created by the ARCHITECT and issued by the PMT.

F. CONTRACTOR: That entity awarded this Construction Agreement by official action of OWNER. Throughout the Contract Documents CONTRACTOR is treated as being of singular number and neuter gender.
G. **Date of Acceptance**: The date when all of the following conditions are satisfied:

1. OWNER is able to occupy all portions of the project.
2. The notice of completion is recorded with local authorities.
3. The final verified report is filed with the Division of State Architect of the Department of General Services.
4. Acceptance of project by OWNER's governing board or other governing body.

H. **Days**: Calendar days unless noted otherwise.

I. **Equivalent to**: Equal or superior in function and quality and approved by the Architect.

J. **Furnish**: Means “supply and deliver to the project site, ready for unloading, unpacking, assembly, installation, and similar operations.”

K. **Indicated**: Refers to graphic representations, notes or schedules on the Drawings, or other Paragraphs or Schedules in Specifications, and similar requirements in Contract Documents. Where terms such as “shown,” “noted,” or “scheduled” are used, it is to help locate the reference; no limitation on locations is intended except as specifically noted.

L. **Install**: Used to describe operations at the project site, including the actual “unloading, unpacking, assembly, erection, placing, anchoring, applying, working to dimension, finishing, curing, protection, cleaning and similar operations.”

M. **Installer**: An entity engaged by CONTRACTOR, either as an employee, subcontractor, or sub-subcontractor for performance of a particular construction activity, including installation, erection, application, and similar required operations. Installers are required to be experienced in the operations they are engaged to perform and licensed as required in the individual specification sections.

N. **Liquidated Damages**: Pursuant to Government Code Section 53069.85, this is the specified sum of money that CONTRACTOR shall forfeit and pay to OWNER for those specified portions of the Project that are uncompleted and delayed beyond the stated completion time.

O. **Or Equal**: Where named products in specification text are accompanied or are deemed by law to be followed by the term “or equal,” or other language of similar effect, CONTRACTOR shall comply with those Contract Document provisions for “substitutions” when obtaining Architect’s review and consideration.

P. **OWNER**: Kern County Community College executing the Construction Agreement acting through its governing board or other governing body.

Q. **Plans**: The reproductions of the official drawings adopted and approved by OWNER showing locations, character, dimensions, and details of the work.

R. **Program Management Information Systems (PMIS)**: A cloud based system such as
eBuilder selected by the PMT to contain and manage information for all projects within the KCCD Bond program. (Architect/Contractor/Consultant) shall utilize as required, the PMIS that have been established for the KCCD Bond Program. Access to and training for the PMIS will be provided at no charge to the (Architect/Contractor/Consultant).

S. Project: The undertaking planned by OWNER and CONTRACTOR as provided in the Contract Documents.

T. Project Inspector/Inspector of Record: Any individual or firm retained by OWNER as the on-site inspector for a particular project hired by and paid by OWNER and under general direction of the Architect or registered engineer in charge. The Project Inspector shall be responsible for inspecting all work included in the Contract Documents. A special inspector shall be responsible only for inspecting the work for which he/she is approved. Inspectors are independent contractors and are not agents or employees of OWNER.

U. Project Management Team (PMT): Persons, person or entities selected by OWNER to provide program/project management services to the project. The PMT is a representative of the OWNER. The PMT, including AECOM, Parsons, their employees, officers, directors and respective agents are not agents of the OWNER.

V. Project Manual: The volume(s) that include the bidding requirements, sample forms, and all of the initial Contract Documents, such as Conditions of the Contract, Schedules and Details Manual, the Specifications, and the addenda to be used on the Project.

W. Project Site: The space available to CONTRACTOR for performance of the Work, either exclusively or in conjunction with others performing other construction as part of the Project. The extent of the Project Site is shown on the Drawings, and may or may not be identical with the description of the land upon which the Project is to be built.

X. Provide: Includes “provide complete in place,” that is, furnish and install.

Y. Refer: Indicates that the subject is defined or specified in further detail at another location in the Contract Documents or elsewhere as indicated. Except, as otherwise noted, “refer” does not imply that CONTRACTOR must purchase or subcontract the subject work in any special manner.

Z. Related Work in Other Sections: A nonrestrictive term used throughout the Specifications to coordinate the Work and facilitate checking and bidding.

AA. Required: As required by Contract Documents.

BB. Safety Orders: Issued by Division of Industrial Safety and OSHA Safety and Health Standards for Construction.

CC. Specification: The printed instruction and requirements which complement the plans as to the methods and manner of performing the Work or to the quantities and qualities of the materials to be furnished.

DD. Subcontractor: Includes those having a direct contract with the CONTRACTOR and those
who furnish material worked to a special design according to plans, drawings, and Specifications of this work, but does not include those who merely furnish material not so worked.

EE. Surety: The firm or corporation executing CONTRACTOR’S Performance Bond and/or Payment Bond as surety, as the context indicates.

FF. Testing Laboratory: An independent entity engaged to perform specific inspections or test, either at the Project Site or elsewhere, and to report on, and if required, interpret results of those inspections or tests. It is not an agent of OWNER.

GG. Unfinished: Refers to the status of the Work prior to reaching completion, as described in Article 61.

HH. Work: Work of the CONTRACTOR and subcontractors, including all labor or materials (including without limitation, equipment, and appliances), both incorporated in, or to be incorporated in the Project in order to fully meet the requirements of the Contract Documents.

**ARTICLE 2   STATUS OF CONTRACTOR**

A. CONTRACTOR is and shall at all times be deemed to be an independent contractor and shall be wholly responsible for the manner in which it performs the services required of it by the terms of the Contract Documents.

B. Nothing contained in the Contract Documents shall be construed as creating the relationship of employer and employee, or principal and agent, between OWNER and CONTRACTOR or any of CONTRACTOR’S agents or employees.

C. CONTRACTOR exclusively assumes the responsibility for the acts of its employees as they relate to the services to be provided during the course and scope of their employment. CONTRACTOR, its agents, and employees shall not be entitled to any rights or privileges of OWNER employees and shall not be considered in any manner to be OWNER employees.

D. OWNER shall be permitted to monitor the activities of CONTRACTOR to determine compliance with the terms of the Contract Documents.

E. Contractors are required by law to be licensed and regulated by the Contractors’ State License Board. Any contractor not so licensed is subject to penalties under the law and the Construction Agreement will be considered void pursuant to Business and Professions Code Section 7028.7. Any questions concerning a contractor may be referred to the Registrar, Contractors’ State License Board, 3132 Bradshaw Road, Post Office Box 2600, Sacramento, California, 95826.

F. Contractors or subcontractors are not qualified to bid on, be listed in a bid proposal, subject to the requirements of Section 4104 of the Public Contract Code, or engage in the performance of any contract for public work, as defined in this chapter, unless currently registered and qualified to perform public work pursuant to Labor Code Section 1725.5. This project is subject to monitoring by the Department of Industrial Relations.

**ARTICLE 3   CONTRACTOR SELECTION PROCESS AND PROHIBITED INTERESTS**
A. As a means of maintaining the integrity of the formal selection process, contacts with individual members of OWNER’s Board of Trustees or governing body on behalf of any bidding firm relative to this Project will be considered inappropriate.

B. No official of OWNER who is authorized in such capacity and on behalf of OWNER to negotiate, make, accept, or approve, or to take part in negotiating, making, accepting or approving, any architectural, engineering, inspection, construction, or material supply contract, or any subcontract in connection with construction of the Project, shall have any direct or indirect financial interest in any part of this Project.

C. No officer, employee, architect, attorney, engineer, or inspector of or for OWNER who is authorized in such capacity and on behalf of OWNER to exercise any executive, supervisory, or other similar functions in connection with construction of the Project shall have any direct or indirect financial interest in any part of this Project.

D. CONTRACTOR shall receive no compensation and shall repay OWNER for any compensation received should CONTRACTOR aid, abet, or knowingly participate in any violation of this Article.

ARTICLE 4 CHANGE IN NAME OR NATURE OF CONTRACTOR’S LEGAL ENTITY

Before CONTRACTOR makes any change in the name or legal nature of the CONTRACTOR'S entity, CONTRACTOR shall first notify OWNER in writing and cooperate with OWNER in making such changes as OWNER may request in the Contract Documents.

ARTICLE 5 DEBARRED CONTRACTOR

A. Pursuant to Labor Code Sections 1777.1 and 1777.7, a contractor may be prohibited from bidding or performing work as a subcontractor on a public works project.

B. Any contract on a public works project entered into between a contractor and a debarred subcontractor is void as a matter of law. A debarred subcontractor may not receive any public money for performing work as a subcontractor on a public works contract, and any public money that may have been paid to a debarred subcontractor by a contractor on the Project shall be returned to the awarding body. The contractor shall be responsible for the payment of wages to workers of a debarred subcontractor who has been allowed to work on the Project.

C. Pursuant to Public Contract Code Section 4701, CONTRACTOR shall request the substitution of any subcontractor who has been debarred by the California Labor Commissioner from working as a subcontractor on public work.

ARTICLE 6 SUBCONTRACTING

A. CONTRACTOR agrees to bind each and every subcontractor to the terms of the Contract Documents as far as the terms are applicable to the subcontractor's work. Each subcontract shall contain a reference to Contract Documents, and the terms of the Contract Documents shall be incorporated into and made a part of each subcontract. If CONTRACTOR subcontracts any part of its work under the Construction Agreement, CONTRACTOR shall be responsible to OWNER for any acts and omissions of its subcontractors and of persons either directly or indirectly
employed by its subcontractors. Nothing contained in the Contract Documents shall create any contractual relationship between any subcontractor and OWNER.

B. OWNER’S consent to or approval of any subcontractor shall not in any way relieve CONTRACTOR of its obligations under the Contract Documents, and no such consent or approval shall be deemed to waive any provision of the Contract Documents.

C. CONTRACTOR must submit with its bid a Designation of Subcontractors. If CONTRACTOR specifies more than one subcontractor for the same portion of work or fails to specify a subcontractor, and such portion of the work exceeds one-half of one percent of the total bid, CONTRACTOR agrees that it is fully qualified to perform and shall perform such work itself. The substitution or addition of subcontractors shall be permitted only as authorized by Public Contract Code Sections 4100, et seq.

D. All subcontractors shall be appropriately licensed and registered with DIR to perform the work for which employed in conformity with the laws of the State of California.

E. In accordance with California Business and Professions Code Section 7059, if CONTRACTOR is designated as a "specialty contractor" (as defined in Public Contract Code Section 7058), all of the work to be performed outside of the Contractor's license specialty, except "incidental" work as that term is used in Section 7059(a), shall be performed by a licensed subcontractor in compliance with the Subletting and Subcontracting Fair Practices Act, California Public Contract Code Section 4100, et seq.

F. A copy of each subcontract, if in writing, or if not in writing, then a written statement signed by the Contractor giving the name of the subcontractor and the terms and conditions of such subcontract, shall be filed with OWNER before the subcontractor begins work. Each subcontract will provide for termination in accordance with these General Conditions. Each subcontract shall provide for its annulment by CONTRACTOR at the order of the PMT if in the PMT’s opinion the subcontractor fails to comply with the requirements of the Contract Documents insofar as the same may be applicable to this work.

G. Nothing contained in these General Conditions shall relieve CONTRACTOR of any liability or obligation under the Contract Documents, nor shall any permissible substitution or addition of a subcontractor result in any increase in the contract price or in an extension of time for completion of the Project.

H. CONTRACTOR shall require subcontractors to include the provisions of this article in their sub-subcontracts, if any.

I. Each subcontract applicable to this Project is hereby assigned to OWNER, such assignment to become effective only upon termination of the Construction Agreement for cause pursuant to the Contract Documents, and only as to such subcontracts as OWNER may, in its sole discretion, select and provide written notice of such assignment, and such assignments are subject to the rights and obligations of the surety on any applicable bonds, as detailed in the Contract Documents.

ARTICLE 7 PROJECT MANAGEMENT TEAM’S STATUS

A. The Program Management Team (PMT) shall be OWNER’s representative during
construction and shall observe the progress and quality of the Work on behalf of OWNER. The PMT shall have the authority to act on behalf of OWNER only to the extent expressly provided in the Contract Documents. The PMT shall have authority to stop work whenever necessary, in the PMT's reasonable opinion, to ensure the proper execution of the Work of the Project.

B. The PMT with the Architect will be responsible for oversight of the performance of the Work on the Owner's behalf. The PMT will exercise authority, as representative of the Owner, under the Contract Documents to enforce CONTRACTOR's faithful performance.

C. The Architect shall have all authority and responsibility established by law, including Title 24 of the California Code of Regulations. The PMT, together with the ARCHITECT, has the authority to enforce compliance with the Contract Documents and CONTRACTOR shall promptly comply with instructions from the PMT and Architect.

D. On all questions related to quantities, acceptability of material, equipment, or workmanship, execution, progress, or sequence of work, the interpretation of plans, specifications, or drawings, and the acceptable performance of CONTRACTOR, the decision of the PMT and Architect shall govern and shall be a condition precedent to any payment, unless otherwise ordered by OWNER. CONTRACTOR shall not impair or delay the progress and completion of the Work by virtue of any question or dispute arising out of or related to the foregoing matters, or the instructions of the PMT and Architect relating to them.

E. General supervision and direction of the Work by the PMT or Architect in no way implies that the PMT, the Architect or its representatives are in any way responsible for the safety of CONTRACTOR or its employees or that the PMT, the Architect or its representatives will maintain supervision over CONTRACTOR'S construction methods, means, or personnel other than to ensure that the quality of the finished work is in accordance with the Contract Documents.

ARTICLE 8 PROJECT INSPECTOR AND INSPECTOR OF FACILITIES

A. One or more Project Inspectors ("IOR"), including specialty Inspectors as required, employed by OWNER and operating under direction of the Architect, in accordance with the requirements of the California Code of Regulations Titles 21 and 24, will be assigned to the Work. All work shall be performed under the observation of or with the knowledge of the Project Inspector. The Project Inspector shall have free access to all parts of the Work at any time. CONTRACTOR shall furnish the Project Inspector with such information as may be necessary to keep the Project Inspector fully informed regarding the progress and manner of work and the character of materials.

B. Observations by the Project Inspector shall not in any way relieve CONTRACTOR from responsibility for full compliance with all terms and conditions of the Contract Documents, or be construed to lessen to any degree CONTRACTOR'S responsibility for providing efficient and capable superintendence.

C. The Project Inspector is not authorized to make changes in the drawings or Specifications, nor shall the Project Inspector's approval of the Work and methods relieve CONTRACTOR of responsibility for the correction of subsequently discovered defects, or from its obligation to fully comply with the Contract Documents.

ARTICLE 9 COPIES FURNISHED
ARTICLE 10 OWNERSHIP OF DRAWINGS

All documents prepared on behalf of OWNER including, without limitation the Plans, Specifications, drawings, and other documents, are instruments of service of the Architect and/or its consultants and are the property of OWNER. Neither CONTRACTOR nor any Subcontractor, Sub-subcontractor, material or equipment supplier or anyone else shall own or claim a copyright in such documents. Unless otherwise indicated, the Architect shall be deemed the author of such documents. Such documents are furnished to CONTRACTOR for use solely with respect to this Project and are not to be used for any other purpose by CONTRACTOR or any Subcontractor, Sub-subcontractor, or material or equipment supplier, or anyone claiming through them without the express written consent of OWNER. CONTRACTOR, Subcontractors, Sub-subcontractors, and material or equipment suppliers are granted a limited license to use and reproduce applicable portions of the documents for use in the execution of their work under the Contract Documents.

ARTICLE 11 DOCUMENTS ON WORK

A. CONTRACTOR shall keep one hard copy of all Contract Documents, including addenda, change orders, shop drawings, and other modifications, and Titles 19, 21 and 24 of the California Code of Regulations, on the job at all times. The documents shall be kept in good order and accurately marked to record all changes made during construction. The documents shall be available to the PMT and ARCHITECT and its representatives at all times.

B. CONTRACTOR shall be acquainted with and comply with all statutes and regulations as they relate to this Project. (See particularly the duties of Contractor, Title 24 California Code of Regulations, Sections 4-343.) CONTRACTOR shall also be acquainted with and comply with all provisions of the California Code of Regulations relating to conditions on this Project, particularly Titles 8 and 17.

ARTICLE 12 DRAWINGS AND SPECIFICATIONS

A. Drawings and Specifications are intended to delineate and describe the Project and its component parts sufficiently to enable skilled and competent contractors to intelligently bid upon the work, and to carry the Work to a successful and timely conclusion.

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

C. The drawings and Specifications 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 could have been shown.

D. The Contract Documents are complementary, and what is required by one shall be as
binding as if required by all. The Contract Documents are intended to encompass all labor and materials, equipment, and transportation necessary for proper execution 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 in both.

E. All materials or labor for the Work which are shown either by the Drawings or the Specifications (or are reasonably inferable from the Drawings or the Specifications as being necessary to complete the work) shall be provided by CONTRACTOR, whether or not the work is expressly covered in either the Drawings and/or the Specifications. It is intended that the Work be of sound, quality construction. CONTRACTOR must furnish adequate labor and materials to cover installation of all items indicated, described, or implied in the portion of the Work to be performed.

F. Drawings and Specifications are intended to comply with all laws, ordinances, rules and regulations of authorities having jurisdiction, and where referred to in the Contract Documents, such laws, ordinances, rules and regulations shall be considered as a part of the Contract Documents within the limits specified. If CONTRACTOR observes that the drawings or Specifications are contrary to applicable law, ordinance, rule or regulation, CONTRACTOR shall immediately notify the Architect by submitting this issue to the PMT in writing, and any changes deemed necessary by the Architect and PMT shall be made as provided in the Contract Documents for changes in work. If CONTRACTOR performs any work which CONTRACTOR knows or through the exercise of reasonable diligence should have known to be contrary to any law, rule, regulation, or ordinance without seeking and obtaining clarification, CONTRACTOR shall bear any and all costs arising from it, including without limitation the costs of correction without increase or adjustment to the contract price or the time for performance.

G. Materials or work described in words which have a well known technical or trade meaning shall be deemed to refer to those recognized standards.

H. It is not the intention of the Contract Documents to go into detailed descriptions of any materials and/or methods commonly known to the trade under "trade name" or "trade term." The mere mention or notation of such "trade name" or "trade term" shall be considered a sufficient notice to CONTRACTOR that it will be required to complete the Work so named with all its incidental and accessory items according to the best practices of the trade.

I. Naming any material and/or equipment requires CONTRACTOR to furnish and install the named material/equipment, including all incidental and accessory items and/or labor necessary to achieve full and complete functioning of the material and/or equipment according to the best practices of the trade(s) involved, unless specifically noted otherwise.

J. Figured dimensions on drawings shall govern, but work not dimensioned shall be as directed. Work not particularly shown or specified shall be the same as similar parts that are shown or specified. Large scale drawings shall take precedence over smaller scale drawings as to shape and details of construction. Specifications shall govern as to materials, workmanship, and installation procedures, provided however that the drawing or specification calling for the higher quality material or workmanship shall prevail, without additional cost to OWNER.

K. In case of inconsistencies in the descriptions of work to be done, equipment to be provided or material to be used, it is intended that the more stringent, higher quality, and greater quantity of work shall apply, without additional cost to OWNER.
L. All items indicated on the drawings or in the Specifications as future items require CONTRACTOR to provide all the mechanical, electrical, and other necessary service hookups or provisions required to make the equipment function as intended. Such items shall be provided to the location where the future item is indicated to be installed.

M. In the event of an inconsistency between the Construction Agreement or General Conditions and the other various Contract Documents, the Construction Agreement or General Conditions shall control.

N. Drawings and specifications are intended to be fully cooperative and to agree. If CONTRACTOR observes that drawings and Specifications are in conflict, CONTRACTOR shall promptly notify the Architect in writing, requesting clarification. Should CONTRACTOR commence work on any part of the Work without seeking clarification, CONTRACTOR waives any claim for extra work or damages as a result of any ambiguity, conflict, or lack of information. Questions regarding interpretation of drawings and Specifications shall be clarified by the Architect in writing.

O. If 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 to be done 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 resulting costs, including without limitation the costs of correction without increase or adjustment to the contract price or the time for performance.

P. Should clarification by the Architect be deemed new or additional work, the cost shall be adjusted as provided in these General Conditions for "Changes and Extra Work," provided however that requirements calling for the higher quality material or workmanship shall prevail without additional cost to OWNER or time adjustment.

Q. In the event the Architect and PMT agree that CONTRACTOR’s requests for clarification or interpretation are not justified, or do not reflect adequate, competent supervision or knowledge by CONTRACTOR, or by the subcontractors, CONTRACTOR shall be required to pay the Architect’s reasonable and customary fees in processing and responding to such requests.

R. Some drawings or other documents may be required of CONTRACTOR. If CONTRACTOR performs, permits, or causes the performance of any work under the documents prepared by or on the behalf of CONTRACTOR which document is in error, inconsistent or ambiguous, or not sufficiently detailed or explained, CONTRACTOR shall bear any and all resulting costs, including, without limitation, the cost of correction, without increase to or adjustment in the contract price or the time for performance. In no case shall any subcontractor proceed with the work if uncertain without CONTRACTOR’S written direction and/or approval.

S. If it is found at any time, whether before or after completion of the work, that CONTRACTOR has varied from the drawings and/or Specifications in materials, quality, form, or finish, or in the amount or value of the materials and labor used, the Architect shall make a recommendation either: (1) that all such improper work should be removed, remade, and replaced, and all work disturbed by these changes be made good at CONTRACTOR’S sole expense; or (2) that OWNER deduct from any amount due CONTRACTOR the sum of money equivalent to the difference in value between the work performed and that called for by the drawings and Specifications. The Architect shall determine such difference in value. At its option,
OWNER may pursue either recommendation made by the Architect.

ARTICLE 13  DETAIL DRAWINGS AND SPECIFICATIONS

A. In case of ambiguity, conflict, or lack of information, the Architect shall furnish additional instructions, by means of drawings or otherwise, necessary for proper execution of the Work. All drawings and instructions shall be consistent with the Contract Documents, true developments of them, and reasonably inferable from them. Any additional instructions shall be furnished with reasonable promptness, provided that CONTRACTOR informs the Architect of the relationship of the request to the critical path of construction.

B. Work shall be executed in conformity with the Contract Documents and CONTRACTOR shall do no work without proper drawings and instructions.

C. The Architect will furnish necessary additional details to more fully explain the work, which shall be considered as part of the Contract Documents.

D. Should any details be more elaborate, in the opinion of CONTRACTOR, than scale drawings and specifications warrant, CONTRACTOR shall give written notice to the Architect and PMT via the PMIS system within five days of receipt of the details. In case no notice is given to the Architect and PMT within five days, it will be assumed the details are reasonable development of the scale drawings. In case notice is given, the details will be considered and if found justified the Architect will either modify the drawings or shall recommend to OWNER a change order for any extra work involved.

E. All parts of the construction shall be of the best quality of their respective kinds and CONTRACTOR shall use all diligence to become fully involved in the required construction and finish, and in no case to proceed with the different parts of the Work without first obtaining from the Architect directions and/or drawings as may be necessary for proper performance of the Work.

ARTICLE 14  SHOP DRAWINGS AND SUBMITTALS

A. The term "shop drawing" shall be understood to include, but not be limited to detail design calculations, fabrication and installation drawings, lists, graphs, and operating instructions.

B. CONTRACTOR shall check and verify all field measurements and shall promptly submit, via the PMIS, all shop or setting drawings, schedules, and material lists required for the work of various trades, checked and approved by CONTRACTOR.

C. All submittals of shop drawings, catalog cuts, data sheets, schedules, and material lists shall be complete and shall conform to contract drawings and specifications. Except where the preparation of a shop drawing is dependent upon the approval of a prior shop drawing, all shop drawings pertaining to the same class or portion of the work shall be submitted simultaneously.

D. Shop drawings shall be submitted at a time sufficiently early to allow review by the Architect and the Division of State Architect (DSA) if required, and to accommodate the rate of construction progress required under the Contract Documents. CONTRACTOR will be required to pay the Architect’s reasonable and customary fees to expedite review of shop drawings which are not submitted in timely fashion.
E. Calculations of a structural nature must be approved by the DSA.

F. All shop drawing submittals shall be submitted in the approved format via the PMIS. Any shop drawing submittal not submitted in this format, will be returned for resubmittal. CONTRACTOR may authorize a material or equipment supplier to deal directly with the Architect with regard to shop drawings, however ultimate responsibility for the accuracy and completeness of the information contained in the submittal shall remain with CONTRACTOR.

G. Normally, a separate submittal shall be made for each specific item or class of material or equipment for which a submittal is required. Transmittal of shop drawings on various items using a single submittal will be permitted only when the items taken together constitute a manufacturer's "package" or are so functionally related that expediency indicates review of the group or package as a whole.

H. CONTRACTOR’s review and approval of shop drawings shall include the following statement: “CONTRACTOR has reviewed and approved not only the field dimensions but the construction criteria and has also made written notation regarding any information in the shop drawings that does not conform to the Contract Documents. This shop drawing has been coordinated with all other shop drawings received to date by CONTRACTOR and this duty of coordination has not been delegated to subcontractors, material suppliers, the PMT, the Architect, or the engineers on this Project.

I. The Architect’s review of shop drawings will be limited to checking for general agreement with the Contract Documents, and shall in no way relieve CONTRACTOR of responsibility for errors or omissions contained in them, nor shall the review operate to waive or modify any provision contained in the Contract Documents. The Architect’s approval of the drawings or schedules shall not relieve CONTRACTOR of its responsibility for deviations from drawings or specifications unless CONTRACTOR has called the Architect’s attention to the deviations, in writing, at the time of submission, and secured the Architect’s written approval.

J. Fabricating dimensions, quantities of material, applicable code requirements, and other contract requirements shall be CONTRACTOR’s responsibility.

K. Within 21 calendar days after receipt of shop drawings, the Architect will return the shop drawings via the PMIS to CONTRACTOR with the Architect’s comments noted on them.

L. If prints of the shop drawings are returned to CONTRACTOR marked "NO EXCEPTIONS TAKEN," formal revision of the drawings will not be required. If the shop drawings are returned to CONTRACTOR marked "MAKE CORRECTIONS NOTED," a formal resubmittal will not be required. If the shop drawings are returned to CONTRACTOR marked "REVISE AND RESUBMIT," CONTRACTOR shall revise the drawings and resubmit via the PMIS. If the shop drawings are returned to CONTRACTOR marked "REJECTED; RESUBMIT," CONTRACTOR shall resubmit the drawings to the Architect.

M. CONTRACTOR shall make a complete and acceptable submittal to the Architect by the second submission of drawings. OWNER shall withhold funds due to CONTRACTOR to cover additional costs of the Architect’s review beyond the second submission and any other costs incurred by OWNER.

N. Fabrication of an item shall not be commenced before the Architect has reviewed and
returned the pertinent shop drawings to CONTRACTOR marked "NO EXCEPTIONS TAKEN," or "MAKE CORRECTIONS NOTED." Revisions indicated on shop drawings shall be considered changes necessary to meet the requirements of the Contract Documents and shall not be taken as the basis of claims for extra work.

O. No work represented by required shop drawings shall be purchased or commenced until the applicable submittal has been approved. The work shall conform to the approved shop drawings and all other requirements of the Contract Documents. CONTRACTOR shall not proceed with any related work which may be affected by the work covered under shop drawings until the applicable shop drawings have been approved, particularly where piping, machinery, equipment, and/or the required arrangements and clearances are involved.

P. CONTRACTOR SHALL HAVE NO CLAIM FOR DAMAGES OR EXTENSION OF TIME DUE TO ANY DELAY RESULTING FROM CONTRACTOR HAVING TO MAKE REQUIRED REVISIONS TO SHOP DRAWINGS UNLESS THE ARCHITECT’S REVIEW OF THE DRAWINGS IS DELAYED BEYOND THE TIME PROVIDED IN THE CONTRACT DOCUMENTS AND CONTRACTOR CAN ESTABLISH THAT THE ARCHITECT’S DELAY IN REVIEW ACTUALLY RESULTED IN A DELAY IN CONTRACTOR’S CONSTRUCTION SCHEDULE. CONTRACTOR SHALL NOT BE ENTITLED TO ANY CLAIM FOR DAMAGES RESULTING FROM DSA REVIEW EXTENDING BEYOND 15 CALENDAR DAYS AFTER SUBMITTAL. HOWEVER, OWNER MAY CONSIDER AN EXTENSION OF TIME DUE TO ANY DELAY CAUSED BY DSA REVIEW.

Q. Within 35 calendar days following award of contract, or a shorter time as circumstances require, CONTRACTOR shall furnish for approval all Shop Drawings and Submittals required in the Specifications, together with catalogs and supporting data required by the Architect. (This provision shall not authorize any extension of time for performance of the work.)

R. CONTRACTOR shall provide submittals electronically in PDF format; ARCHITECT will provide return reviewed copy in PDF format; CONTRACTOR will "print out" hard copies of the reviewed submittals for the contractor’s job site office, the Project Inspector, and as required.

ARTICLE 15 SAMPLES

A. Within 35 calendar days following award of contract, or a shorter time as circumstances require, CONTRACTOR shall furnish for approval all samples required in the Specifications, together with catalogs and supporting data required by the Architect. This provision shall not authorize any extension of time for performance of the work. The Architect shall review the samples, as to conformance with design concept of work and compliance with information given in the Contract Documents, and approve or disapprove them within 10 working days from receipt.

B. Unless specified otherwise, sampling, preparation of samples, and tests shall be in accordance with the latest standards of the American Society for Testing and Materials.

C. Upon demand of the Architect or OWNER, designated samples shall be submitted or tests or examinations and considered before incorporation into the Work. CONTRACTOR shall be solely responsible for delays due to samples not being submitted in time to allow for tests. Acceptance or rejection will be expressed via the PMIS. Work shall be equal to approved samples in every respect. Samples which are of value after testing will remain the property of CONTRACTOR.
D. Work commenced before approval of samples subject to tests or examinations shall be at the sole risk of CONTRACTOR. CONTRACTOR alone shall bear the entire cost of repair, removal, or replacement of work commenced prior to approval of samples subject to tests or examinations.

ARTICLE 16 WORK TO COMPLY WITH APPLICABLE LAWS AND REGULATIONS

A. CONTRACTOR shall give all notices and comply with all laws, ordinances, rules, and regulations relating to the Work required by the Contract Documents.

B. If CONTRACTOR observes that the Drawings and/or Specifications are at variance with any applicable law, ordinance, rule, or regulation, CONTRACTOR shall promptly notify the Architect and PMT via the PMIS in writing, and any changes deemed necessary by the Architect shall be made as provided in the Contract Documents for changes in work. If CONTRACTOR performs any work which CONTRACTOR knows, or through the exercise of reasonable care should have known, to be contrary to any laws, ordinances, rules, or regulations, and fails to notify the Architect and PMT, CONTRACTOR shall bear all arising costs, including without limitation the costs of correction without increase or adjustment to the contract price or the time for performance. Where Plans, Drawings, or Specifications state that materials, processes, or procedures must be approved by the DSA, State Fire Marshall, or other body or agency, CONTRACTOR shall be responsible for satisfying the requirements of those bodies or agencies.

ARTICLE 17 WORK AND MATERIALS

A. Except as otherwise specifically stated in the Contract Documents, CONTRACTOR shall provide and pay for all materials, labor, tools, equipment, water, light, power, transportation, supervision, temporary construction of every kind, and all other services and facilities necessary to perform and complete the Work within the time specified.

B. Unless otherwise specified, all materials shall be new and the best of their respective kinds and grades as noted or specified, and workmanship shall be of good quality.

C. Materials shall be furnished in ample quantities and at times to ensure uninterrupted progress of the work and shall be properly stored and protected. CONTRACTOR shall be solely responsible for any damage or loss by weather, theft, or other causes to materials or work under the Contract Documents. After issuance of the Notice to Proceed by OWNER, CONTRACTOR shall place orders for materials and/or equipment as specified so that delivery may be made without delays to the Work. Upon demand from the PMT, CONTRACTOR shall furnish to the PMT documentary evidence showing that orders have been placed.

D. In the event of failure to comply with the above instructions, OWNER reserves the right to place orders for any materials and/or equipment as it may deem advisable in order that the Work may be completed at the date specified in the Contract Documents, and all expenses incidental to procuring the materials and/or equipment shall be paid for by CONTRACTOR.

E. No material, supplies, or equipment for work under the Contract Documents shall be purchased subject to any chattel mortgage or under a conditional sale or other agreement by which an interest in all or any part is retained by the seller or supplier. CONTRACTOR warrants good title to all material, supplies, and equipment installed or incorporated in the Work, and upon
completion of all work agrees to surrender the premises to OWNER, together with all improvements and appurtenances constructed or placed by CONTRACTOR, free from any claims, liens, or charges. CONTRACTOR further agrees that neither CONTRACTOR nor any person, firm, or corporation furnishing any materials or labor for any work covered by the Contract Documents shall have any right to a lien upon the premises or any improvement or appurtenance, except that CONTRACTOR may install metering devices or other equipment of utility companies or political subdivisions, title to which is commonly retained by the utility company or political subdivision. In the event of the installation of any metering device or equipment, CONTRACTOR shall advise OWNER as to its owner. Nothing contained in this article however shall defeat or impair the legal right of persons furnishing material or labor to look to funds due and owing CONTRACTOR for payment. This provision shall be inserted in all subcontracts and material contracts and notice of its provisions shall be given to all persons furnishing material for work when no formal contract is entered into for such material.

F. Title to new materials and/or equipment, and attendant liability for their protection and safety, shall remain in CONTRACTOR until incorporated in the Work and accepted by OWNER. No part of these materials and/or equipment shall be removed from their place of storage except for immediate installation in the Work, and CONTRACTOR shall keep an accurate inventory of all materials and/or equipment in a manner satisfactory to OWNER or its authorized representative.

G. Price, fitness, and quality being equal with regard to supplies, OWNER may prefer supplies grown, manufactured, or produced in California. OWNER may next prefer supplies partially manufactured, grown, or produced in California provided the bids of suppliers or the prices quoted by them do not exceed by more than five percent the lowest bids/prices quoted by out-of-state suppliers, the major portion of the manufacture of the supplies is not done outside of California, and the public good will be served. (Government Code Sections 4330-4334)

ARTICLE 18 CONTRACTOR'S SUPERVISION, PROSECUTION, AND PROGRESS

A. Unless personally present on premises where the work is being done, CONTRACTOR shall maintain competent project supervision at all times during working hours, which includes but is not limited to a Project Manager and all additional personnel necessary to maintain progress of the Project within the approved contract schedule satisfactory to the PMT. The Project Manager shall not be changed except with the written consent of the PMT. The Project Manager shall represent CONTRACTOR in its absence and all directions given to the Project Manager shall be binding on CONTRACTOR.

B. Unless personally present on premises where the work is being done, CONTRACTOR shall maintain a competent Superintendent on the work site at all times, satisfactory to the PMT. The Superintendent shall not be changed except with the written consent of the PMT. The Superintendent shall represent CONTRACTOR in its absence and all directions given to the Superintendent shall be binding on CONTRACTOR.

C. Before commencing the Work, CONTRACTOR shall give written notice to OWNER and the PMT of the name, qualifications, and experience of CONTRACTOR’s proposed Project Manager and Superintendent. If either the Project Manager or Superintendent is found unsatisfactory by OWNER, CONTRACTOR shall replace that person with one acceptable to the OWNER.
D. CONTRACTOR shall supervise and direct the work competently and efficiently, devoting such attention and applying such skills as may be necessary to perform the Work in accordance with the Contract Documents.

E. Before commencing the Work, CONTRACTOR shall verify all grade lines, levels, and dimensions indicated on the Drawings and shall report any apparent error or inconsistencies to the Architect and PMT via the PMIS before commencing work. CONTRACTOR shall not proceed until reported apparent errors and inconsistencies are corrected or otherwise resolved by the Architect, PMT and OWNER.

F. CONTRACTOR shall establish and maintain all construction grades, lines, and bench marks, and be responsible for their accuracy and protection.

G. CONTRACTOR represents itself to OWNER as a skilled, knowledgeable, and experienced CONTRACTOR who will or has carefully studied and compared the Contract Documents with each other, and CONTRACTOR further represents it has or shall at once report to the Architect and PMT via the PMIS any errors, inconsistencies, or omissions discovered in them. CONTRACTOR shall be liable to OWNER for damage resulting from errors, inconsistencies, or omissions in the Contract Documents that CONTRACTOR either:

   1. Recognized and knowingly failed to report; or

   2. Should have recognized, and which a similarly skilled, knowledgeable, and experienced contractor would have discovered, which CONTRACTOR negligently failed to recognize and report.

H. CONTRACTOR shall verify all indicated dimensions before ordering materials or equipment, or before performing work. CONTRACTOR shall take field measurements, verify field conditions, and carefully compare the field measurements and conditions and other information known to CONTRACTOR with the Contract Documents before commencing work. Errors, inconsistencies, or omissions discovered shall be reported to OWNER at once. Upon commencement of any item of work, CONTRACTOR shall be responsible for dimensions related to the item of work and shall make any corrections necessary to make work properly fit at no additional cost to OWNER. This responsibility for verification of dimensions is a non-delegable duty and may not be shifted to subcontractors or agents.

I. Omissions from the Plans, drawings, or Specifications, or the mis-description of details of work which are manifestly necessary to carry out the intent of the Plans, drawings, and Specifications, or which are customarily performed, shall not relieve CONTRACTOR from performing such omitted or mis-described work, but they shall be performed as if fully and correctly set forth and described in the Plans, drawings, and Specifications.

J. CONTRACTOR shall be solely responsible for the means, methods, techniques, sequences, and procedures of construction. CONTRACTOR shall be responsible to see that the finished work complies accurately and completely with the Contract Documents.

**ARTICLE 19  SUBSTITUTIONS**

A. CONTRACTOR shall follow all instructions and requirements for substitutions set forth in the Instructions to Bidders and in this article.
B. OWNER desires that whenever possible all substitution requests be resolved prior to contract award. For that reason, no substitution requests, whether of “equal” materials, process, service, equipment, or otherwise, may be made after the bid date except by the express written permission of OWNER and on such terms as OWNER may require, or in the case of an emergency as where a specified material, process, service, equipment or other item has become unavailable through no fault of CONTRACTOR.

C. As to any emergency substitution request, CONTRACTOR shall timely submit the request, together with substantiating data, including substitution warranties, in order to prevent delays arising from the substitution request.

D. With respect to all proposed substitutions:

1. Every substitution request shall be made in the approved format via the PMIS and shall include all substantiating data.

2. CONTRACTOR shall furnish with its substitution request all drawings, Specifications, samples, performance data, calculations, and other information as may be required to assist the Architect, PMT and OWNER in determining whether the proposed substitution is acceptable, including but not limited to the following:

   a. Identify product by Specifications section and article numbers; provide manufacturer’s name and address, trade name of product, and model or catalog number; list fabricators and suppliers as appropriate.

   b. Attach product data as required by Specifications.

   c. List similar projects using product, dates of installation, and names of Architect/Engineer and owner.

   d. Give itemized comparison of proposed substitution with specified product, listing variations and reference to Specifications section and article numbers.

   e. Give quality and performance comparison between proposed substitution and specified product.

   f. Give cost data comparing proposed substitution with specified product and amount of net change to contract sum.

   g. Identify any required license fees or royalties.

   h. List availability of maintenance services and replacement materials.

   i. State the effect of the substitution on the construction schedule, and the effect of any changes required in other work or products; include a document waiving rights to additional payment or time that may become necessary because of the failure of the substitution to perform adequately.

3. OWNER is not responsible for locating or securing any information which is not included in any substantiating data.
4. The proposed substitution must be, in the opinion of OWNER, substantially equal or better in every respect to what is specified. The burden of proof as to the quality or suitability of proposed substitutions shall be borne by CONTRACTOR.

5. With the assistance of the Architect and the PMT, OWNER shall be the sole judge as to the quality and suitability of proposed substituted items, and decisions of the OWNER shall be final and conclusive.

6. All substitutions shall be submitted with a substitution warranty. Any substitution requests submitted without the warranty will not be considered, but will be returned to CONTRACTOR without review or evaluation. If required by OWNER, CONTRACTOR shall provide an extended warranty for the requested substitution.

7. No extension of time shall be granted if the extension request arises from a request for substitution, whether by reason of delay in making the request, delay in OWNER's approval of the request, delay in obtaining other governmental approvals, delay in coordination of substitutions into or with other work or equipment, delay in obtaining the substituted items, increased time of installation or performance, or for any other reason.

8. Once any part or all of a substitution request has been denied, it is considered always denied.

9. A substitution request shall be submitted separately from any other submittal and shall be clearly marked as a “request for substitution.”

10. If the substitution is accepted, CONTRACTOR shall bear all costs and be solely and directly responsible for fitting accepted substitute materials and equipment into the available space in a manner acceptable to the Architect and OWNER, and for the proper operation of the substituted equipment with other equipment with which it may be associated. In addition, CONTRACTOR shall acknowledge in writing on CONTRACTOR’s letterhead, that CONTRACTOR accepts complete responsibility for additional costs required for modifications to building or other materials and equipment and additional coordination of work.

11. Any additional time, including Architect review time, and any additional coordination, inspection, materials, equipment, labor, tools, warranty extension, or other items necessary to either accomplish a substitution or arising as a result of a substitution request will be the sole responsibility of and at the sole expense of CONTRACTOR, who will reimburse OWNER for review or redesign services associated with approval by the Architect and obtaining all required approvals by other agencies.

12. CONTRACTOR shall also be responsible for meeting all code requirements whether local, city, county, state, federal, or other.

F. If the substitution requested by CONTRACTOR is not substantially equal or better in every respect to that specified, in the opinion of the OWNER, CONTRACTOR shall provide and/or perform as specified.
G. In the event CONTRACTOR furnishes a material, process, service, or equipment more expensive than that specified, the difference in cost of such material, process, service, or equipment furnished shall be borne by CONTRACTOR. Any difference in cost between an approved substitution, which is lower in cost than the originally specified item shall be refunded by CONTRACTOR to OWNER.

H. Any engineering, design, or approval agencies' fees required to make adjustments in material or work of all trades directly or indirectly affected by the approved substitution shall be borne entirely by CONTRACTOR. If a substitution is approved, any additional time required to obtain shop drawings, order materials, make modifications, perform testing, or whatever else is necessary to make the substitution function properly in place of the originally specified item shall be borne solely by CONTRACTOR. It will also be CONTRACTOR's responsibility to acquire and install the substituted item in the time frame allowed under the Contract Documents. No time extension need be granted to CONTRACTOR for any substitution, except as OWNER in its sole discretion may deem appropriate.

ARTICLE 20 PROTECTION OF WORK AND PROPERTY

A. CONTRACTOR shall be responsible for all damages to persons or property which occur as a result of CONTRACTOR's fault or negligence in connection with performance under the Contract Documents, and for the proper care and protection of all materials delivered and work performed until completion and final acceptance by OWNER. With the exception of damage to the Work caused by "acts of God," as defined in Public Contract Code 7105, CONTRACTOR assumes the risk for damage or destruction of any or all work performed under the Contract Documents. CONTRACTOR shall adequately protect adjacent property from settlement or loss of lateral support as provided by law and this article.

B. CONTRACTOR shall take, and require subcontractors to take, all necessary precautions for safety of workers and shall comply with all applicable federal, state, local, and other safety laws, standards, orders, rules, regulations, and building codes to prevent accidents or injury to persons on, about, or adjacent to the work site and to provide a safe and healthful place of employment. CONTRACTOR shall furnish, erect, and properly maintain at all times, as directed by OWNER, PMT or the Architect, or required by conditions and progress of work, all necessary safety devices, safeguards, construction canopies, signs, audible devices for protection of the blind, safety rails, belts and nets, barriers, lights, and watchmen for protection of workers and the public, and shall post danger signs warning against hazards created by such features in the course of construction. CONTRACTOR shall designate a responsible employee whose duty shall be to post information regarding protection and obligations of workers and other notices required under occupational safety and health laws, to comply with reporting and other occupational safety requirements, and to protect the life, safety, and health of workers. The name and position of the person so designated shall be reported in writing to OWNER by CONTRACTOR. CONTRACTOR shall correct any violation of safety laws, standards, orders, rules, or regulations. Upon issuance of a citation or notice of violation by the California Division of Occupational Safety and Health, the violation shall be corrected immediately by CONTRACTOR at CONTRACTOR's expense.

C. In an emergency affecting safety of life, work, or adjoining property, CONTRACTOR is permitted to act at its discretion without special instruction or authorization from the Architect, PMT or OWNER to prevent any threatened loss or injury, and CONTRACTOR shall act if authorized or instructed by the Architect, PMT or OWNER. Any compensation claimed by CONTRACTOR for emergency work shall be determined according to the Contract Documents.
D. CONTRACTOR shall (unless waived by OWNER in writing):

1. Provide heat, covering, and enclosures necessary to protect all work, materials, equipment, appliances, and tools against damage by weather conditions;

2. Take adequate precautions to protect existing sidewalks, curbs, pavements, utilities, adjoining property, and structures, and avoid damage to them, and repair any damage caused by construction operations;

3. When performing new construction on existing sites, become informed and take into specific account the maturity of the students on the site, and perform work which may interfere with college routine before or after college hours; enclose the work area with a substantial barricade and arrange work to cause a minimum of inconvenience and danger to students and staff in their regular college activities;

4. Provide substantial barricades around any shrubs or trees to be preserved;

5. Deliver materials to the building area over the route designated by the PMT;

6. Take preventative measures to eliminate excessive dust;

7. Confine apparatus, storage of materials, and the operations of its workers within limits indicated by law, ordinances, permits, or directions of the PMT and not unreasonably encumber the premises with materials;

8. Enforce all instructions of OWNER, PMT, and the ARCHITECT regarding signs, advertising, fires, danger signals, barricades, and smoking, and require that all persons employed on the Work comply with all regulations while on the construction site;

9. Exercise reasonable care to prevent disturbing or covering any survey markers, monuments, or other devices marking property boundaries or corners; if markers are disturbed, they shall be replaced by an approved civil engineer at no cost to OWNER.

ARTICLE 21 USE OF ASBESTOS OR LEAD MATERIALS/PRODUCTS

A. CONTRACTOR shall not use any asbestos or lead containing products or materials in performing the work under the Contract Documents. Upon completion of the Project, CONTRACTOR shall certify in writing to OWNER that no asbestos or lead containing materials or products were used by CONTRACTOR or any subcontractor in performing the work required by the Contract Documents.

B. Should asbestos containing materials be installed by CONTRACTOR in violation of this certification, or if removal of asbestos containing materials is otherwise a part of the Project, decontaminations and removals will meet the following criteria:

1. Decontamination and removal of work found to contain asbestos or work installed with asbestos containing equipment shall be done only under the supervision of a qualified consultant, knowledgeable in the field of asbestos abatement and accredited by Cal-OSHA.
2. Any asbestos removal contractor shall be a Cal-OSHA accredited contractor qualified in the removal of asbestos and shall be chosen and approved by the asbestos consultant who shall have sole discretion and final determination in this matter.

3. The asbestos consultant shall be chosen and approved by OWNER who shall have sole discretion and final determination in this matter.

4. The work will not be accepted until asbestos contamination is reduced to levels deemed acceptable by the asbestos consultant.

C. Cost of all asbestos removal, including but not limited to the cost of an asbestos removal contractor, the cost of the asbestos consultant, analytical and laboratory fees, time delays, and additional costs as may be incurred by OWNER shall be borne entirely by CONTRACTOR.

D. Interface of work for the Project with work containing asbestos shall be executed by CONTRACTOR at CONTRACTOR’s risk and at CONTRACTOR’s discretion with full knowledge of the currently accepted standards, hazards, risks, and liabilities associated with asbestos work and asbestos containing materials. By execution of the Construction Agreement, CONTRACTOR acknowledges the above and agrees to hold harmless OWNER, its governing board, or other governing body, employees, agents, the PMT and the Architect and assigns for all asbestos liability which may be associated with this work. CONTRACTOR further agrees to instruct CONTRACTOR’s employees with respect to the above standards, hazards, risks, and liabilities.

E. Should lead containing materials be installed by CONTRACTOR in violation of this certification, or if removal of lead containing materials is part of the Project, decontaminations and removals will meet the criteria approved by OWNER.

F. The cost of all removals or decontaminations resulting from the installation of materials in violation of this certification shall be at the sole expense of CONTRACTOR.

ARTICLE 22 LAYOUT AND FIELD ENGINEERING

All field engineering required for laying out this Work and establishing grades for earthwork operations shall be furnished by CONTRACTOR at its expense. The work shall be done by a qualified civil engineer approved by the PMT. “As-Built” drawings of site development and utilities’ locations and inverts shall be prepared by an approved civil engineer.

ARTICLE 23 UTILITIES

A. All utilities, including but not limited to electricity, water, gas, and telephone used on the Work, shall be furnished and paid for by CONTRACTOR. CONTRACTOR shall furnish and install necessary temporary distribution systems, including meters if necessary, from distribution points to points on the site where the utility is necessary to perform the work. Upon completion of the Work, CONTRACTOR shall remove all temporary distribution systems.

B. If this Project is for an addition to an existing facility, CONTRACTOR may use existing OWNER utilities, with the written permission of OWNER, by making prearranged payments to OWNER for utilities used by CONTRACTOR for construction.
ARTICLE 24 UTILITIES: REMOVAL, RESTORATION

A. Pursuant to Government Code section 4215, OWNER assumes the responsibility for removal, relocation, and protection of utilities located on the construction site at the time of commencement of construction with respect to any main or trunkline utility facilities which are not identified in the Plans and Specifications. CONTRACTOR shall not be assessed any delay in completion of the Project caused by OWNER’s failure to provide for removal or relocation of utility facilities. OWNER shall compensate CONTRACTOR for the costs of locating, repairing damage not due to CONTRACTOR’s failure to exercise reasonable care, and removing or relocating any utility facilities not indicated in the Plans and Specifications with reasonable accuracy, and for equipment necessarily idle during the work, using the provisions of the Contract Documents on changes in the Work.

B. This article shall not be construed to preclude assessment against CONTRACTOR for any other delays in completion of the Work. Nothing in this article shall be deemed to require OWNER to indicate the presence of existing service laterals or appurtenances whenever the presence of those utilities on the construction site can be inferred from the presence of other visible facilities, such as buildings or meter junction boxes on or adjacent to the construction site.

C. If while performing work under the Contract Documents, CONTRACTOR discovers utility facilities not identified by OWNER in the contract Plans or Specifications, CONTRACTOR shall immediately notify OWNER and the utility in writing.

D. As part of the work to be performed, CONTRACTOR shall provide the notices and proceed in accordance with Government Code Sections 4216.2, 4216.3, and 4216.4, and pay all fees charged pursuant to Government Code Section 4216, et seq.

ARTICLE 25 SANITARY FACILITIES

CONTRACTOR shall provide temporary sanitary toilet facilities as required by law and additional facilities as directed by the Project Inspector for the use of all workers. The facilities shall be maintained in a sanitary condition and left at the site until removal is directed by the Project Inspector. Use of toilet facilities contained in the Work under construction shall not be permitted except with the approval of the Project Inspector.

ARTICLE 26 LABOR—FIRST AID

CONTRACTOR shall maintain emergency first aid treatment on the Project for all workers of CONTRACTOR or any subcontractors on the Project, and shall ensure compliance with the Federal Occupational Safety and Health Act of 1970 (29 U.S.C.A., Section 651 et seq.).

ARTICLE 27 CHANGES AND EXTRA WORK

A. As used in this article, the following definitions shall apply:

1. "Labor" means any amount(s) paid directly to non-supervisory workers (up to and including general foreman) in the form of employee wages and benefits in order to perform the Work. These costs shall include documented payroll cost (wages, payroll taxes, fringe benefits, workers compensation) and general liability insurance as submitted and approved by OWNER.
2. “Material” means all products, equipment, and devices that are physically incorporated into the work to be performed. Any costs or equipment, facilities, or services not physically incorporated in the work to be performed but necessary for its completion shall be considered "overhead." Cash or trade discounts available to the purchaser shall be credited to OWNER. Material costs secured by other than direct purchase and billing will be the price paid to the actual supplier as determined by OWNER. Markup will not be allowed. If cost of materials is deemed excessive, the price will be determined to be the lowest current wholesale price delivered to the site, less cash or trade discount.

3. "Equipment" costs shall include transportation and setup costs, if CONTRACTOR can substantiate that the Work could not have been performed economically with equipment already at the site. Rental costs shall not exceed rates set forth in the then-current “Rental Rate Blue Book,” published by Dataquest, Inc., Palo Alto, California, as adjusted to this region. Owned equipment costs shall not exceed rates set forth in the then-current “Cost Reference Guide for Construction Equipment,” published by Dataquest. Hours of usage must be documented by CONTRACTOR in order to be the basis for equipment utilization charges for Change Orders. CONTRACTOR will not be allowed to charge for idle equipment.

4. "Overhead" means any necessary costs and expenses incurred in the performance of the Work excluding “labor,” “materials,” and “equipment” as defined above.

B. Without invalidating the Contract Documents, OWNER may order extra work or make changes by altering, adding to, or deducting from the Work, and the contract sum shall be adjusted accordingly. All the work shall be subject to the conditions of the Contract Documents, except that any claim for extension of time caused by changes shall be adjusted at the time of ordering the change, with adjustments to time being made after CONTRACTOR has justified, through documentation, the impact on the critical path of the Project.

C. In giving instructions, the PMT shall have authority to make minor changes in the Work not involving a change in cost and not inconsistent with purposes of the Project, subject to DSA approval. If so authorized by OWNER, PMT or other OWNER's Representative, if one has been identified, may authorize changes in work involving a change in cost that does not exceed $15,000. Otherwise, except in an emergency endangering life or property, no extra work or change shall be performed unless pursuant to a written order from OWNER, and no claim for any addition to the contract amount or time shall be valid unless by written order of OWNER. A Change Order will not be officially approved until ratified by OWNER’s Board of Trustees or other governing body.

D. If the PMT determines that the work required to be done constitutes extra work outside the scope of the Contract Documents, the PMT shall send a request for a detailed proposal to CONTRACTOR. CONTRACTOR will respond with a detailed proposal within five calendar days of receipt of the request for proposal. If the work is to be performed by a subcontractor, CONTRACTOR’s proposal must include a bid from the subcontractor.

E. If the PMT determines the work required does not constitute extra work, or work for which CONTRACTOR may recover additional compensation, the PMT shall so notify CONTRACTOR. If CONTRACTOR is not in agreement with the determination by the PMT, CONTRACTOR shall immediately give notice of any claim as provided in the Contract Documents. CONTRACTOR
shall perform the required work in timely fashion.

F. At the discretion of OWNER, the value of any extra work, change, or deduction shall be determined in one or more of the following ways:

1. By acceptable lump sum proposal from CONTRACTOR, a total sum for the changed work may be mutually determined by OWNER and CONTRACTOR. CONTRACTOR shall furnish a breakdown of the proposed lump sum cost satisfactory to OWNER, which shall be full and final compensation for the change, including time adjustment.

2. By contract unit prices contained in CONTRACTOR’s original bid and incorporated in the Contract Documents, or fixed by subsequent agreement between OWNER and CONTRACTOR. Where payment for Change Orders is based on unit prices stipulated in CONTRACTOR’s bid, those unit prices shall constitute the total equitable adjustment due for the change. If a change is ordered in an item or work covered by a contract unit price, and the change does not involve a substantial change in the character of the work from that shown on the Plans or included in the Specifications, an adjustment in payment will be made based upon the increase or decrease in quantity and the contract unit price. In the case of such an increase or decrease in a major bid Item, the use of this basis for the adjustment of payment will be limited to that portion of the change which, together with all previous changes to that item, is not in excess of 25 percent of the total cost of such item based on the original quantity and contract unit price. If a change is ordered in an item of work covered by a contract unit price, and the change does involve a substantial change in the character of the work from that shown on the Plans or included in Specifications, an adjustment in payment will be made in accordance with other sections of this article. Should any contract item be deleted in its entirety, payment will be made only for actual costs incurred prior to notification of such deletion.

3. Stipulated contract unit prices are those established by OWNER in the Contract Documents, as distinguished from contract unit prices submitted by CONTRACTOR, and may be used for the adjustment of contract changes. Whether set forth in the Contract Documents or subsequently agreed upon, all contract unit prices shall include overhead, profit, and increased premium on the Surety Bonds.

4. By cost of labor, material, equipment, and subcontract, plus a percentage for overhead and profit. If the value is determined by this method the following requirements shall apply:

a. Daily reports by CONTRACTOR, as follows:

   (1) General. At the close of each working day, CONTRACTOR shall submit a daily report to the PMT in the approved format via the PMIS, together with applicable delivery tickets listing all labor, materials, and equipment involved for that day, 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 PMT and CONTRACTOR. In the event of disagreement, pertinent notes shall be entered by each party to explain points which cannot be resolved immediately. Reports by subcontractors or others shall be submitted...
through CONTRACTOR.

(2) **Labor.** The report shall show names of workers, classifications, and hours worked and hourly rate. Project supervision expenses, including for foremen and above, are not allowed.

(3) **Materials.** The report shall describe and list quantities of materials used and unit cost.

(4) **Equipment.** The report shall show the type of equipment, size, identification number, and hours of operation, including loading and transportation, if applicable, and hourly/daily costs.

(5) **Other Services and Expenditures.** Other services and expenditures shall be described in such detail as OWNER may require.

b. **Basis for Establishing Costs**

(1) **Labor.** The costs of labor will be the actual cost for wages prevailing locally for each craft classification or type of worker 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 labor classifications which would increase the extra work cost will not be permitted unless 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.

(2) **Materials.** The cost of materials reported shall be at invoice or lowest current price at which such materials are locally available and delivered to the work site in the quantities involved, plus sales tax, freight, and delivery. OWNER reserves the right to approve materials and sources of supply, or to supply materials to CONTRACTOR if necessary for the progress of the work. No markup shall be applied to any material provided by OWNER.

(3) **Tool and Equipment Rental.** No payment will be made for the use of tools which have a replacement value of $500 or less or where an invoice is not provided. Regardless of ownership, the rates to be used in determining equipment rental costs shall not exceed listed rates prevailing locally at equipment rental sources 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 OWNER than holding it at the work site, it shall be
returned, unless CONTRACTOR elects to keep it at the work site at no expense to OWNER. All equipment shall be acceptable to the PMT in good working condition, and suitable for the purpose for which it is to be used. Manufacturer's ratings and manufacturer's approved modifications shall be used to classify equipment and it shall be powered by a unit of at least the minimum rating recommended by the manufacturer.

(4) **Other Items.** OWNER may authorize other items which may be required on the extra work. These 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 CONTRACTOR or any of the Subcontractors. Detailed invoices covering all such items shall be submitted with the request for payment.

(5) **Invoices.** Vendors' invoices for material, equipment rental, and other expenditures shall be submitted with the request for payment. If the request for payment is not substantiated by invoices or other documentation, OWNER may establish the cost of the item involved at the lowest price which was current at the time of the report.

c. The following format shall be used by OWNER and CONTRACTOR as applicable to communicate proposed additions and deductions to the Contract Documents.

<table>
<thead>
<tr>
<th>EXTRA CREDIT</th>
</tr>
</thead>
<tbody>
<tr>
<td>(i) Material (attached itemized quantity and unit cost plus sales tax)</td>
</tr>
<tr>
<td>(ii) Labor (attached itemized hours and rates)</td>
</tr>
<tr>
<td>(iii) Subtotal</td>
</tr>
<tr>
<td>(iv) If Subcontractor performed work, add Subcontractor's overhead and profit to portions performed by it, not to exceed 10% of Item (iii) above</td>
</tr>
<tr>
<td>(v) Subtotal</td>
</tr>
<tr>
<td>(vi) CONTRACTOR's Overhead and Profit, including any increased bond costs, not to exceed 10% of Item (v)</td>
</tr>
<tr>
<td>(vii) Total</td>
</tr>
</tbody>
</table>

5. **IT IS EXPRESSLY UNDERSTOOD THAT THE VALUE OF SUCH EXTRA WORK OR CHANGES AS DETERMINED BY ANY OF THESE METHODS EXPRESSLY INCLUDES ANY AND ALL OF CONTRACTOR'S COSTS AND EXPENSES, BOTH DIRECT AND INDIRECT, RESULTING FROM DELAYS OR ADDITIONAL TIME REQUIRED ON THE PROJECT, OR RESULTING FROM ACCELERATED WORK TO AVOID DELAYS TO THE PROJECT.**
G. For changes that increase the contract price, CONTRACTOR may include amounts for overhead and profit. CONTRACTOR’s overhead (general and administrative) and profit shall include, but not be limited to additional bond costs, additional job site facilities costs, additional home and field office costs, additional administrative costs, additional cleaning, and additional project supervision costs (which includes but is not limited to a Project Manager and any and all additional personnel necessary to maintain the project progress within the approved contract schedule).

H. CONTRACTOR’S overhead, profit, and additional bond costs on the cost of work performed by CONTRACTOR shall be a total sum not exceeding 10 percent of the cost of work.

I. CONTRACTOR’S overhead, profit, and additional bond costs on the cost of work performed by Subcontractors of all tiers shall be a total sum not exceeding 10 percent of those costs.

J. Subcontractors’ (all tiers) overhead and profit on the cost of work performed by Subcontractor shall be a total sum not exceeding 10 percent of the cost of labor, materials, rentals, etc.

K. Overhead and profit shall not be applied to taxes, delivery charges, and insurance by CONTRACTOR or its subcontractors or sub-subcontractors.

L. Before CONTRACTOR is authorized to proceed with extra work or changes on the basis set forth in this Article, OWNER and CONTRACTOR shall be in complete agreement on what the term "costs" shall include and the percentage amount of fixed fee CONTRACTOR is to charge.

M. If CONTRACTOR should claim that any instruction, request, drawing, specification, action, condition, omission, default, or other situation constitutes a change, extra work, or otherwise obligates OWNER to pay additional compensation to CONTRACTOR or to grant an extension of time, or constitutes a waiver of any provision in the Contract Documents, CONTRACTOR shall notify OWNER in writing of such claim within five calendar days from the date CONTRACTOR has actual or constructive notice of the factual basis supporting the claim. The notice shall state the factual basis for the claim and cite in detail the Contract Documents (including plans and specifications) upon which the claim is based. CONTRACTOR's failure to notify OWNER within the five-day period shall be deemed a waiver and relinquishment of such a claim. If the notice is given within the specified time, the procedure for its consideration shall be as stated in these General Conditions. In the event of failure to agree, the matter shall be treated as a claim following the claims procedures in the Contract Documents.

N. Costs which shall not be paid in Change Orders under the Contract Documents include but are not limited to interest costs of any type, claim preparation or filing costs, costs in preparing or reviewing proposed change orders or proposals, CQR's, ASI's, etc., lost revenue, lost profit, lost income or earnings, rescheduling costs, costs of idled equipment, lost earnings or interest on unpaid retainage, claims consulting costs, costs of corporate officers or staff visiting the site, fluctuation of foreign currency conversion or exchange rate costs, or loss of other business.

O. Notwithstanding any other provision in the Contract Documents, the adjustment in the contract price, if any, and the adjustment in the contract time, if any, set out in a change order shall constitute the entire compensation and/or adjustment in the contract time due
CONTRACTOR arising out of the change in the work covered by the change order, including any extensions of time, unless otherwise expressly stated in the change order. The amount of any compensation due CONTRACTOR shall be calculated pursuant to this Article. The compensation shall not include any additional charges not set forth in this Article and shall not include delay damages due to processing a change order or refusal to sign a change order, or any indirect, consequential, or incidental costs, including any project management costs, extended home office and field office overhead, administrative costs, or profit except as such matters may be authorized under this Article.

P. In furtherance of the intent to settle all change orders fully and finally at the issuance date of the change order, the following shall be expressly incorporated in writing and deemed incorporated in all change orders:

THE COMPENSATION (TIME AND COST) SET FORTH IN THIS CHANGE ORDER COMPRISSES THE TOTAL COMPENSATION DUE CONTRACTOR FOR THE CHANGE DEFINED IN THE CHANGE ORDER, INCLUDING IMPACT ON UNCHANGED WORK. ACCEPTANCE OF THIS CHANGE ORDER CONSTITUTES A FULL AND COMPLETE ACCORD AND SATISFACTION OF ANY AND ALL CLAIMS BY CONTRACTOR ARISING OUT OF OR RELATING TO THE CHANGE ORDER, INCLUDING BUT NOT LIMITED TO CLAIMS FOR CONTRACT BALANCE AND RETENTION, TIME, EXTENDED FIELD OR HOME OFFICE, OR OTHER OVERHEAD, ALL ACCELERATION, IMPACT, DISRUPTION AND DELAY DAMAGES, ANY AND ALL OTHER DIRECT AND/OR INDIRECT COSTS, CLAIMS BY SUBCONTRACTORS AND SUPPLIERS, AND ANY AND ALL OTHER CLAIMS AGAINST OWNER FOR TIME OR MONEY, FROM ANY SOURCE AND UNDER ANY LEGAL THEORY WHATSOEVER, AS TO THE SUBJECT OF THIS CHANGE ORDER. NO SIGNATURE UNDER PROTEST OR ACCOMPANIED BY RESERVATION OF RIGHTS OR PROTEST LANGUAGE, OR ANY OTHER ATTEMPTS TO AVOID SUCH WAIVER SHALL BE OF ANY FORCE OR EFFECT WHATSOEVER. NO ADDITIONS OR DELETIONS TO THIS CHANGE ORDER SHALL BE ALLOWED, EXCEPT WITH WRITTEN PERMISSION OF OWNER.

Q. Within 10 days of the notice to proceed, CONTRACTOR shall submit a detailed list of the field office overhead cost components which are time related and which represent costs incurred as a direct result of time extensions. No allowance for overhead costs and no profit allowance will be allowed on the extended daily field overhead cost component of the change Order. The deviation of an extended home office overhead rate and its application to contract time extensions shall not be allowed.

ARTICLE 28 CORRECTION OF WORK BEFORE FINAL PAYMENT

A. CONTRACTOR shall promptly remove from the premises all work identified by OWNER as failing to conform to the Contract Documents, whether incorporated or not. CONTRACTOR shall promptly replace and repair its own work to comply with the Contract Documents, without additional expense to OWNER, and shall bear the expense of making good all work of other contractors destroyed or damaged by that removal or replacement, including compensation for the Architect’s additional services.

B. If CONTRACTOR does not remove work within a reasonable time following written notification, OWNER may remove and store the material at CONTRACTOR’S expense. If CONTRACTOR does not pay the expenses of removal within 10 days, OWNER may sell the materials at auction or private sale upon 10 days’ written notice, and shall account for any net
proceeds after deducting all costs and expenses that should have been borne by CONTRACTOR.

ARTICLE 29 DEDUCTIONS FOR UNCORRECTED WORK

A. If CONTRACTOR defaults or neglects to carry out the Work in accordance with the Contract Documents, or fails to perform any provision of the Contract Documents, after 10 days’ written notice to CONTRACTOR, OWNER may make good such deficiencies without prejudice to any other remedy it may have.

B. OWNER shall reduce the total contract price by the cost of making good such deficiencies.

C. If OWNER deems it inexpedient to correct work not performed in compliance with the Contract Documents, an equitable deduction from the contract price shall be made.

ARTICLE 30 CLEANING UP

A. CONTRACTOR shall at all times keep the work site free from debris such as waste, rubbish, and excess materials and equipment caused by this Work. CONTRACTOR shall not leave debris under, in, or about the work site, but shall promptly remove all items.

B. Upon completion of the Work, CONTRACTOR shall clean the interior and exterior of each building, including fixtures, equipment, walls, floors, ceilings, roofs, window sills and ledges, horizontal projections, and any areas where debris has collected. CONTRACTOR shall clean and polish all glass, plumbing fixtures, and finish hardware and similar finish surfaces and equipment, and remove temporary fencing, barricades, planking, sanitary facilities, and similar temporary facilities from the site.

C. If CONTRACTOR fails to clean up at the completion of the Work, OWNER may do so and the cost for such cleanup shall be charged back to CONTRACTOR and may be deducted from future progress or final payments.

D. CONTRACTOR shall not include cleaning as an additional line item for change order payments. Cleaning is included in the overhead expenses included in the CONTRACTOR’s and/or Subcontractor’s overhead and profit percentage.

ARTICLE 31 ACCESS TO WORK

OWNER and its representatives shall at all times have access to the Work wherever it is in preparation or progress. CONTRACTOR shall provide safe and proper facilities for access so OWNER’s representatives may perform their functions under the Contract Documents.

ARTICLE 32 GUARANTEE

A. CONTRACTOR warrants that the Work, including any equipment furnished by CONTRACTOR, shall be:

1. Free from defects in workmanship and material;
2. Free from defects in any design performed by CONTRACTOR;
3. New, and conform and perform to the requirements stated in the Specifications, and where detail requirements are not so stated, shall conform to applicable industry standards; and

4. Suitable for the use stated in the Specifications.

B. The warranty period for discovery of defective work shall commence on the date stamped on the Notice of Completion to verify recording with the County, and shall continue for the period set forth in the Specifications or for one year if not so specified. If during the warranty period the Work is not available for use due to defective work, such time of unavailability shall not be counted as part of the warranty period. The warranty period for corrected defective work shall continue for a duration equivalent to the original warranty period.

C. OWNER shall give CONTRACTOR prompt written notice after discovery of any defective work. CONTRACTOR shall correct any such defective work, as well as any damage to any other part of the Work resulting from such defective work, and provide repair, replacement, or reimbursement, at its sole expense, in a manner approved by OWNER and with due diligence and dispatch as required to make the Work ready for use by OWNER, ordinary wear and tear, unusual abuse, or neglect excepted. Such corrections shall include but not be limited to any necessary adjustments, modifications, changes of design (unless of OWNER's design), removal, repair, replacement, or reinstallation, and shall include all necessary parts, materials, tools, equipment, transportation charges, and labor as may be necessary, and cost of removal. Replacement shall be performed at a time and in such a manner so as to minimize the disruption to OWNER's use of the Work.

D. In the event CONTRACTOR or Surety fails to commence and pursue with diligence any replacements or repairs within one week after being notified in writing, OWNER is authorized to proceed to have any defects repaired at the expense of CONTRACTOR and Surety, and CONTRACTOR and Surety agree to pay the costs and charges immediately on demand.

E. If defective work creates a dangerous condition, in the opinion of OWNER, or requires immediate correction or attention to prevent further loss to OWNER or to prevent interruption or operations of OWNER, OWNER shall attempt to give the notice required by this Article. If CONTRACTOR or Surety cannot be contacted or neither complies with OWNER's request for correction within a reasonable time, as determined by OWNER, without regard to the provisions of this Article, OWNER may proceed to make the correction or provide the attention, and the costs of correction or attention shall be charged against CONTRACTOR. Any action by OWNER shall not relieve CONTRACTOR of the guarantees provided in this Article or elsewhere in the Contract Documents.

F. This article does not in any way limit the guarantee on any items for which a longer guarantee is specified, or any items for which a manufacturer gives a guarantee for a longer period. CONTRACTOR shall furnish OWNER with all appropriate guarantee or warranty certificates upon completion of the Project.

G. All guarantees required under this Article shall be considered to be in writing on the guarantee provided by CONTRACTOR, and CONTRACTOR shall use the form included in the Contract Documents unless otherwise agreed by OWNER.

H. OWNER may collect its reasonable costs and attorneys' fees in any action to enforce this
ARTICLE 33 SURVEYS

OWNER shall furnish all surveys describing the physical characteristics, legal limitations, and utility locations for the site of the Project and a legal description of the site. Surveys to determine locations of construction, grading, and site work shall be provided by CONTRACTOR.

ARTICLE 34 SOILS INVESTIGATION REPORT

A. When a soils investigation report has been obtained from test holes at the site, that report is available for CONTRACTOR’s use in preparing its bid and work under the Contract Documents. Any information obtained from the report or any information given on drawings as to subsurface soil conditions or as to elevations of existing grades or elevations of underlying rock, is approximate only, is not guaranteed, and is not part of the Contract Documents. CONTRACTOR is required to make a visual examination of the site and must make whatever tests it deems appropriate to determine the actual underground condition of the soil.

B. CONTRACTOR agrees that it will make no claim against OWNER for damages in the event that during progress of the Work, CONTRACTOR encounters subsurface or latent conditions at the site materially different from those shown on drawings or indicated in Specifications or soils reports, or for unknown conditions of an unusual nature which differ materially from those ordinarily encountered in work of the type provided for in the Plans and Specifications.

C. If during the course of work under the Contract Documents CONTRACTOR encounters subsurface or latent conditions which differ materially from those indicated in the soils investigation report, or drawings, or Specifications, CONTRACTOR shall notify OWNER of same within five working days of discovery of the condition.

WARNING: OWNER does not warrant the soils at the project site. A soils investigation report is provided for CONTRACTOR’S information only.

CONTRACTOR represents it has conducted an independent investigation of the project site and the soil conditions of the site. CONTRACTOR is solely responsible to ascertain site conditions for the purposes of determining construction means and methods before commencing construction.

ARTICLE 35 PERMITS AND LICENSES

A. All necessary permits and licenses shall be secured and paid for by CONTRACTOR unless otherwise provided in the Contract Documents.

B. All permits, licenses, and certificates shall be delivered to the PMT before demand is made for the certificate of final payment.

C. CONTRACTOR shall, and shall require subcontractors to, maintain appropriate contractor's licenses in effect as required by law throughout the entire Project.

D. Easements for permanent structures or permanent changes in existing facilities shall be secured and paid for by OWNER unless otherwise specified.
E. Permits and charges for installation and inspection of utility services by serving utilities shall be secured and paid for by OWNER.

**ARTICLE 36 CUTTING AND PATCHING**

A. CONTRACTOR shall do all cutting, fitting, or patching of the Work as required to make its several component parts come together properly, and fit it to receive or be received by any work of other contractors indicated on, or reasonable implied by, the drawings and Specifications, and shall follow all directions given by the Architect.

B. Any cost caused by defective or ill-timed work shall be borne by CONTRACTOR.

C. CONTRACTOR shall not endanger any work by cutting, excavating, or otherwise altering work, and shall not cut or alter work of any other contractor except with the written consent of the Architect.

D. CONTRACTOR shall be solely responsible for protecting existing work on adjacent properties and shall obtain all required permits for shoring and excavations near property lines.

E. When modifying existing work or installing new work adjacent to existing work, CONTRACTOR shall match the finishes, textures, and colors of the original work as closely as conditions of site and materials will allow, refinishing existing work as required, at no additional cost to OWNER.

F. CONTRACTOR is aware that this Project may be split into several phases. If the Project is split into phases, CONTRACTOR has made allowances for any delays or damages which may arise from coordination with contractors for other phases. If any delays should arise from a contractor working on a different phase, CONTRACTOR's sole remedy for damages, including delay damages, shall be against the contractor who caused such damage and not against OWNER. CONTRACTOR shall provide access to contractors for other phases as necessary to prevent delays and damages to contractors working on other phases of construction.

**ARTICLE 37 TESTS AND INSPECTIONS**

A. If the Contract Documents, OWNER's instructions, laws, ordinances, or any public authority requires any work to be specially tested or approved, CONTRACTOR shall give notice, in accordance with requirements of such authority, of CONTRACTOR's readiness for observation or inspection. Such notice shall be given at least two working days prior to being tested or covered up. If inspection is by authority other than OWNER, CONTRACTOR shall inform OWNER's Inspector of the date fixed for such inspection. Required certificates of inspection shall be secured by CONTRACTOR. Observations by OWNER shall be promptly made, and where practicable, at the source of supply. If any work is covered up without approval or consent of OWNER, if required by OWNER, it must be uncovered for examination and satisfactorily reconstructed at CONTRACTOR's expense, in compliance with the Contract Documents. The cost of inspection or testing of any materials which are not in compliance with the Contract Documents shall be borne by CONTRACTOR. If the inspection or testing was paid for by OWNER, it will be charged back to and paid by CONTRACTOR. Other costs for tests and inspection of materials shall be paid by OWNER, unless otherwise provided in the Contract Documents.
B. Where the inspection and testing will be conducted by an independent laboratory or agency, the materials or samples of materials to be tested shall be selected by the laboratory or agency, or OWNER's representative, and not by CONTRACTOR.

C. CONTRACTOR shall notify OWNER in writing a sufficient time in advance of the manufacture of any materials to be supplied to CONTRACTOR under the Contract Documents, which materials must be tested according to the terms of the Contract Documents, in order that OWNER may arrange for testing at the source of supply. Materials shipped by CONTRACTOR from the source of supply without having satisfactorily passed testing and inspection, or prior to receipt of notice from OWNER that testing and inspection will not be required, shall not be incorporated into the Work without the prior approval of OWNER and subsequent testing and inspection.

D. Reexamination or retesting of questioned work may be ordered by OWNER, and if so ordered any work must be uncovered by CONTRACTOR. If the work is determined to be in accordance with the Contract Documents, OWNER shall bear the costs of reexamination or retesting and replacement. If the work is not in accordance with the Contract Documents, CONTRACTOR shall bear the costs.

ARTICLE 38 EXCAVATION DEEPER THAN FOUR FEET

A. CONTRACTOR shall provide adequate sheeting, shoring, and bracing, or equivalent method, for the protection of life and limb in trenches and open excavation. Any such method used shall conform to applicable safety standards.

B. If the Contract Documents involve the excavation of any trench or trenches more than four feet in depth, in advance of excavation CONTRACTOR shall submit to OWNER, or to whomever OWNER designates, a detailed plan showing the design of shoring, bracing, sloping, or other provisions to be made for worker protection from the hazard of caving ground during the excavation of any trench or trenches. If the plan varies from the Shoring System Standards established by the Construction Safety Orders of the Division of Industrial Safety of the Department of Industrial Relations, the plan shall be prepared by a registered civil or structural engineer employed by CONTRACTOR, and all costs of the plan shall be included in the contract price. In no case shall the plan be less effective than that required by the Construction Safety Orders. No excavation of any trench or trenches shall be commenced until the plan has been accepted by CAL-OSHA and a CAL-OSHA permit for the plan is delivered to OWNER.

C. If the Contract Documents involve digging trenches or excavations that extend deeper than four feet below the surface, the following shall apply:

1. Before the following conditions are disturbed, CONTRACTOR shall promptly notify OWNER in writing of any:
   
   a. Material that CONTRACTOR believes may be hazardous waste, as defined in Health and Safety Code Section 25117, that is required to be removed to a Class I, Class II, or Class III disposal site in accordance with provisions of existing law.

   b. Subsurface or latent physical conditions at the site different from those indicated.
c. 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 Documents.

2. OWNER shall promptly investigate the conditions, and if it finds that the conditions do so materially differ, or do involve hazardous waste, and cause a decrease or increase in CONTRACTOR’s cost or the time required for performance of any part of the Work, shall issue a change order under the procedures described in the Contract Documents.

3. In the event of a dispute between OWNER and CONTRACTOR concerning whether or not the conditions materially differ or involve hazardous waste, or cause a decrease or increase in CONTRACTOR’s cost or time required for performance of any part of the Work, CONTRACTOR shall not be excused from any scheduled completion date provided for by the Contract Documents, but shall proceed with all the work to be performed. 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.

ARTICLE 39 WORKERS

A. At all times, CONTRACTOR shall enforce strict discipline and good order among its employees, shall not employ any unfit person or anyone not skilled in the work assigned, and shall require the same of all subcontractors of all tiers. It shall be the responsibility of CONTRACTOR to ensure subcontractor compliance with this Article.

B. Any person in the employ of CONTRACTOR or subcontractors whom OWNER may deem to be incompetent, unfit, troublesome, or otherwise undesirable, shall be excluded from the work site and shall not again be employed on it except with written consent of OWNER.

ARTICLE 40 NOT USED

ARTICLE 41 WAGE RATES AND PAYROLL RECORDS

A. Pursuant to the provisions of Article 2 (commencing at Section 1770), Chapter 1, Part 7, Division 2, of the California Labor Code, OWNER has ascertained the general prevailing rate of per diem wages for each craft, classification, or type of worker needed to execute the work of the Project in the locality in which this public work is to be performed. The general prevailing rates of per diem wages are available at OWNER’s office. CONTRACTOR is responsible to pay those rates determined to be applicable by the Director of the Department of Industrial Relations and OWNER shall not be responsible for any damages arising from the error.

B. When permitted by law, holiday and overtime work shall be paid at a rate of at least one and one-half times the specified rate of per diem wages, unless otherwise specified.

C. CONTRACTOR shall pay and shall cause to be paid to each worker engaged in work on the Project not less than the general prevailing rate of per diem wages, regardless of any contractual relationship which may exist between CONTRACTOR or any Subcontractor and such workers.

D. Pursuant to Labor Code Section 1775, CONTRACTOR shall forfeit and OWNER shall
General Conditions

withhold from payments to CONTRACTOR not more than $200 for each calendar day any worker is paid less than the established prevailing wage rates for the work or craft in which the worker is employed by CONTRACTOR on the Project. The difference between the established prevailing wage rates and the amount paid to each worker for each whole or partial calendar day for which each worker was paid less than the established prevailing wage rates shall be paid to each worker by CONTRACTOR.

E. Any worker employed to perform work on the Project which is not covered by any classification available in OWNER's office, shall be paid not less than the minimum rate of wages specified for the classification which most nearly corresponds with work to be performed by him, and that minimum wage rate shall be retroactive to the time of initial employment of the person in the classification.

F. Pursuant to Labor Code Section 1773.1, per diem wages are deemed to include employer payments for health and welfare, pension, vacation, travel, subsistence, apprenticeship, and similar purposes.

G. At appropriate conspicuous points on the site of the Project, CONTRACTOR shall post job site notices prescribed by the Department of Industrial Relations, including but not limited to, a schedule showing all determined minimum wage rates and all authorized deductions, if any, from unpaid wages actually earned.

H. CONTRACTOR shall submit a breakdown of all labor costs for this Project by trade. This breakdown shall be for all labor that CONTRACTOR or any subcontractor supplies to the Project. This information shall be provided to OWNER before the first payment request after the Notice to Proceed has been issued. Failure to provide the labor cost breakdown will result in delay in processing the payment request until the complete cost breakdown is provided by CONTRACTOR and received and approved by OWNER. No other labor expenses will be considered unless approved in writing by OWNER.

I. Pursuant to the provisions of Labor Code Section 1776, CONTRACTOR shall keep and shall cause each Subcontractor performing any portion of the work on the Project to keep an accurate payroll record, showing the name, address, social security number, work classification, straight time, and overtime hours worked each day and week, and the actual per diem wages paid to each journeyman, apprentice, worker, or other employee employed by CONTRACTOR in connection with the Work. Each payroll record shall contain or be verified by a written declaration that it is made under penalty of perjury, stating that (1) the information contained in the payroll record is true and correct, and (2) the employer has complied with the requirements of Sections 1771, 1811, and 1815 for any work performed by the employer’s employees on the Project.

J. The payroll records required under this article shall be certified and shall be available for inspection at all reasonable hours at CONTRACTOR’s principal office 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 required payroll records shall be made available for inspection or furnished upon request to a representative of OWNER, the Division of Labor Standards Enforcement, and/or the Division of Apprenticeship Standards of the Department of Industrial Relations;
3. A certified copy of all payroll records required under this article shall be made available for inspection or copies made upon request by the public; provided, however, that a request by the public shall be made through either OWNER, the Division of Apprenticeship Standards, or the Department of Industrial Relations. If the requested payroll records have not been provided pursuant to Paragraph 2 above, prior to being provided the records, the requesting party shall reimburse the costs of preparation by CONTRACTOR, Subcontractors, and the entity through which the request was made. The public shall not be given access to the records at CONTRACTOR’s principal office.

4. A certified copy of all payroll records shall be submitted, at regular intervals, to the OWNER via the PMIS system.

5. The form of certification shall be as follows:

   I, ______________________________ (printed name), the undersigned, am the ______________________ (position in business) with the authority to act for and on behalf of ____________ (name of business and/or CONTRACTOR), and certify under penalty of perjury that the records or copies submitted and consisting of (description, number of pages) are the originals or true, full, and correct copies of the originals which depict the payroll record(s) of the actual disbursements by way of cash, check, or whatever form to the individual or individuals named.

   Dated: ________ Signature: __________________________

K. CONTRACTOR shall file a certified copy of the required payroll records with the entity requesting the records within 10 days after receipt of a written request. In the event CONTRACTOR fails to comply within the 10-day period, as a penalty to OWNER CONTRACTOR shall forfeit $100 for each calendar day, or portion of each calendar day, for each worker until strict compliance is effectuated. Upon request by the Division of Apprenticeship Standards or the Division of Labor Standards Enforcement, these penalties shall be withheld from progress payments then due.

L. Payroll records made available for inspection as copies and furnished upon request to the public by OWNER, the Division of Apprenticeship Standards, or the Division of Labor Standards Enforcement shall be marked or obliterated to prevent disclosure of an individual’s name, address, and social security number. Payroll records furnished to agencies that are included in the Joint Enforcement Strike Force on the Underground Economy and other law enforcement agencies investigating violations of law shall be unredacted. The name and address of CONTRACTOR shall not be marked or obliterated in either case.

M. It shall be CONTRACTOR’s responsibility to ensure compliance with the provisions of this article and the provisions of Labor Code Section 1776.
N. This project is subject to prevailing wage monitoring and enforcement by the Department of Industrial Relations. CONTRACTOR and all subcontractors shall be subject to the requirements of Subchapter 4.5 of Chapter 8 of Title 8 of the California Code of Regulations. Contractor and all subcontractors must furnish electronic certified payroll records to the DIR on the frequency specified in the Notice Calling for Bids using the DIR’s eCPR system. To enroll in the eCPR system or obtain additional information and assistance, CONTRACTOR is directed to the DIR website at www.dir.ca.gov/Public-Works/Certified-Payroll-Reporting.html. CONTRACTOR shall comply with all requirements of the Labor Code and attendant regulations pertaining to prevailing wage monitoring and compliance as indicated in the Contract Documents, and/or as required by the DIR. CONTRACTOR shall permit OWNER, the DIR or their designee to interview CONTRACTOR’s employees concerning compliance with prevailing wage, apprenticeship, and related matters, whether or not during work hours, and shall require each subcontractor to provide OWNER, the DIR or their designee with such access to its employees.

ARTICLE 42 APPRENTICES

A. CONTRACTOR acknowledges and agrees that the Contract Documents are governed by the provisions of Labor Code Section 1777.5 where applicable. It shall be CONTRACTOR’s responsibility to ensure compliance with this article and with Labor Code Section 1777.5 for all apprenticing occupations.

B. Apprentices of any crafts or trades may be employed, and when required by Labor Code Section 1777.5, shall be employed provided they are properly registered in full compliance with the provisions of the Labor Code.

C. Every apprentice shall be paid the prevailing rate of per diem wages for apprentices in the trade to which the apprentice is registered, and shall be employed only at the work of the craft or trade to which the apprentice is registered.

D. Only apprentices as defined in Labor Code Section 3077 who are in training under apprenticeship standards that have been approved by the Chief of the Division of Apprenticeship Standards, and who are parties to written apprentice agreements under Chapter 4 (commencing at Section 3070), Division 3, of the Labor Code, are eligible to be employed on public works. The employment and training of each apprentice shall be in accordance with either (1) the apprenticeship standards and apprentice agreements under which the apprentice is in training, or (2) the rules and regulations of the California Apprenticeship Council.

E. Pursuant to Labor Code Section 1777.5, CONTRACTOR and any subcontractors employing workers in any apprenticeship craft or trade performing any work under the Contract Documents shall employ apprentices in at least the ratio set forth in Labor Code Section 1777.5, and may apply to any apprenticeship program in the craft or trade that can provide apprentices to the project site for a certificate approving CONTRACTOR or Subcontractor under the applicable apprenticeship standards for the employment and training of apprentices in the area of industry affected.

F. Prior to commencing work on the Project, CONTRACTOR shall submit contract award information to an applicable apprenticeship program that can supply apprentices to the project site. The information submitted shall include an estimate of journeyman hours to be performed on the Project, the number of apprentices proposed to be employed, and the approximate dates the apprentices would be employed. A copy of this information shall also be submitted to
OWNER if requested. Within 60 days after concluding work on the Project, CONTRACTOR and all Subcontractors shall submit a verified statement of the journeyman and apprentice hours performed on the Project to the awarding body, if requested, and to the apprenticeship program. This information shall be public.

G. If in performing any of the Work, CONTRACTOR employs journeymen or apprentices in any apprenticeable craft or trade, CONTRACTOR shall contribute to the California Apprenticeship Council the same amount that the Director of Industrial Relations determines is the prevailing amount of apprenticeship training contributions in the area of the Project, subject to any credits permitted by law.

H. If CONTRACTOR or any Subcontractor is determined by the Chief of the Division of Apprenticeship Standards to have knowingly violated Labor Code Section 1777.5, it shall:

1. Forfeit as a civil penalty an amount not exceeding $100 ($300 for knowing subsequent violations) for each full calendar day of noncompliance. Notwithstanding Labor Code Section 1727, upon receipt of a determination that a civil penalty has been imposed by the Labor Commissioner, OWNER shall withhold the amount of the civil penalty from contract progress payments then due or to become due.

2. In lieu of the monetary penalty, for a first-time violation and with the concurrence of a specified apprenticeship program, the Labor Commissioner may order CONTRACTOR or any Subcontractor to provide apprentice employment equivalent to the work hours that would have been provided for apprentices during the period of noncompliance.

3. In the event CONTRACTOR or any Subcontractor is determined by the Labor Commissioner to have knowingly committed a serious violation of any provision of Section 1777.5, the Labor Commissioner may also deny CONTRACTOR or any Subcontractor, and their responsible officers, the right to bid on or be awarded or perform work as a subcontractor on any public works contract for a period of up to one year for the first violation and up to three years for a subsequent violation.

CONTRACTOR or any Subcontractor (or responsible officer) shall have the right to obtain a review of the determination imposing a debarment or civil penalty as provided by law.

I. CONTRACTOR and all Subcontractors shall comply with Labor Code Section 1777.6, which forbids certain discriminatory practices in the employment of apprentices.

J. CONTRACTOR shall become fully acquainted with the law regarding apprentices prior to commencement of the work. Special attention is directed to Labor Code Sections 1777.5, 1777.6, and 1777.7, and Title 8, California Code of Regulations, Section 200 et seq. Questions may be directed to the State Division of Apprenticeship Standards, 455 Golden Gate Avenue, San Francisco, California.

ARTICLE 43  HOURS OF WORK

A. CONTRACTOR shall furnish, and shall require all Subcontractors to furnish, sufficient forces to ensure the Work is prosecuted in accordance with the detailed project schedule without payment of overtime wage rates whenever possible.
B. As provided in Article 3 (commencing at Section 1810), Chapter 1, Part 7, Division 2 of the Labor Code, eight hours of labor shall constitute a legal day of work. The time of service of any worker employed at any time by CONTRACTOR, or by any subcontractor, upon the Work or upon any part of the work contemplated by the Contract Documents is limited and restricted to eight hours per day and 40 hours during any one week. Upon completion of all hours worked in excess of eight hours per day, work shall be permitted upon this Project at not less than one and one-half times the basic rate of pay.

C. CONTRACTOR shall keep, and shall cause all subcontractors to keep, an accurate record showing the name and actual hours worked each calendar day and each calendar week by each worker employed in connection with the Work or any part of the Work contemplated by the Contract Documents. The record shall be kept open at all reasonable hours to the inspection of OWNER and to the Division of Labor Standards Enforcement, Department of Industrial Relations.

D. Saturdays, Sundays, holidays (including all OWNER designated holidays), and any day with work hours before 7:30 a.m. and/or after 4 p.m. shall be considered overtime for OWNER’s representatives, consultants, and inspectors, and shall be compensated as such by CONTRACTOR per OWNER’s submitted invoice. Such cost shall be billed to CONTRACTOR and deducted from subsequent progress payments or the final payment.

E. As a penalty, CONTRACTOR shall pay $25 to the Department of Industrial Relations or OWNER for each worker employed by CONTRACTOR or by any subcontractor in the performance of the Contract Documents for each calendar day during which the worker is required or permitted to work more than eight hours in any calendar day and 40 hours in any one calendar week in violation of the provisions of Article 3 (commencing at Section 1810), Chapter 1, Part 7, Division 2 of the Labor Code.

F. Any work performed before or after regular working hours or on Saturdays, Sundays, or holidays (including all OWNER designated holidays) shall be performed without additional expense to OWNER. Should inspection or testing services be necessary on a Saturday, Sunday, or holiday (including all OWNER designated holidays), CONTRACTOR shall pay all additional expenses incurred. Such cost shall be billed to CONTRACTOR and deducted from the next payment.

G. CONTRACTOR shall anticipate work that would occur outside the normal work hours of 7:30 a.m. to 4 p.m. Such activities would include but are not limited to early morning concrete pours (because of hot weather), early or late material deliveries, required off-site inspections, or any other activity that would require the Project Inspector or OWNER personnel to work longer than an eight-hour day.

H. The Project Inspector cannot be asked to leave the Project after eight hours of work so CONTRACTOR would not have to pay overtime. If the extended work day is a result of CONTRACTOR’S work, the Project Inspector will perform its DSA assigned work as necessary to assure the Project is kept on schedule and CONTRACTOR is responsible to pay all costs associated with fulfilling these DSA assignments, including the Project Inspector’s overtime. These costs shall be billed to CONTRACTOR and deducted from subsequent progress payments or the final payment.

**ARTICLE 44  NONDISCRIMINATION**
In the performance of the terms of the Contract Documents, CONTRACTOR agrees that it will not engage in or permit any Subcontractor it may employ to engage in unlawful discrimination in employment of persons because of the race, religious creed, color, national origin, ancestry, physical handicap, medical condition, marital status, or sex of such persons.

**ARTICLE 45   COST BREAKDOWN AND PERIODICAL ESTIMATES**

A. In the format approved by OWNER, CONTRACTOR shall furnish the following via the PMIS:

1. Within 10 calendar days of award of contract, a detailed estimate giving a complete breakdown of contract price for each Project or site, which shall include all Subcontractor/supplier agreements showing dollar amounts of these agreements to justify the schedule of values; and

2. A periodical itemized estimate of work done for the purpose of making partial payments; and

3. A schedule of estimated monthly payments due CONTRACTOR within 10 days of request by OWNER.

B. Values employed in making up any of these schedules are subject to the PMT’s written approval and will be used only for determining basis of partial payments and will not be considered as fixing a basis for additions to or deductions from contract price unless OWNER in its sole discretion so elects.

**ARTICLE 46   PAYMENTS**

A. This project has been designated as Not substantially complex. As such, Owner will retain 5% of any progress payment due to ensure satisfactory completion of the project. Each month within 30 days after receipt by OWNER of the monthly progress schedule and the certification of application for payment by the PMT, OWNER shall pay to CONTRACTOR a sum equal to 95 percent of the value of work performed and materials delivered subject to or under the control of OWNER and unused up to the last day of the previous month, less aggregate previous payments. In its sole discretion, OWNER may also deduct from these payments any amounts deemed due from CONTRACTOR.

B. Monthly payments shall be made only on the basis of monthly estimates which shall be prepared by CONTRACTOR on a form approved by OWNER and filed before the fifth day of the month during which payment is to be made.

C. Before consideration of a request for payment, a certificate in writing shall be obtained from the Architect stating that the work for which the payment is demanded has been performed in accordance with the terms of the Contract Documents and that the amount stated in the certificate is due under the terms of the Contract Documents. The certificate shall be attached to and made a part of the payment request filed with OWNER. The certificate of the Architect shall not be conclusive upon OWNER, but advisory only.

D. If within three days after written demand the Architect fails to deliver such certificate, CONTRACTOR may file its payment request with OWNER without the certificate, but the request shall be accompanied by a statement that demand was made for the certificate and
was refused. OWNER will then either allow the payment request as presented or shall by an order entered on the minutes of OWNER state the reasons for refusing to make payment.

E. Work completed as estimated shall be an estimate only and no inaccuracy or error in an estimate shall operate to release CONTRACTOR or Surety from any damages arising from such work or from enforcing each and every provision of the Contract Documents, and OWNER shall have the right to subsequently correct any error made in any estimate for payment.

F. CONTRACTOR SHALL NOT BE ENTITLED TO HAVE ANY PAYMENT REQUESTS PROCESSED OR ANY PAYMENT FOR WORK PERFORMED SO LONG AS CONTRACTOR HAS FAILED TO COMPLY WITH ANY LAWFUL OR PROPER DIRECTION CONCERNING THE WHOLE OR ANY PORTION OF THE WORK GIVEN BY OWNER, PMT OR THE ARCHITECT.

G. OWNER has discretion to require from CONTRACTOR any of the following information with the application for payment: (1) certified payroll covering the period of the prior application for payment, (2) unconditional waivers and releases from all Subcontractors/suppliers for which payment was requested under the prior application for payment, (3) receipts or bills of sale for any items. In addition, upon submittal of the first payment request, a complete per diem wage rate breakdown for all trades must be submitted in order for the payment request to be processed.

H. PAYMENT BY OWNER OF ANY PAYMENT REQUEST IS NOT AN INDICATION THAT OWNER HAS INSPECTED, APPROVED, OR ACCEPTED ANY PART OF THE WORK, NOR SHALL PAYMENT CONSTITUTE A WAIVER IN ANY RESPECT OF ANY OWNER RIGHTS.

I. The final payment of 5 percent of the value of the work done under the Contract Documents, if unencumbered, may be made 35 days after the Notice of Completion is recorded by OWNER. ACCEPTANCE WILL BE MADE ONLY BY ACTION OF THE GOVERNING BOARD OR OTHER GOVERNING BODY OF OWNER IN ACCORDANCE WITH THE PROVISIONS ON “COMPLETION.”

J. Unless otherwise agreed in writing, on or before making request for final payment of the undisputed amount due under the Contract Documents, CONTRACTOR shall submit to OWNER the following in writing:

1. Information on CONTRACTOR’s results in attaining compliance with the OWNER’s three percent participation goal for Disabled Veterans Business Enterprises;

2. A summary of all claims for compensation under or arising out of the Contract Documents, stating whether the claims are settled or unsettled and the amounts of the claims, and further specifying the date(s) upon which any required protest and/or notice was given to OWNER;

3. A written release of all claims against OWNER arising by virtue of the Project, the Work, and the Contract Documents. Payment of undisputed amounts is contingent upon receipt of this waiver.

**ARTICLE 47 PAYMENTS BY CONTRACTOR**

CONTRACTOR shall pay:
A. All transportation and utility services not later than the 20th day of the calendar month following the month in which the services are rendered;

B. Ninety-five percent of the cost of all materials, tools, and other expendable equipment, not later than the 20th day of the calendar month following the month in which the materials, tools, and equipment are delivered to the project site, and the balance of the cost not later than the 30th day following completion of that part of the work in which the materials, tools, and equipment are incorporated or used; and

C. To each of its subcontractors the respective amounts allowed CONTRACTOR on account of work performed by each subcontractor not later than the fifth day following each payment to CONTRACTOR.

ARTICLE 48 PAYMENTS WITHHELD

A. In addition to any amount(s) which OWNER may retain under the article entitled "PAYMENTS," OWNER may withhold sufficient amount(s) of any payment(s) otherwise due to CONTRACTOR, as in its judgment may be necessary to cover the following:

1. Payments which may be past due and payable for claims against CONTRACTOR or any Subcontractors at any level for labor or materials furnished in the performance of work under the Contract Documents.

2. Defective work not remedied.

3. Failure of CONTRACTOR to make proper payments to its subcontractor(s) or material suppliers for materials or labor.

4. Completion of work if there exists a reasonable doubt that the work can be completed for the balance then unpaid.

5. Damage to another contractor.

6. All costs and expenses associated with OWNER having to acquire alternate educational facilities if CONTRACTOR fails to complete the Project within the period of time required by the Contract Documents.

7. Project schedule not up-to-date with the current payment request.

8. Overtime charges due consultants, Project Inspectors, the Architect, and OWNER or others as a result of extra services that were provided at CONTRACTOR’s request or as a result of actions of CONTRACTOR or those employed by CONTRACTOR, including subcontractors, material suppliers, or others will be withheld from current payment requests.

9. CONTRACTOR agrees that OWNER may withhold 150 percent of the estimated cost of any additional testing or retesting required as a result of the fault or negligence of CONTRACTOR, or Subcontractors, vendors, or suppliers, until such time as OWNER receives confirmation that payment for such additional testing or retesting has been made.
10. Failure to maintain a current record set of drawings. The drawings shall be updated to the date when the payment request is submitted.

11. Failure to submit daily reports.

12. Failure to submit items required to accompany payment requests at initial and final completion.

13. Failure to submit and keep current any construction schedule required by the Contract Documents.

14. Failure to compensate the Architect for substitution review within the required time period.

15. Failure to compensate OWNER for overtime charges for OWNER representatives and employees incurred as a result of services provided during the current payment period.

16. Failure to compensate OWNER and/or the Architect for the cost of review time to evaluate CONTRACTOR’S proposed solutions to effect repair of work not in accordance with Contract Documents.

17. Failure to submit per diem wage rates for all trades pursuant to appropriate provisions of the General Conditions.

18. Penalties for violation of labor laws.

19. Cost of site clean-up.

20. Required payments to indemnify, hold harmless, or defend OWNER.

21. Compensation for unpaid extra services for the Architect or PMT caused by CONTRACTOR.

22. Compensation for unpaid extra services for the Project Inspector, including but not limited to reinspection required due to CONTRACTOR’s failed tests, installation of unapproved or defective materials, or CONTRACTOR’s requests for inspection and failure to attend the requested inspection.

23. Any liquidated damages, forfeiture of fees, or other damages assessed against CONTRACTOR by reason of failure to complete the Project on time.

B. OWNER may apply the withheld amount(s) to the payment of any claims or obligations at its discretion. In so doing, OWNER shall be deemed the agent of CONTRACTOR and any payment made by OWNER shall be considered to be a payment made under the Contract Documents by OWNER to CONTRACTOR, and OWNER shall not be liable to CONTRACTOR for the payments made in good faith. The payments may be made without prior judicial determination of the claim or obligations. OWNER shall submit to CONTRACTOR an accounting of the funds disbursed on behalf of CONTRACTOR.
ARTICLE 49  SUBSTITUTION OF SECURITIES

A. Pursuant to the provisions of Public Contract Code section 22300, CONTRACTOR may substitute certain securities for any funds withheld by OWNER to ensure its performance under the Contract Documents. At the request and expense of CONTRACTOR, securities equivalent to any amount withheld shall be deposited, at the discretion of OWNER, with either a state or federally chartered bank as the escrow agent, who shall then pay any funds otherwise subject to retention to CONTRACTOR. Upon satisfactory completion of the Project, the securities shall be returned to CONTRACTOR.

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

C. CONTRACTOR shall be the beneficial owner of any securities substituted for funds withheld and shall receive any interest.

D. All expenses relating to the substitution of securities under Public Contract Code section 22300 and this article, including but not limited to OWNER’s overhead and administrative expenses and expenses of escrow agent, shall be CONTRACTOR’s responsibility.

E. Should the value of the substituted security at any time fall below the amount for which it was substituted, or any other amount which OWNER determines to withhold, CONTRACTOR shall immediately and at CONTRACTOR’S expense deposit additional security qualifying under Public Contract Code section 22300 until the total security deposited is no less than equivalent to the amount subject to withholding under the Contract Documents.

F. In the alternative, under Public Contract Code section 22300, at its own expense, CONTRACTOR may request OWNER to make payment of earned retention funds directly to the escrow agent.

G. All escrow agreements shall be in conformance with the Escrow Agreement for Security Deposits In lieu of Retention set forth in Public Contract Code section 22300, and shall be in the form of agreement provided by OWNER unless otherwise agreed in advance.

ARTICLE 50  PROGRESS SCHEDULE

A. Immediately after being awarded the Construction Agreement, CONTRACTOR shall prepare an estimated progress schedule and submit it to OWNER for review. The schedule shall indicate the beginning and completion dates of all phases of construction.

B. The schedule shall be updated at reasonably required intervals throughout the Project, unless specifically required to be updated at more frequent intervals.

C. Additional scheduling requirements may be contained in the attached Supplemental General Conditions.

D. While OWNER does not discourage efforts by CONTRACTOR to accomplish an early completion of the Project, CONTRACTOR is directed to utilize and schedule the entire construction period set forth in the Construction Agreement. Any portion of the construction
period not so scheduled shall be considered “float” and used the same as other float under the Contract Documents.

E. The progress schedule shall comply with the requirements set out in the specifications.

ARTICLE 51 EXTENSION OF TIME—LIQUIDATED DAMAGES

A. The parties understand and agree that the goodwill, educational process, and other business of OWNER will be damaged if the Project is not completed within the time limits required. The parties have further agreed that the exact amount of damages for failure to complete the Work within the time specified is, in some cases, extremely difficult, impractical, or impossible to determine. As to those damages that are difficult, impractical, or impossible to determine, CONTRACTOR shall be assessed the sum set forth in the Contract Documents per day as liquidated damages for each and every calendar day until the work required under the Contract Documents is complete. CONTRACTOR will pay to OWNER or OWNER may retain such damages from amounts otherwise payable to CONTRACTOR. For purposes of this article, the Work shall be considered “complete” in accordance with the provisions of the article on “COMPLETION,” except that the work may be considered compete without formal acceptance by the OWNER’s governing board or other governing body so long as the governing board, at its next regularly scheduled meeting, accepts the work.

B. Providing CONTRACTOR has protested and/or given notice of delays on the Project as required by these Contract Documents, CONTRACTOR shall not be charged for liquidated damages as set forth above because of any delays in completion of work which are not the fault or negligence of CONTRACTOR, including but not restricted to acts of God. CONTRACTOR shall provide documentation and justification to substantiate the delay and its relation to the Project’s critical path. OWNER shall ascertain the facts and extent of delay and grant extension of time for completing work when, in its judgment, the facts justify an extension. OWNER’s findings of fact shall be final and conclusive on the parties. Extension of time shall apply only to that portion of work affected by the delay, and shall not apply to other portions of work not so affected. Any dispute pertaining to a request for time or assessment of liquidated damages shall be resolved pursuant to the provisions on resolution of construction claims in the Contract Documents.

C. In addition to any liquidated damages which may be assessed, if CONTRACTOR fails to complete the Project within the time period provided in the Contract Documents, and if as a result OWNER finds it necessary to incur any costs and/or expenses, or if OWNER receives any claims by other contractors, subcontractors, or third parties claiming time or other compensation by reason of CONTRACTOR’s failure to complete work on time, CONTRACTOR shall pay all those costs and expenses incurred by OWNER. These costs and expenses may include but are not limited to such items as rental payments, inspection fees, and additional architectural fees, whether related to the acquisition of facilities or caused by the delay in completion. These costs and expenses may be retained by OWNER from any payments otherwise due to CONTRACTOR.

D. Within 10 days of the beginning of any delay (unless OWNER grants in writing a further period of time to file notice prior to the date of final completion of the Project), CONTRACTOR shall notify OWNER in writing of the causes for the delay. Failure to give the required notice in writing within the time provided shall be interpreted as a failure by CONTRACTOR to properly administer the Contract Documents, Project, and Work, and shall constitute a waiver by CONTRACTOR of all claims of any kind and nature, without limitation, arising from the delay.
In addition to this notice, in any instance where CONTRACTOR claims delay was caused by OWNER, the Architect or Architect's consultants, Inspector of Record, Division of State Architect, or anyone claimed to be an agent of them, and as a precondition to any right to claim additional time, prior to making any request for time, CONTRACTOR shall have satisfied the obligation of the Contract Documents to protest the delay.

E. Extensions of time shall be based solely upon the effect of delays to the work as a whole and will not be granted unless CONTRACTOR can demonstrate through analysis of the current updated schedule that the delay was caused by one of the causes for which an extension is authorized. A time extension will not be granted unless CONTRACTOR submits a Time Impact Analysis which utilizes networking techniques (fragments) and a written analysis of the facts which are alleged to have caused the delay. Time extensions will not be allowed for delays to parts of the work not on the critical path of the currently approved monthly updated construction schedule. Time extensions will not be granted until all available float, slack, or contingency time on the Project is used and the end date of the Work is moved beyond the current adjusted contract completion date. CONTRACTOR's sole remedy for delay or extensions of time in all cases except those due to unanticipated or unreasonable delay caused by OWNER shall be an extension of the contract time at no cost to OWNER. Additional scheduling requirements in cases of delay or requests for time may be included in supplementary conditions.

ARTICLE 52 OCCUPANCY

OWNER reserves the right to occupy buildings and/or portions of the site at any time before completion, and occupancy shall not constitute final acceptance of any part of the Work covered by the Contract Documents, nor shall such occupancy extend the date specified for completion of the Work. Beneficial occupancy of building(s) does not commence any warranty period or entitle CONTRACTOR to any additional compensation due to such occupancy, or affect in any way or amount CONTRACTOR’s obligation to pay liquidated damages for failure to complete the Project on time.

ARTICLE 53 CONTRACT CLOSEOUT

A. Utility Connections: The building and/or buildings shall be connected to water, gas, sewer, and electric services, complete and ready for use. Service connections shall be made and existing services reconnected.

B. Record Drawings:

1. CONTRACTOR shall keep the following:
   a. An electronic set of drawings and annotated specifications located on the PMIS. These documents shall show any and all changes from change orders, substitutions, or any other deviations from the original contract documents. Markups on record documents shall be electronically cross linked to RFIs, CO’s, etc. Drawings and specifications shall be kept up-to-date as the Work progresses.

2. The intent of this procedure is to obtain an exact "as built" record of the work upon completion of the Project. The following information shall be carefully and correctly drawn on the drawings and all items shall be accurately located and dimensioned from finished surfaces of building walls on all record drawings:
a. Any work not installed as indicated on drawings.

b. The exact locations and elevations of all covered utilities, including valves, cleanouts, etc.

3. CONTRACTOR shall certify to OWNER the accuracy of the record drawings and annotated Specifications and is liable and responsible for inaccuracies in as-built and/or record drawings and the annotated Specifications, even if they do not become evident until a future date.

4. Upon completion of the Work and correction of all punch list items and as a condition precedent to approval of final payment, CONTRACTOR shall obtain the Architect's review of the marked up record set of drawings and annotated Specifications. CONTRACTOR shall pay for a set of as-built contract drawings and specifications to be provided to the OWNER. CONTRACTOR shall deliver, via the PMIS and on a memory stick, to the PMT the operating manuals, repair parts lists, and service instructions for all electrical and mechanical equipment, together with equipment warranties.

C. Maintenance Manuals: At least 30 days prior to final inspection, the complete operational and maintenance manuals shall be submitted for review. Each manual shall also contain a list of subcontractors, with their addresses and the names of persons to contact in case of emergencies. Identifying labels shall provide names of manufacturers, their addresses, ratings, and capacities of equipment and machinery. The manuals shall be in an electronically searchable format approved by the OWNER.

D. Inspection Requirements:

1. Before calling for final inspection, CONTRACTOR shall determine that the following work has been performed:

   a. General construction has been completed;

   b. Mechanical and electrical work complete, fixtures in place, connected and ready for tryout and test;

   c. Electrical circuits scheduled in panels and disconnect switches labeled;

   d. Painting and special finishes complete;

   e. Doors complete with hardware, cleaned of protective film, in good working order without sticking or binding;

   f. Tops and bottoms of doors stained/painted and sealed;

   g. Floors waxed and polished as specified;

   h. Broken glass replaced and glass cleaned;

   i. Grounds cleared of CONTRACTOR'S equipment, raked clean of debris, and trash removed from site;
j. Work cleaned, free of stains, scratches, and other foreign matter, replacement of damaged and broken material;

k. Finished and decorative work shall have marks, dirt, and superfluous labels removed;

l. All flatwork shall have all stains removed including but not limited to oil, gas, rust, paint, etc.

2. Final inspection will be made by the Architect, the PMT and specified OWNER personnel upon written notification from CONTRACTOR that work has been completed. CONTRACTOR must prearrange a final inspection with OWNER and Project Inspector. There should be a minimum of seven days' notice to OWNER and Project Inspector before the final inspection is scheduled. CONTRACTOR shall receive a list (punch list) of items found unacceptable and shall promptly correct them. Upon written notification from CONTRACTOR that all items have been corrected the PMT and Project Inspector or OWNER will reinspect for final acceptance of the Project. Failure of CONTRACTOR to complete punch list items will necessitate further reinspection by the PMT and Project Inspector or OWNER. Cost of reinspection will be deducted from the amounts owing to CONTRACTOR.

3. Deliver keys (labeled) to OWNER's representative. Master keys shall be accounted for in writing.

4. Furnish a letter to OWNER stating that a responsible representative of OWNER (give name and position) has been instructed in working characteristics of mechanical and electrical equipment.

E. Guarantee: Upon completion of final inspection, CONTRACTOR is to submit the guarantee to OWNER as specified in the Contract Documents.

F. Manufacturer Warranties: CONTRACTOR shall deliver 10 days prior to final inspection, original manufacturer warranties for all materials, equipment and/or supplies purchased and/or installed under the Contract Documents.

G. Equipment Training: Prior to final inspection, CONTRACTOR is responsible for providing the appropriate training for a minimum of two personnel of OWNER for each trade for the newly installed mechanical and electrical equipment required under the Contract Documents.

H. Contract Closeout Items Specified Within this Article are Mandatory: The parties agree that, should the required items not be furnished to OWNER, as stated or within 30 days of completion of all other work, OWNER will suffer damage which damage will be difficult, impossible or impractical to assess. For that reason, in accordance with Government Code Section 53069.85, the parties agree the following sums shall be assessed as fixed and liquidated damages and not as a penalty:

1. Record Drawings—$25,000 or 10 percent of contract price, whichever is greater;

2. Maintenance Manuals—$5,000 or 10 percent of contract price, whichever is greater;
3. Guarantee—$25,000 or 10 percent of contract price whichever is greater;

4. Manufacturer Warranties—$5,000 for each product or 10 percent of contract price whichever is greater;

5. Equipment Training—$10,000 for each system or 10 percent of contract price whichever is greater.

I. In addition, the Notice of Completion will not be filed until either such amounts are paid or the items are provided. However, OWNER may also elect to file the Notice of Completion and pay retention after deducting such amounts. If CONTRACTOR disputes the amounts or OWNER's right to withhold these amounts, OWNER may withhold up to 150 percent of the disputed amount.

ARTICLE 54 COMPLETION

A. OWNER shall accept the completion of the Project when all of the following conditions have been met:

1. The entire Work or Project (including all phases if a project is phased) including minor corrective items is completed to the satisfaction of OWNER;

2. The final DSA report has been filed with the State;

3. By action of its governing board or other governing body, OWNER has accepted the Project to be complete.

4. The Notice of Completion for the entire Project has been filed and recorded.

B. A final walk-through of the Project to determine completion of the Work and to record the Notice of Completion shall occur only upon a valid claim by CONTRACTOR that the Project is complete, including minor corrective items.

1. CONTRACTOR's Project Manager and Superintendent(s) shall attend the final walk-through. A representative(s) of OWNER shall also attend.

2. Should OWNER incur any costs by reason of an erroneous or premature claim of completion by CONTRACTOR that results in a premature walk-through, OWNER may withhold such costs from any money due or to become due to CONTRACTOR.

3. Any incomplete or corrective items shall be identified in the final walk-through of the Project.

4. Incomplete and corrective items identified in any walk-through shall be completed before CONTRACTOR calls for a subsequent walk-through, which shall be treated as and bear the same consequences as the initial call for a walk-through.

C. Alternative Process: OWNER shall have the option in its sole discretion to accept completion of the Work and have the Notice of Completion recorded when the entire Work is completed to OWNER’s satisfaction, except for minor corrective items as distinguished from
1. Should OWNER elect to accept the Work as complete prior to completion of the entire Work or Project, it shall be on the following conditions:
   a. The entire Work or Project (including all phases if a project is phased), excluding minor corrective items, is complete to OWNER’s satisfaction;
   b. The final DSA report shall be filed with the State as soon as appropriate;
   c. By action of its governing board or other governing body, OWNER has accepted the Project to be complete.
   d. The Notice of Completion for the entire project has been filed and recorded.

2. Should OWNER elect to accept the Work as complete prior to completion of the entire Work or Project, there shall be a final walk-through of the Project, as follows:
   a. Final walk-through shall be made upon a valid claim by CONTRACTOR that the Project is complete, excepting only minor corrective items;
   b. CONTRACTOR’s Project Manager and Superintendent(s) shall attend the final walk-through. OWNER may be represented by anyone designated by OWNER’s Representative, including but not limited to the Project Inspector, management, and/or representatives from Maintenance and Operations;
   c. Should OWNER incur any costs by reason of an erroneous or premature claim of completion by CONTRACTOR that results in a premature walk-through, OWNER may withhold such costs from any money due or to become due to CONTRACTOR.
   d. All remaining work, including minor incomplete or corrective items, shall be identified in the final walk-through of the Project;
   e. Incomplete and corrective items identified in any walk-through shall be completed before CONTRACTOR calls for a subsequent walk-through, which shall be treated as, and bear the same consequences as, the initial call for a walk-through.

3. Should OWNER elect to accept the Work as complete prior to completion of the entire Work or Project, and if CONTRACTOR fails to complete the minor corrective items prior to the expiration of a 35-day period immediately following recording of the Notice of Completion, OWNER shall withhold from the final payment an amount equal to 150 percent of the estimated cost, as determined by OWNER, of each incomplete or corrective item until such time as the item is completed.

4. If at the end of an additional 30-day period, there are items remaining to be corrected, OWNER may elect to:
   a. Permit additional time for completion;
b. Complete the Work at the expense of CONTRACTOR, deducting the cost of work from any amounts being withheld.

5. CONTRACTOR shall have no claim or offset as against OWNER arising or in any way connected with an election by OWNER not to accept completion of the Work until the entire Work or Project, including minor corrective items, has been completed to OWNER's satisfaction. The time taken by CONTRACTOR to complete the Work or Project, including minor corrective items, shall be a basis for assessment of liquidated damages as provided in the Contract Documents, and is not affected by any decision by OWNER to occupy all or any portion of the Work prior to completion.

ARTICLE 55 CLAIMS FOR DAMAGES

A. Pursuant to Public Contract Code section 9204, CONTRACTOR shall make all claims for payment for 1) work done by or on behalf of contractor for which payment is not otherwise expressly provided for in the Contract, 2) damages allegedly sustained by reason of any acts or omissions of OWNER or its agents, 3) time extensions, 4) relief from damages or penalties for delay or, 5) an amount disputed by OWNER by registered mail or certified mail, return receipt requested. Such written claim shall be submitted, within 10 days after the claim has arisen, is discovered or reasonably should have been discovered. CONTRACTOR shall furnish reasonable documentation to support the claim.

IF CONTRACTOR FAILS TO COMPLY WITH ANY OF THE PROVISIONS OF THIS ARTICLE CONCERNING THE SUBMISSION OF CLAIMS, ITS CLAIM(S) SHALL BE FORFEITED AND INVALIDATED.

B. In no event shall CONTRACTOR be permitted to reserve rights to make or pursue claims of any kind, whether for compensation in any form, or for time extensions, without the OWNER’s express written consent. Any attempt to make such reservation or otherwise avoid the effect of this Article shall be void and of no force or effect whatsoever.

C. Any change order executed by CONTRACTOR with such reservation or other language of qualified acceptance shall be read and interpreted as though such language did not exist. No action by OWNER is required to invalidate such language, and no oral communication or other act or omission by OWNER or anyone acting on OWNER’s behalf, except OWNER’s express written consent, shall be construed as acquiescence in or consent to such reservation or other qualified acceptance language.

D. CONTRACTOR shall diligently proceed with performance of the Work, and OWNER shall continue to make payment of undisputed amounts, during any time period while claims are pending.

ARTICLE 56 RESOLUTION OF CONSTRUCTION CLAIMS

A. Upon receipt of a claim, OWNER shall conduct a reasonable review of the claim, and, unless extended by mutual agreement of the parties, provide CONTRACTOR a written statement identifying what portion of the claim is disputed and what portion is undisputed within 45 days.

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

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

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

E. Within 10 business days following the conclusion of the meet and confer conference, if the claim or any portion of the claim remains in dispute, OWNER shall provide CONTRACTOR a written statement identifying the portion of the claim that remains in dispute and the portion that is undisputed. Any payment due on an undisputed portion of the claim shall be processed and made within 60 days after OWNER issues its written statement. Any disputed portion of the claim, as identified by the CONTRACTOR in writing, shall be submitted to nonbinding mediation, with OWNER and CONTRACTOR sharing the associated costs equally. OWNER and CONTRACTOR shall mutually agree to a mediator within 10 business days after the disputed portion of the claim has been identified in writing. Each party shall bear the fees and costs charged by its respective mediator in connection with the selection of the neutral mediator. If mediation is unsuccessful, the parts of the claim remaining in dispute shall be subject to applicable procedures described in sections K through O (below).

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

G. Unless otherwise agreed to by OWNER and CONTRACTOR in writing, the mediation conducted pursuant to section E (above) shall excuse any further obligation under Public Contract Code section 20104.4 to mediate after litigation has been commenced.

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

I. CONTRACTOR may present to OWNER a claim on behalf of a subcontractor or lower tier subcontractor. A subcontractor may request in writing, either on his or her own behalf or on
behalf of a lower tier subcontractor, that the CONTRACTOR present a claim for work which was performed by the subcontractor or by a lower tier subcontractor on behalf of the subcontractor. The subcontractor requesting that the claim be presented to OWNER shall furnish reasonable documentation to support the claim. Within 45 days of receipt of this written request, the CONTRACTOR shall notify the subcontractor in writing as to whether the CONTRACTOR presented the claim to OWNER and, if the CONTRACTOR did not present the claim, provide the subcontractor with a statement of the reasons for not having done so.

J. Except for tort claims, all claims or any portion of the claim(s) by CONTRACTOR remaining in dispute of $375,000 or less shall be subject to the provisions of Public Contract Code Section 20104 et seq., except that the provisions of Public Contract Code section 20104.4 relating to mediation after litigation has commenced are excused, unless a written agreement to the contrary has been entered into between the parties.

Only claims, regardless of size, for which timely notice has been given, which have been subjected to the procedures specified in Public Contract Code section 9204, remaining “unresolved” may be pursued through litigation. All other CONTRACTOR claims are deemed waived.

K. The parties shall attempt to resolve all claims during the course of the Project using the procedures set forth in Articles 55 and 56. Pending resolution of a claim, CONTRACTOR shall diligently continue to work on the Project to completion. CONTRACTOR agrees it will neither rescind the Contract Documents nor stop the progress of the work, and CONTRACTOR’S sole remedy shall be the procedures set forth in Articles 55 and 56.

ARTICLE 57 PERFORMANCE/PAYMENT BOND

A. Unless otherwise specified in the Contract Documents, CONTRACTOR shall furnish a Performance Bond, and for any contract of $25,000 or more, a Payment Bond, each in an amount equal to 100 percent of the price stated in the Contract Documents. All bonds shall be provided by a corporate surety admitted in California. Personal sureties and unregistered sureties are unacceptable. The Performance Bond shall remain in full force and effect through the guarantee period as specified in the Contract Documents and through such extended period as permissible to cover latent conditions.

B. All surety companies with a minimum rating of "A minus, VIII," ("A minus V" when the price stated in the Contract Documents is less than $500,000) as rated by the current edition of Best's Key Rating Guide, published by A.M. Best Company, Oldwick, New Jersey, 08858, and admitted in California shall be presumed to be satisfactory to OWNER for the issuance of bonds. In the alternative, any admitted surety company which satisfies the requirements set forth in California Code of Civil Procedure Section 995.660 shall be accepted and approved for the issuance of bonds.

ARTICLE 58 INSURANCE REQUIREMENTS

A. CONTRACTOR shall provide the following insurance coverages, which shall remain in full force and effect during the Project:

1. Workers’ Compensation;
2. Comprehensive General Liability;
3. Comprehensive Auto Liability;

4. Asbestos Abatement (on all modernization projects and on any other projects where asbestos-containing products may be affected by construction);

5. Course of Construction/Builder’s Risk.

B. All insurance companies must meet the following criteria:

1. U.S. Treasury listed;

2. California admitted, as confirmed by the California Department of insurance, or listed in the Department of Insurance’s List of Eligible Surplus Line Insurers (“LESLI List”);

All insurance companies with a minimum rating of A-VIII as rated by the current edition of Best’s Key Rating Guide, published by A.M. Best Company, Oldwick, New Jersey, 08858, and admitted to do business in California shall be presumed to be satisfactory to OWNER for the issuance of insurance.

C. All CONTRACTOR’S insurance policies shall name OWNER’s governing board or other governing body, OWNER’s consultants, the PMT (Aecom/Parsons), the Architect, and the Architect’s consultants, their officers, agents and employees as additional insureds with regard to damages and defense of claims arising from:

1. Activities performed by or on behalf of the Named Insured;

2. Products and completed operations of Named Insured;

3. Premises owned, leased or used by the Named Insured;

4. The ownership, operation, maintenance, use, loading, or unloading of any auto owned, leased, hired, or borrowed by the Named Insured.

D. Should CONTRACTOR fail to provide insurance as required by the Contract Documents, OWNER may, at OWNER’s option, take out and maintain at the expense of CONTRACTOR, insurance in the name of CONTRACTOR, or subcontractor, as OWNER may deem proper. OWNER may deduct the cost of taking out and maintaining such insurance from any sums which are due or to become due to CONTRACTOR under the Contract Documents.

E. Insurance coverage shall not be less than the following:

1. WORKERS’ COMPENSATION

   a. In accordance with the provisions of Section 3700 of the California Labor Code, CONTRACTOR and every subcontractor shall be required to secure the payment of compensation to its employees.

   b. In accordance with the provisions of Section 3700 of the California Labor Code, CONTRACTOR and every subcontractor shall be required to secure the
payment of compensation to its employees.

c. CONTRACTOR shall at all times maintain workers’ compensation insurance for all of its employees engaged in work under the Contract Documents, on or at the site of the Project. In case any of its work is sublet, CONTRACTOR shall require the subcontractor to similarly provide workers' compensation insurance for all of the subcontractors' employees. Any class of employee or employees not covered by a subcontractor’s insurance shall be covered by CONTRACTOR's insurance. In case any class of employees engaged in work under the Contract Documents, on or at the site of the Project, is not protected under the workers' compensation statutes, CONTRACTOR shall provide or shall cause a subcontractor to provide adequate insurance coverage for the protection of such employees not otherwise protected before subcontractor commences work. CONTRACTOR shall file with OWNER certificates of its insurance protecting workers and a 30-day notice shall be provided to OWNER before the cancellation or reduction of any policy of CONTRACTOR or subcontractor. CONTRACTOR shall submit proof of insurance and provide endorsements on the forms provided by OWNER or on forms approved by OWNER.

d. The certificate shall reflect coverage in at least the following amounts:

   (1) State workers’ compensation statutory benefits policy—limits of not less than $1,000,000.

   (2) Employer's liability policy – limits of not less than $1,000,000.

2. COMMERCIAL GENERAL LIABILITY

a. CONTRACTOR shall take out and maintain such commercial general liability insurance as shall protect CONTRACTOR and OWNER from all claims for personal injury, including accidental death, to any person (including, as to OWNER, injury or death to CONTRACTOR's or subcontractor's employees), as well as from all claims for property damage arising from operations under the Contract Documents, in amounts set forth in this article.

b. CONTRACTOR shall require its subcontractors, if any, to take out and maintain similar general commercial liability insurance in like amounts.

c. Coverage must be written on an occurrence versus a “claims made” form with policy limits not less than $1,000,000 per occurrence and $2,000,000 aggregate per project on bodily injury and property damage, and include coverage for the following:

   (1) Premises - operations;

   (2) Contractual liability;

   (3) Products;

   (4) Completed operations;
(5) Broad form property damage including explosion, collapse, and underground coverages;

(6) Personal injury;

d. In the event of any payment under the Commercial General Liability Policy, the insurer shall be subrogated to the extent of such payment to all the insured’s rights of recovery, but the insurer shall have no rights of subrogation against OWNER, OWNER's consultants, the Architect, and the Architect’s consultants, their elected or appointed officials, or employees, except as respects the negligence of OWNER, the Architect, and Architect’s consultants.

3. COMPREHENSIVE AUTO LIABILITY INSURANCE

Such insurance shall have combined single limits of not less than $1,000,000, bodily injury, property damage, including coverage for owned, non-owned and hired autos.

4. ASBESTOS ABATEMENT

a. Must be occurrence coverage versus “claims made” coverage.

b. $1,000,000 per occurrence with not less than $2,000,000 annual aggregates limits required.

c. Certificates of insurance must specify “asbestos abatement.”

5. COURSE OF CONSTRUCTION (COC)/BUILDER’S RISK INSURANCE

a. On new school construction projects, CONTRACTOR will be required to provide builders risk coverage with limits equal to 100 percent of the insurable value of the Project, including all items of labor and materials in or adjacent to the structure insured, all materials in place or to be used as part of the permanent construction, including surplus materials, shanties, protective fences, bridges, or temporary structures, miscellaneous materials and supplies incident to the work, and such scaffolding, staging, towers, forms, and equipment as are not owned or rented by CONTRACTOR, the cost of which are included in the cost of the Work. Such insurance shall be maintained for the life of the Contract.

b. If required by OWNER, CONTRACTOR shall maintain a Builder’s Risk Completed Value Form providing all risk coverage, naming CONTRACTOR and OWNER as insureds and subcontractors to all levels as additional insureds, as their respective interests appear.

c. A maximum deductible of $5,000 per occurrence will be allowed on projects. CONTRACTOR shall be responsible for any deductibles under the property insurance policy.

d. The builder's risk insurance limits shall initially be for the full amount of the Project price shown in the Agreement document and shall be maintained in full force and effect at all times between the signing of the contract and final
acceptance of the completed work by OWNER at an amount equaling the estimated cost to OWNER of rebuilding.

F. CONTRACTOR shall be responsible for payment of any deductibles under any of the above named coverages.

ARTICLE 59 PROOF OF INSURANCE COVERAGE

A. CONTRACTOR shall deliver proof of carriage of required insurance via the PMIS. This proof shall be presented with the required Payment and Performance Bonds and return of other Contract Documents.

B. CONTRACTOR shall not commence work or allow any subcontractor to commence work under this contract until CONTRACTOR has obtained all required insurance and certificates, which shall be delivered to and approved by OWNER.

C. Certificates and insurance policies shall include the following:

1. A clause stating:
   "This policy shall not be canceled or reduced in required limits of liability or amount of insurance until notice has been mailed to certificate holder stating the date of cancellation or reduction. The date of cancellation or reduction may not be less than 30 days after the date of mailing the notice."

2. Transcripts from the policies authenticated by the proper office of the insurer evidencing, in particular, those insured, the extent of the insurance, the location of and the operations to which the insurance applies, expiration date, and cancellation and reduction notice.

3. A statement that OWNER is a named additional insured under the policy described and that the insurance policy shall be primary to any insurance or self-insurance maintained by OWNER.

D. OWNER shall be named as certificate holder and additional insured and all certificates with endorsements shall be forwarded to OWNER.

E. In the event of modification or cancellation of the policy or policies during the periods of coverage stated in this article, 30 days' prior written notice of such cancellation shall be delivered or mailed by certified mail, return receipt requested, to OWNER.

F. Acceptance of the certificates of insurance shall not relieve or decrease CONTRACTOR’s liability. Insurance coverage in the minimum amounts set forth in the Contract Documents shall not be construed to relieve CONTRACTOR of liability in excess of such coverage, nor shall it preclude OWNER from taking such other actions as are available to it under any other provisions of the Contract Documents or otherwise in law.

ARTICLE 60 INDEMNIFICATION

A. CONTRACTOR shall hold harmless, defend, and indemnify OWNER, the PMT, the Architect, and Inspector of Record and the officials, officers, employees, volunteers, and agents, and each of them, from any and all claims, demands, causes of action, costs, expenses, liability,
loss, damage or injury, in law or equity, to property or persons, including wrongful death, in any manner arising out of or incident to any acts, omissions, or willful misconduct of CONTRACTOR, its officials, officers, employees, agents, consultants, and subcontractors arising out of or in connection with the performance of the Work or the Contract Documents, including without limitation the payment of all consequential damages and attorney's fees and other related costs and expenses. At CONTRACTOR’s own cost, expense, and risk and with counsel reasonably satisfactory to OWNER, CONTRACTOR shall defend any and all such suits, actions, or other legal proceedings of every kind that may be brought or instituted against OWNER, the PMT, the Architect, Inspector of Record, and their directors, officials, officers, employees, agents, or volunteers. CONTRACTOR shall pay and satisfy any judgment, award, or decree that may be rendered against OWNER, the PMT, the Architect, Inspector of Record or their directors, officials, officers, employees, agents, or volunteers, in any such suit, action, or other legal proceeding. CONTRACTOR shall reimburse OWNER, the PMT, the Architect, Inspector of Record and their directors, officials, officers, employees, agents, and volunteers, for any and all legal expenses and costs incurred by each of them in connection with any suit, action, or legal proceeding, or in enforcing the indemnity provided under this Article.

B. CONTRACTOR shall require each subcontractor to hold harmless, defend, and indemnify OWNER, the PMT, the Architect, Inspector of Record and their officials, officers, employees, volunteers and agents, from any and all claims, demands, causes of action, costs, expenses, liability, loss, damage, or injury, in law or equity, to property or persons, including wrongful death, in any manner arising out of or incident to any acts, omissions, or willful misconduct of subcontractor its officials, officers, employees, agents, consultants and subcontractors arising out of or in connection with the performance of the Work or the Contract Documents, including without limitation the payment of all consequential damages and attorneys’ fees and other related costs and expenses. At subcontractor’s own cost, expense and risk, subcontractor shall defend any and all such suits, actions, or other legal proceedings of every kind that may be brought or instituted against OWNER, the PMT, the Architect, Inspector of Record, and their directors, officials officers, employees, agents or volunteers. Subcontractor shall pay and satisfy any judgment, award, or decree that may be rendered against OWNER, the PMT, the Architect, Inspector of Record, or their directors, officials, officers, employees, agents or volunteers, in any such suit, action, or other legal proceeding. Subcontractor shall reimburse OWNER, the PMT, the Architect, Inspector of Record, and their directors, officials, officers, employees, agents, and volunteers, for any and all legal expenses and costs incurred by each of them in connection with any suit, action, or legal proceeding, or in enforcing the indemnity provided under this article.

C. The obligations of this Article expressly include but are not limited to the obligations of indemnification and defense of OWNER, the PMT, the Architect, Inspector of Record, and their directors, officials, officers, agents and employees arising in any manner out of any claims against them brought by other contractors, subcontractors, material suppliers, or other third parties alleging any of them owe the claimant either time, compensation, or damages due to any act, omission, or occurrence caused or contributed to in any degree by CONTRACTOR or any of its subcontractors.

ARTICLE 61 ASSIGNMENT

CONTRACTOR shall not assign any rights, delegate any duties, transfer, convey, sublet, or otherwise dispose of the Construction Agreement or of its rights, title, or interest in or to the Construction Agreement or any part of it. If CONTRACTOR assigns, transfers, conveys, sublets, or otherwise disposes of the Construction Agreement or its right, title, or interest in it, or any
part of it, any attempted or purported assignment, transfer, conveyance, sublease, or other disposition, shall be null, void, and of no legal effect whatsoever, and at OWNER's option the Construction Agreement may be terminated, revoked, and annulled, and OWNER shall then be discharged from any and all liability and obligations to CONTRACTOR, and to its purported assignee or transferee, arising out of the Construction Agreement. This expressly includes but is not limited to any attempts to create “pass through” or similar rights for subcontractors to pursue claims directly against OWNER.

ARTICLE 62 SEPARATE CONTRACTS

A. OWNER reserves the right to let other contracts in connection with this Work. CONTRACTOR shall afford other contractors reasonable opportunity for introduction and storage of their materials and execution of their work, and shall coordinate its work with those other contractors.

B. If any part of CONTRACTOR's work depends upon work of any other contractor for proper execution of results, CONTRACTOR shall inspect and promptly report in writing to the Architect any defects in the other contractor's work that render it unsuitable for proper execution or results. CONTRACTOR's failure to inspect and report shall constitute its acceptance of any other contractor's work as fit and proper for reception of its work except as to defects which may develop in another contractor's work after execution of CONTRACTOR's work.

C. To ensure proper execution of CONTRACTOR's subsequent work, CONTRACTOR shall measure and inspect work already in place and shall report in writing to the PMT any discrepancy between executed work and the Contract Documents.

D. CONTRACTOR shall ascertain to CONTRACTOR's satisfaction the scope of the Project and nature of any other contracts that have been or may be awarded by OWNER in connection with the Project, in order that CONTRACTOR may perform the work in light of any other contracts. Nothing contained in the Contract Documents shall be interpreted as granting to CONTRACTOR exclusive occupancy of the Project site. CONTRACTOR shall not cause any unnecessary hindrance or delay to any other contractor working on the Project. If simultaneous execution of any contract for the Project is likely to cause interference with performance of some other contract or contracts, OWNER shall decide which contractor shall cease work temporarily and which contractor shall continue or whether work can be coordinated so that the contractors may proceed simultaneously. OWNER shall not be responsible for any damage suffered or extra costs incurred by CONTRACTOR resulting directly or indirectly from the award or performance or attempted performance of any other contract or contracts on the Project, or caused by any decision or omission of OWNER regarding the order in performing or coordinating the contracts.

ARTICLE 63 OWNER'S RIGHT TO TERMINATE CONTRACT

Termination for Cause:

A. OWNER may serve upon CONTRACTOR and its surety written notice of OWNER's intention to terminate the Construction Agreement, without prejudice to any other right or remedy, upon the occurrence of any of the following circumstances:

1. If CONTRACTOR refuses or fails to pursue the Work or any part with sufficient diligence to ensure its completion within the time specified, or any extension of time;
2. If CONTRACTOR refuses or fails to complete the Work within the time required;

3. If CONTRACTOR is adjudged a bankrupt, or makes a general assignment for the benefit of its creditors;

4. If a receiver is appointed on account of CONTRACTOR’s insolvency;

5. If CONTRACTOR persistently or repeatedly refuses or fails to supply enough properly skilled workers or proper materials to complete the Work in the time specified, except in cases for which extension of time is provided;

6. If CONTRACTOR fails to make prompt payment to subcontractors or for material or labor;

7. If CONTRACTOR persistently disregards laws, ordinances, or instructions of OWNER;

8. If CONTRACTOR or its SUBCONTRACTORS violates any of the provisions of the Contract Documents.

B. The notice of intent to terminate shall contain the reasons for termination.

C. Unless the identified condition(s) or violation(s) ceases and arrangements satisfactory to OWNER for correction are made within 10 days after service of the notice, the Construction Agreement may be terminated, in the total discretion of OWNER. In that event, CONTRACTOR shall not be entitled to receive any further payment until the Work is completed.

D. In the event of OWNER’s election to terminate, OWNER shall immediately serve written notice of termination upon CONTRACTOR and upon surety on CONTRACTOR’s Performance Bond, and the surety shall then have the right to take over and perform this contract; provided however that if within seven days after service upon the surety of the notice of election to terminate, the surety does not give OWNER written notice of its intention to take over and perform the Construction Agreement, or does not commence performance within 15 days after the date of service of the notice of termination by OWNER on surety, OWNER may take over and complete the Work by contract or by any other method it deems advisable.

E. CONTRACTOR and its surety shall be liable to OWNER for any excess cost or other damages incurred by OWNER. If OWNER takes over the Work as provided above, OWNER may exclude CONTRACTOR and the surety from the premises, or any portion of the premises, and take control of the premises without liability and without affecting the liability of CONTRACTOR and the surety for completion of the Work. In addition, OWNER may take possession of and utilize in completing the Work any materials, appliances, equipment, and other property belonging to CONTRACTOR on the work site necessary for completion of the Project, without liability.

F. If the unpaid balance of the contract price exceeds the expense of finishing the Work, including without limitation compensation for additional architectural, managerial, inspection, and administrative services, the excess shall be paid to CONTRACTOR. If the expense exceeds the unpaid balance, CONTRACTOR shall pay the difference to OWNER. Any expenses incurred by OWNER, and any damage incurred through CONTRACTOR’s default, shall be
Termination for Convenience:

H. OWNER has discretion to terminate this Agreement at any time and require CONTRACTOR to cease all work on the project by providing CONTRACTOR written notice of termination specifying the desired date of termination. Upon receipt of written notice from OWNER of such termination for OWNER's convenience, CONTRACTOR shall:

1. Cease operations as directed by OWNER in the notice;

2. Take any actions necessary, or that OWNER may direct, for the protection and preservation of the Work; and

3. Maintain any insurance provisions required by the Contract Documents.

In case of termination for OWNER's convenience, CONTRACTOR shall be entitled to receive payment from OWNER for work satisfactorily executed and for proven loss with respect to materials, equipment, and tools, including overhead and profit for that portion of the work completed. In the case of termination for convenience, OWNER shall have the right to accept assignment of subcontractors. The foregoing provisions are in addition to and not in limitation of any other rights or remedies available to OWNER.

ARTICLE 64 NO WAIVER

The failure of OWNER in any one or more instances to insist upon strict performance of any of the terms of the Contract Documents, or to exercise any option conferred in them, shall not be construed as a waiver or relinquishment to any extent of the right to assert or rely upon any such terms or option on any future occasion.

ARTICLE 65 EXCISE TAXES

If any transaction under the Contract Documents constitutes a sale on which a federal excise tax is imposed under federal excise tax law, and the sale is exempt from the excise tax because it is a sale to a state or local government for its exclusive use, upon request OWNER will execute a certificate of exemption which will certify that (1) OWNER is a political subdivision of the State for the purpose of such exemption, and (2) the sale is for the exclusive use of OWNER. No excise tax for such materials shall be included in any bid price.

ARTICLE 66 NOTICE OF TAXABLE POSSESSORY INTEREST

The terms of the Contract Documents may result in the creation of a possessory interest. If a possessory interest is vested in a private party to the Contract Documents, the private party may be subjected to the payment of property taxes levied on such interest.

ARTICLE 67 ASSIGNMENT OF ANTITRUST ACTIONS

A. Public Contract Code Section 7103.5(b) provides:
“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 awarding body (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. Sect. 15) or under the Cartwright Act (Chapter 2 (commencing with Section 16700) of Part 2 of Division 7 of the Business and Professions Code), arising from purchases of goods, services, or materials pursuant to the public works contract or the subcontract. This assignment shall be made and become effective at the time the awarding body tenders final payment to the contractor, without further acknowledgment by the parties.”

B. For itself and all subcontractors, CONTRACTOR agrees to assign to OWNER all rights, title, and interest in and to all such causes of action CONTRACTOR and all subcontractors may have under the Contract Documents. This assignment shall become effective at the time OWNER tenders final payment to CONTRACTOR, and CONTRACTOR shall require assignments from all SUBCONTRACTORS to comply with this requirement.

ARTICLE 68 PATENTS, ROYALTIES, AND INDEMNITIES

CONTRACTOR shall hold harmless OWNER and its governing board or other governing body, officers, agents, and employees from liability of any nature or kind, including cost and expense, for or on account of any patented or unpatented invention, process, article, or appliance manufactured or used in the performance of the Work of the Contract Documents, including its use by OWNER, unless otherwise specifically provided in the Contract Documents and unless such liability arises from the sole negligence, active negligence, or willful misconduct of OWNER.

ARTICLE 69 STATE AUDIT

Pursuant to and in accordance with the provisions of Government Code Section 8546.7, CONTRACTOR and any subcontractor connected with the performance of the Contract Documents involving the expenditure of public funds in excess of $10,000, including, but not limited to the cost of administration of the Contract Documents, shall be subject to examination and audit by the State of California, either at the request of OWNER or as part of any audit of OWNER, for a period of three years after final payment is made under the Contract Documents.

ARTICLE 70 PROVISIONS REQUIRED BY LAW DEEMED INSERTED

Every provision of law and clause required by law to be inserted in the Contract Documents shall be deemed to be inserted, and the Contract Documents shall be read and enforced as though it were included. If through mistake or otherwise any provision is not inserted or is not correctly inserted, upon application of either party the Contract Documents shall be amended to make the insertion or correction. All references to statutes and regulations shall include all amendments, replacements, and enactments on the subject which are in effect as of the date of the Contract Documents and any later changes which do not materially and substantially alter the positions of the parties.

ARTICLE 71 NOTICE AND SERVICE

A. Any notice from one party to the other under the Contract Documents shall be in writing and shall be dated and signed by the party giving the notice or by a duly authorized
representative of the party. Any notice shall not be effective for any purpose unless served in one of the following ways:

B. If notice is given to OWNER, by personal delivery to OWNER or by depositing the notice in the United States mail, enclosed in a sealed envelope addressed to OWNER and sent by registered or certified mail with postage prepaid.

C. If notice is given to CONTRACTOR, by personal delivery to CONTRACTOR or to CONTRACTOR’s superintendent at the Project Site, or by depositing the notice in the United States mail, enclosed in a sealed envelope addressed to CONTRACTOR at its regular place of business or at such address as may have been established for the conduct of work under the Contract Documents, and sent by registered or certified mail with postage prepaid.

D. If notice is given to surety or other persons, by personal delivery or by depositing the notice in the United States mail, enclosed in a sealed envelope addressed to the surety or person at the address last communicated by the surety or other person to the party giving notice, and sent by registered or certified mail with postage prepaid.

ARTICLE 72 NOT USED

ARTICLE 73 PROGRESS MEETINGS

CONTRACTOR shall attend all progress meetings and take clear and complete notes of the meetings and all subjects discussed at the meetings, submitting the notes within 48 hours of the end of the meeting to the Architect for review and comment. Notes shall be kept in a manner which will permit easy tracking of the progress of each topic of discussion.

ARTICLE 74 PROGRAM MANAGEMENT INFORMATION SYSTEMS

Contractor shall utilize as required, the PMIS (Program Management Information Systems) that have been established for the KCCD Bond Program. Access to and training for the PMIS will be provided at no charge to the Contractor.
12-PAYMENT BOND

KNOW ALL PERSONS BY THESE PRESENTS:

WHEREAS, the KERN COMMUNITY COLLEGE DISTRICT, (referred to as “Owner”), has awarded to ____________________ (referred to as the "Contractor/Principal") a contract for the work described as follows: BAKERSFIELD COLLEGE INFRASTRUCTURE (28F792) CENTRAL PLANT MATH/SCIENCE COIL REPLACEMENT.

WHEREAS, Contractor/Principal is required by Division 4, Part 6, Title 3, Chapter 5 (commencing at Section 9550) of the California Civil Code to furnish a bond in connection with the contract;

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

THE CONDITION OF THIS OBLIGATION IS SUCH that if the Contractor/Principal, his/her or its heirs, executors, administrators, successors, or assigns, or a subcontractor, shall fail to pay any person or persons named in Civil Code Section 9100 or fail to pay for any materials or other supplies used in, upon, for, or about the performance of the work contracted to be done, or for any work or labor thereon of any kind, or for amounts due under the Unemployment Insurance Code with respect to work or labor thereon of any kind, or shall fail to deduct, withhold, and pay over to the Employment Development Department any amounts required to be deducted, withheld, and paid over by Section 13020 of the Unemployment Insurance Code with respect to work and labor thereon of any kind, then said Surety will pay for the same, in or to an amount not exceeding the amount set forth above, and in case suit is brought upon this bond Surety will also pay such reasonable attorney's fees as shall be fixed by the court, awarded and taxed as provided in Division 4, Part 6, Title 3, Chapter 5 (commencing at Section 9550) of the California Civil Code.

This bond shall inure to the benefit of any of the persons named in Section 9100 of the California Civil Code so as to give a right of action to such person or their assigns in any suit brought upon this bond.

It is further stipulated and agreed that the Surety of this bond shall not be exonerated or released from the obligation of the bond by any change, extension of time for performance, addition, alteration, or modification in, to, or of any contract, plans, specifications, or agreement pertaining or relating to any scheme or work of improvement described above or pertaining or relating to the furnishing of labor, materials, or equipment therefor, nor by any change or modification of any terms of payment or extension of the time for any payment pertaining or relating to any scheme or work of improvement described above, nor by any rescission or attempted rescission of the contract, agreement, or bond, nor by any conditions precedent or subsequent in the bond attempting to limit the right of recovery of claimants otherwise entitled to recover under any such contract or agreement or under the bond, nor by any fraud practiced by any person other than the claimant seeking to recover on the bond, and
that this bond be construed most strongly against the Surety and in favor of all persons for whose benefit such bond is given, and under no circumstances shall Surety be released from liability to those for whose benefit such bond has been given, by reason of any breach of contract between the Owner and original contractor or on the part of any obligee named in such bond, but the sole conditions of recovery shall be that claimant is a person described in Section 8400 and 8402 of the California Civil Code and has not been paid the full amount of his/her or its claim and that Surety does hereby waive notice of any such change, extension of time, addition, alteration, or modification.

Any claims under this bond may be addressed to:

Name & address of Surety

Name & address of agent or representative in California, if different than above

Telephone # of Surety, or agent or representative in California

IN WITNESS WHEREOF, we have hereto set our hands and seals on this day of , 20 .

[SEAL]

Contractor/Principal

By: _________________________________

Signature

Print Name Above

Print Title Above

Surety: ______________________________

By: _________________________________

Signature

Print Name Above

Print Title Above
[SEAL AND NOTARIAL ACKNOWLEDGMENT OF SURETY]
13-PERFORMANCE BOND

KNOW ALL PERSONS BY THESE PRESENTS:

WHEREAS, the KERN COMMUNITY COLLEGE DISTRICT (referred to as “Owner”), has awarded to __________________ (referred to as “Contractor/Principal”) a contract for the work described as follows: BC-BAKERSFIELD COLLEGE INFRASTRUCTURE (28F792) CENTRAL PLANT MATH/SCIENCE COIL REPLACEMENT.

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

THE CONDITIONS OF THIS OBLIGATION IS SUCH THAT, if the hereby bonded Contractor/Principal, its heirs, executors, administrators, successors, or assigns, shall in all things stand to and abide by and well and truly keep and perform all the undertakings, terms, covenants, conditions, and agreements in the said contract and any alteration thereof, made as therein provided, including but not limited to the provisions regarding contract duration, indemnification, and liquidated damages, all within the time and in the manner therein designated in all respects according to their true intent and meaning, then this obligation shall become null and void; otherwise, it shall be and remain in full force and effect.

As a condition precedent to the satisfactory completion of the contract, the above obligation shall hold good for a period of year(s) after the acceptance of the work by the Owner, during which time if Contractor/Principal shall fail to make full, complete, and satisfactory repair and replacements and totally protect the Owner from loss or damage made evident during the period of year(s) from the date of completion of the work, and resulting from or caused by defective materials or faulty workmanship, the above obligation in penal sum thereof shall remain in full force and effect. The obligation of Surety under this bond shall continue so long as any obligation of Contractor/Principal remains.

Whenever Contractor/Principal shall be, and is declared by the Owner to be, in default under the contract, the Owner having performed the Owner’s obligations under the contract, the Surety shall promptly remedy the default, or shall promptly:

1. Complete the contract in accordance with its terms and conditions; or

2. Obtain a bid or bids for completing the contract in accordance with its terms and conditions, an upon determination by Surety of the lowest responsive and responsible bidder, arrange for a contract between such bidder and the Owner, and make available as work progresses sufficient funds to pay the cost of completion less the balance of the contract price, but not exceeding, including other costs and damages for which Surety may be liable under this Performance Bond, the amount set forth above. The term “balance of the contract price” as used in this paragraph shall mean the total amount payable to Contractor/Principal by the Owner under the
contract and any modifications to it, less the amount previously paid by the Owner to the Contractor/Principal.

Surety expressly agrees that the Owner may reject any contractor or subcontractor which may be proposed by Surety in fulfillment of its obligations in the event of default by the Contractor/Principal.

Surety shall not utilize Contractor/Principal in completing the contract nor shall Surety accept a bid from Contractor/Principal for completion of the work if the Owner, when declaring the Contractor/Principal in default, notifies Surety of the Owner’s objection to Contractor/Principal’s further participation in the completion of the work.

No right of action shall accrue on this bond to or for the use of any person or corporation other than the Owner named herein or the successors or assigns of the Owner. Any suit under this bond must be instituted within the applicable statute of limitations period.

FURTHER, for value received, the Surety hereby stipulates and agrees that no change, extension of time, alternation, or modification of the Contract Documents, or of the work to be performed under them, shall in any way affect its obligations on this bond; and it does hereby waive notice of any change, extension of time, alteration, or modification of the Contract Documents or of work to be performed under them.

Contractor/Principal and Surety agree that if the Owner is required to engage the services of an attorney in connection with the enforcement of this bond, each shall pay Owner’s reasonable attorney’s fees incurred, with or without suit, in addition to the above amount.

Any claims under this bond may be addressed to:

Name and address of Surety:

Name and address of agent or representative in California, if different than above:

Telephone number of Surety, or agent or representative in California:

IN WITNESS WHEREOF, we have hereto set our hands and seals on this __________ day of __________, 20_____.

[SEAL]

CONTRACTOR/PRINCIPAL

By ____________________________

Signature

Type or Print Name Above
SURETY

By __________________________________________

Signature

Type or Print Name Above

Type of Print Title Above

[SEAL AND NOTARIAL ACKNOWLEDGMENT OF SURETY]
14-WORKERS' COMPENSATION CERTIFICATE

PROJECT TITLE: BID #: BAKERSFIELD COLLEGE INFRASTRUCTURE (28F792)
CENTRAL PLANT MATH/SCIENCE COIL REPLACEMENT
OWNER: KERN COMMUNITY COLLEGE DISTRICT

Labor Code Section 3700 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, which may be given upon furnishing proof satisfactory to the Director of Industrial Relations of ability to self-insure and to pay any compensation that may become due to his or her employees.

“(c) For any county, city, city and county, municipal corporation, public district, public agency, or any political subdivision of the state, including each member of a pooling arrangement under a joint exercise of powers agreement (but not the state itself), by securing from the Director of Industrial Relations a certificate of consent to self-insure against workers' compensation claims, which certificate may be given upon furnishing proof satisfactory to the Director of Industrial Relations of ability to administer workers' compensation claims properly, and to pay workers' compensation claims that may become due to its employees. On or before March 31, 1979, a political subdivision of the state which on December 31, 1978, was uninsured for its liability to pay compensation, shall file a properly completed and executed application for a certificate of consent to self-insure against workers' compensation claims. The certificate shall be issued and be subject to the provisions of Section 3702."

I am aware of the provisions of 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 and during the performance of the work on this Project.

Print Name of Contractor Above

By: ____________________________ Date: ____________________________

Print Name Above
Title: ____________________________

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PUBLIC WORKS BID PACKET 1214
WORKERS' COMPENSATION CERTIFICATE
PAGE 1 OF 1
[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.]
15-GUARANTEE

PROJECT TITLE:  BID #:  BAKERSFIELD COLLEGE INFRASTRUCTURE (28F792)
CENTRAL PLANT MATH/SCIENCE COIL REPLACEMENT

OWNER:  KERN COMMUNITY COLLEGE DISTRICT

We guarantee that the construction work described above has been performed in accordance with, and complies with, the Contract Documents. We agree to repair or replace any or all of the work, together with any other adjacent work which may be required in connection with it, that may prove to be defective in workmanship or material within a period of one year from the date of acceptance of the project by Owner and the filing of the final verified report with the Division of State Architect (DSA), ordinary wear and tear excepted.

In the event of our failure to comply with these conditions within the applicable time frame as determined by Owner pursuant to the Contract Documents, in no event later than one week after being notified in writing by Owner, we authorize Owner to proceed to have the defects repaired at our expense, for which we will pay the costs and charges upon demand.

Date: 
Name of Contractor

By: ________________________________
Signature
Print Name: ________________________________
Title: ________________________________

Representative of Contractor to be Contacted for Service:
Name: ________________________________
Address: ________________________________

Telephone number of Contact: ________________________________
This Escrow Agreement is made and entered into by and between Owner KERN COMMUNITY COLLEGE DISTRICT (KCCD), whose address is 2100 Chester Ave, Bakersfield, Ca. 93301, and Contractor ________________, whose address is ________________, and Escrow Agent ________________, whose address is ________________.

For the consideration set forth in this Agreement, the Owner, Contractor, and Escrow Agent agree as follows:

1. Pursuant to Section 22300 of the Public Contract Code of the State of California, Contractor has the option to deposit securities with Escrow Agent as a substitute for retention earnings required to be withheld by Owner pursuant to the Construction Agreement entered into between the Owner and Contractor for BAKERSFIELD COLLEGE INFRASTRUCTURE (28F792) CENTRAL PLANT MATH/SCIENCE COIL REPLACEMENT in the amount of $__________, dated _______________ (referred to as the "Construction Agreement"). Alternatively, on written request of Contractor, 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 10 days of the deposit. The market value of the securities at the time of the substitution shall be at least equal to the cash amount then required to be withheld as retention under the terms of the Construction Agreement between the Owner and Contractor. Securities shall be held in the name of ________________ and shall designate the Contractor as the beneficial owner.

2. Owner shall make progress payments to Contractor for those funds which otherwise would be withheld from progress payments under the provisions of the Construction Agreement, provided the Escrow Agent holds securities in the form and amount specified above.

3. When Owner makes payments of retentions earned directly to the Escrow Agent, the Escrow Agent shall hold them for the benefit of Contractor until the time the escrow created under this Escrow Agreement is terminated. Contractor may direct 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 Owner pays the Escrow Agent directly.

4. Contractor shall be responsible for paying all fees for the expenses incurred by Escrow Agent in administering the Escrow Account and all expenses of Owner. These expenses and payment terms shall be determined by 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 Escrow Agent that Owner consents to withdrawal of the amount sought to be withdrawn by Contractor.

7. Owner shall have a right to draw upon the securities in the event of default by Contractor. Upon seven days' written notice of the default to the Escrow Agent from Owner, Escrow Agent shall immediately convert the securities to cash and distribute the cash as instructed by Owner.

8. Upon receipt of written notification from Owner certifying that the work under the Construction Agreement is final and complete, and that Contractor has complied with all requirements and procedures applicable to the Construction Agreement, 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 monies and securities on deposit and payment of fees and charges.

9. Escrow Agent shall rely on the written notifications from Owner and Contractor pursuant to Sections 6 to 8, inclusive, of this Escrow Agreement and 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 Owner and on behalf of Contractor in connection with the foregoing, and exemplars of their respective signatures, are as follows:

On behalf of Owner: Kern Community College District

On behalf of Contractor:

Title

Title

Name Above [typed or printed]

Name Above [typed or printed]

Signature

Signature

Address:

Address:
On behalf of Escrow Agent: ____________________

Title

_____________________________

Name Above [typed or printed]

_____________________________

Signature

Address: _____________________

_____________________________

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

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

Owner: **Kern Community College District**  Contractor: ____________________

___________________________       _____________________________

Title Above      Title Above

___________________________       _____________________________

Name Above [typed or printed]   Name Above [typed or printed]

_____________________________  ______________________________

Signature      Signature

Escrow Agent: ____________________

___________________________

Title Above

___________________________

Name Above [typed or printed]

_____________________________

Signature
19-SHOP DRAWING TRANSMITTAL

PROJECT TITLE/ BID #: BAKERSFIELD COLLEGE INFRASTRUCTURE (28F792)
CENTRAL PLANT MATH/SCIENCE COIL REPLACEMENT

OWNER: KERN COMMUNITY COLLEGE DISTRICT

The procedure governing shop drawing submittals is contained in the Contract Documents. All requirements must be followed by the Contractor. Failure to comply with all requirements will constitute grounds for return of the shop drawing for proper resubmittal. The Contractor shall sequentially number each submittal, using this form.

Date: Submittal No.
From: To:

This is: an original submittal ☐
a 2nd submittal ☐
a [ ] submittal ☐

Subject of Submittal:

Material or Equipment Designation:

Specification Section(s):

Check either (a) or (b)

☐ (a) We have verified that the material or equipment contained in this submittal meets all the requirements specified or shown (no exceptions).

☐ (b) We have verified that the material or equipment contained in this submittal meets all the requirements specified or shown, except for the following deviations (List deviations on attached sheet).

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

Signature of Contractor or Supplier
20-DRUG-FREE WORKPLACE CERTIFICATION

PROJECT TITLE/BID #: BAKERSFIELD COLLEGE INFRASTRUCTURE (28F792)
CENTRAL PLANT MATH/SCIENCE COIL REPLACEMENT

OWNER: KERN COMMUNITY COLLEGE DISTRICT

This Drug-Free Workplace Certification is required pursuant to Government Code Section 8350 and following sections, and the Drug-Free Workplace Act of 1990. The Drug-Free Workplace Act of 1990 requires that every person or organization awarded a contract 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 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 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 work on the Project be given a copy of the statement required by subdivision (a), and that as a condition of employment on the Contract 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 substances at the workplace, (b) establishing a drug-free awareness program, and (c) requiring that each employee engaged in the performance of the Contract be given a copy of the statement required by Section 8355(a) and requiring that the employee agree to abide by the terms of that statement.

I also understand that if the Owner determines that I have either (a) made a false certification or (b) violated this certification by failing to carry out the requirements of Section 8355, the contract awarded 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 and following sections.

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

Name of Contractor
________________________________
Signature
________________________________
Print Name Above
________________________________
Print Title Above
Date: _____________________
COST CHANGE REQUEST

PROJECT:
BAKERSFIELD COLLEGE INFRASTRUCTURE (28F792)
CENTRAL PLANT MATH/SCIENCE COIL REPLACEMENT

To Contractor:

Send Correspondence To:
Kern Community College District
2100 Chester Ave
Bakersfield, CA 93301-4099

The above-referenced Construction Agreement is modified by agreement of the parties to the extent described below. All work shall be in accordance with the Contract Documents, Project Manual, Drawings and Specifications:

<table>
<thead>
<tr>
<th>ITEM #</th>
<th>DESCRIPTION OF CHANGE</th>
<th>AMOUNT OF CHANGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Enter Description of the CCR Event Here</td>
<td>$</td>
</tr>
<tr>
<td>2</td>
<td>Enter Description of the CCR Event Here</td>
<td>$</td>
</tr>
<tr>
<td>3</td>
<td>Enter Description of the CCR Event Here</td>
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<td>4</td>
<td>Enter Description of the CCR Event Here</td>
<td>$</td>
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<tr>
<td>5</td>
<td>Enter Description of the CCR Event Here</td>
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<tr>
<td>6</td>
<td>Enter Description of the CCR Event Here</td>
<td>$</td>
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<tr>
<td></td>
<td><strong>TOTAL</strong></td>
<td><strong>$ = x.xx %</strong></td>
</tr>
</tbody>
</table>

All other terms and conditions of the Contract Documents shall remain in effect.

- Original contract price
- Net change by previous change orders
- Contract amount prior to this CCR
- Amount of this CCR
- Revised contract amount including this CCR

The Contract time due to this CCR...
- Is Increased /Decreased by ____ Working Days, and the costs directly associated with this contract Time Change are included above.
- Remains Unchanged.

Revised Completion Date, including this CCR: _______________ month, day, year

- The undersigned Contractor approves the foregoing as to the changes, if any, and the Cost specified for each item and as to the extension of time allowed, if any, for completion of the entire Work as stated herein, and agrees to furnish all labor, materials, and service, and perform all work necessary to complete any additional work specified for the consideration stated herein. Submission of sums which have no basis in fact or which Contractor knows are false are at the sole risk of Contractor and may be a violation of the False Claims Act set forth under Government Code section 12650 et seq. It is understood that the changes herein to the Contract shall only be effective when approved by the governing board of the District. It is expressly understood that the value of the extra Work or changes expressly includes any and all of the Contractor’s costs and expenses, both direct and indirect, resulting from additional time required on the Project or resulting from delay to the Project. Any costs, expenses, damages, or time extensions not included are deemed waived.
- It is expressly understood that the value of such extra work or changes as determined by any of these methods expressly includes any and all of contractor’s cost and expenses, both direct and indirect, resulting from delays or additional time required on the project, or resulting from accelerated work to avoid delays to the project.

APPROVED BY

Contractor
Signature
Date

Architect
Signature
Date

BAKERSFIELD COLLEGE CAMPUS CENTER ANNEX [Admin Svcs] BID PACKET
<table>
<thead>
<tr>
<th>Role</th>
<th>Signature</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>CM (AECOM+Parsons)</td>
<td></td>
<td></td>
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<tr>
<td>Maintenance &amp; Operations</td>
<td></td>
<td></td>
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<tr>
<td>KCCD Project Manager</td>
<td></td>
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<tr>
<td>AVC Construction &amp; Facilities</td>
<td></td>
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<tr>
<td>Planning</td>
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<td></td>
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<tr>
<td>Chief Financial Officer</td>
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</tbody>
</table>
23-CONTRACTOR’S QUALIFICATIONS QUESTIONNAIRE
-TO BE SUBMITTED WITH THE BID-

PROJECT TITLE/BID: BAKERSFIELD COLLEGE INFRASTRUCTURE (28F792) CENTRAL PLANT MATH/SCIENCE COIL REPLACEMENT

OWNER: KERN COMMUNITY COLLEGE DISTRICT

The prospective Bidder shall furnish all the following information accurately and completely. Failure to fully and completely comply with this requirement may result in rejection of any bid submitted. Additional sheets may be attached if necessary. "You" or "your" as used in this questionnaire refers to the Bidder's firm and any of its owners, officers, directors, shareholders, parties, or principals. Owner has discretion to request additional information depending on the project.

—WARNING—

Certain information may lead to a determination of non-responsibility and rejection of the bid.

(1) Firm name and address:

(2) Telephone:

(3) Type of firm: (check one) Individual ☐ Partnership ☐ Corp. ☐

(4) License No.:
   Class:
   DIR Registration No.
   Name of license holder:

(5) Have you or any of your principals ever been licensed under a different name or different license number? Response must include information pertaining to principals' association outside of the firm bidding this Project. If yes, give name and license number:

(6) Names and titles of all principals of the firm:

(7) Number of years as contractor. Include only years in this type of construction and only the years with the current entity in its current form: Years

(8) Person who inspected work site for your firm:
   Name: Title:
   Date of Inspection:

(9) Years of experience your firm has in public school construction work:
   As general contractor: Years as subcontractor:

(10) In the last five years has your firm or any of its principals defaulted so as to cause
a loss to a surety? Response must include information pertaining to principals' associations outside of the firm bidding this Project. If the answer is yes, give date, name, and address of surety and details:

(11) In the last five years have you or any of your principals been assessed liquidated damages for any project? Response must include information pertaining to principals' associations outside of the firm bidding this Project. If yes, explain:

(12) In the last five years have you or any of your principals been in litigation or arbitration or a dispute of any kind on a question or questions relating to a public construction project? Response must include information pertaining to principals' association outside of the firm bidding this Project. If yes, provide name of public agency and details of the dispute. Attach additional pages as necessary.

(13) In the last five years have you or any of your principals ever failed to complete a project? Response must include information pertaining to principals' association outside of the firm bidding this Project. If yes, provide owner's name and details. Attach additional pages as necessary.

(14) In the last five years have you or any of your principals been assessed back-charges on any public works construction project? If so, explain, including the identity of the public entity, the basis for their claims, and the final result. Attach additional pages as necessary.

(15) In the last five years have you or any of your principals ever failed to complete a project within the time frame originally set for completion, plus any extension of time granted for weather delays? An extension of time for any reason other than weather delays requires an explanation. Response must include information pertaining to principals' association outside of the firm bidding this Project. If yes, provide owner's name and details. Attach additional pages as necessary.

(16) List names, addresses, and telephone numbers of three architects or engineers with whom you have worked on a public works project in the last five years:

Project One:

Project Two:

Project Three:

(17) Conflicts of Interest: Do you now or have you in the last five years had any direct or indirect business, financial, or other connection with any official, employee, or consultant of the OWNER or architect? If yes, describe. Attach additional pages as necessary.
(18) In the last five years have you or any of your principals filed a claim for additional compensation from a public entity on a construction project? If yes, explain and include the identity of the public entity, the basis for the claim, the response by the public entity, and the final result. Attach additional pages as necessary.

(19) In the last five years have you or any of your principals ever failed to pre-qualify, or been deemed unqualified, on any public works construction project? If yes, explain and include the identity of the public entity, the basis for their claims, and the final result. Attach additional pages as necessary.

(20) In the last five years have you or any of your principals ever been declared a “non-responsible” bidder on any public works construction project? If yes, explain and include the identity of the public entity, the basis for their claims, and the final result. Attach additional pages as necessary.

(21) **Staff/Roster Functions**: List all members of your staff who will be assigned or responsible for work as a team member on this Project (except clerical) and show job titles, functions, years with firm, and projects completed for company. Include company officers, responsible managing employee (RME), project manager, and superintendent. Provide the following information for each individual (copy this page as many times as required).

<table>
<thead>
<tr>
<th>Name and Title</th>
<th>Function</th>
<th>Years with firm</th>
</tr>
</thead>
</table>

Has the individual had prior exposure as a team member on one of your projects?

Yes [ ] No [ ]

List of all school projects this person has completed for you:

Provide an organizational chart reflecting your proposed project team for the Project, including all persons on your project team.

(22) **Surety**: Indicate the names of all surety companies utilized by you in the last 10 years. Attach additional pages as necessary.

<table>
<thead>
<tr>
<th>Surety Name &amp; Address</th>
<th>Period Covered</th>
</tr>
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<tbody>
<tr>
<td></td>
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</tbody>
</table>

(23) Attach a notarized statement from surety company(ies) proposed to be utilized on this Project, indicating your total bonding capacity and certifying that:
A. Currently available bonding capacity exceeds the value of your contract, as estimated by the OWNER, and;

B. Surety(ies) will provide bonding of the project in the event you are awarded Project.

(24) **Insurance:** Provide a notarized statement from your workers’ compensation carrier specifying your current “Experience Modification Rate” for workers’ compensation for the State of California. Provide a list of above-referenced ratings and corresponding companies for the last five years.

(25) **Safety:**

A. Does your firm have a written Safety Program: Yes ☐ No ☐ (If yes, attach copy.)

B. Does your firm have personnel permanently assigned to safety?
   
   Yes ☐ No ☐ (If yes, provide names and duties.)

(26) Give the public entity’s name, telephone number, and the name of the contact person for the three largest public works projects performed for a public entity, other than a school/college/university, that you have completed in the last five years: Attach additional sheets as necessary.

(27) **List of References:** Provide information on the three largest projects performed for a public school, college, or university in the last five years.

**Contract 1:**
Name:                        Address:
Telephone:                   Contact Person:
Type of construction project:
Dates of commencement and completion of construction project:
Contract amount:
Architect:
Architect's address:         Telephone:
DSA or public agency inspector:
Address:                     Telephone:

**Contract 2:**
Name:                        Address:
Telephone:                   Contact Person:
Type of construction project:
Dates of commencement and completion of construction project:

Contract amount:

Architect:

Architect's address: Telephone:

DSA or public agency inspector:

Address: Telephone:

**Contract 3:**
Name: Address:

Telephone: Contact Person:

Type of construction project:

Dates of commencement and completion of construction project:

Contract amount:

Architect:

Architect's address: Telephone:

DSA or public agency inspector:

Address: Telephone:

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

Executed this day of , 20 , at (City, County), State of California.

____________________________________
Signature

______________________________
Print Name Above Print Title Above
27 - IRAN CONTRACTING ACT CERTIFICATION
(Public Contract Code Section 2200 et seq.)

District Project Name: BAKERSFIELD COLLEGE INFRASTRUCTURE (28F792)
CENTRAL PLANT MATH/SCIENCE COIL REPLACEMENT

District Project Number:
District Contract Number:
Contractor Name:

Subject to the penalties for perjury in the state of California, I (the person identified below and who has signed this certification) hereby certify that: (i) I have inherent authority or have been duly authorized by the Contractor to execute this certification on behalf of the Contractor; and (ii) the option checked below relating to the Contractor's status in regard to the Iran Contracting Act of 2010 (Public Contract Code Section 2200 et seq.) is true and correct:

☐ The Contractor is not:

(i) Identified on the current list of persons and entities engaging in investment activities in Iran prepared by the California Department of General Services in accordance with subdivision (b) of Public Contract Code Section 2203; or

(ii) A financial institution that extends for 45 days or more credit in the amount of $20,000,000 or more to any other person or entity identified on the current list of persons and entities engaging in investment activities in Iran prepared by the California Department of General Services in accordance with subdivision (b) of Public Contract Code Section 2203, if that person or entity uses or will use the credit to provide goods or services in the energy sector in Iran.

☐ The District has exempted the Contractor from the requirements of the Iran Contracting Act of 2010 after making a public finding that, absent the exemption, the District will be unable to obtain the goods and/or services to be provided pursuant to the Contract.

☐ The price payable to the Contractor for the Project as of the date of this certification does not exceed $1,000,000.

Certifier Signature: ______________________________

Printed Name:

Title:

Executed at: ______________________________, California

Date Executed:

Note: In accordance with Public Contract Code Section 2205, false certification of this form may result in civil penalties equal to the greater of $250,000 or twice the contract amount, termination of the contract, and/or ineligibility to bid on contracts with a public entity for three years.
PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes:
   1. Project information.
   2. Work covered by Contract Documents.
      a. Type of contract.
   3. Owner-furnished products.
   4. Access to site.
   5. Coordination with occupants.
   6. Work restrictions.
   7. Specification and Drawing formats and conventions.
   8. Miscellaneous provisions.

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

1.3 PROJECT INFORMATION

A. Project Identification BAKERSFIELD COLLEGE INFRASTRUCTURE CENTRAL PLANT MATH/SCIENCE COIL REPLACEMENT Measure J Project.

B. Owner: Kern Community College District 2100 Chester Avenue Bakersfield, CA 93301, (661) 336-5022

C. Architect: PS2

D. Project Website: A project website administered by the PMT will be used for purposes of managing communication and documents during the construction stage.

1.4 WORK COVERED BY CONTRACT DOCUMENTS

A. The Work of Project is defined by the Contract Documents and consists of the coil replacement as shown on Contract Documents prepared by PS2, dated February 18,
2020 which includes the following:

B. Refer to Project Manual Table of Contents, Specifications Divisions 2 thru 49 for listing of Work included.

C. Type of Contract: Project will be constructed under a single-prime contract arrangement.

1.5 OWNER-FURNISHED PRODUCTS

A. Owner will furnish products indicated. The Work includes providing support systems to receive Owner’s equipment and making and electrical connections, where required.
   1. Owner will arrange and pay for delivery of Owner-furnished items according to Contractor’s Construction Schedule.
   2. Contractor is responsible for receiving, unloading, and handling Owner-furnished items at Project site.
   3. Contractor is responsible for protecting Owner-furnished items from damage during storage and handling, including damage from exposure to the elements.
   4. If Owner-furnished items are damaged as a result of Contractor's operations, Contractor shall repair or replace them.
   5. Contractor shall install and otherwise incorporate Owner-furnished items into the Work.

B. Owner-Furnished Products: Refer to Schedule of Owner-Furnished Products in Part 3 of this Section.

1.6 ACCESS TO SITE

A. General: Contractor shall have limited use of Project site for construction operations as indicated on Drawings by the Contract limits and as indicated by requirements of this Section.

B. Use of Site: Limit use of Project site to work in areas indicated. Do not disturb portions of Project site beyond areas in which the Work is indicated.
   1. Limits: Confine construction operations to area indicated on Drawings.
   2. Driveways and Entrances: Keep driveways, parking areas, loading areas, and entrances serving premises clear and available to Owner, Owner’s employees, and emergency vehicles at all times. Do not use these areas for parking or storage of materials.
      a. Schedule deliveries to minimize use of driveways and entrances by construction operations.
      b. Schedule deliveries to minimize space and time requirements for storage of materials and equipment on-site.

C. Condition of Existing Building: Maintain portions of existing building affected by construction operations in a weathertight condition throughout construction period.
Repair damage caused by construction operations. Protect building and its occupants during construction period.

1. Do not allow waste material, rubbish, or construction debris to accumulate in public areas such as hallways, stairs, lobbies, and toilet rooms.

D. Do not unreasonably encumber site with materials or equipment. Confine stockpiling of materials and location of storage areas to areas indicated, or if not indicated, as directed by Architect and Owner.

1.7 COORDINATION WITH OCCUPANTS

A. Partial Owner Occupancy: Owner will occupy the premises during entire construction period, with the exception of areas under construction. Cooperate with Owner during construction operations to minimize conflicts and facilitate Owner usage. Perform Work so as not to interfere with Owner’s operations. Maintain existing exits, unless otherwise indicated.

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

2. Provide not less than 5 working days’ notice to Owner of activities that will affect Owner’s operations.

B. Owner Limited Occupancy of Completed Areas of Construction: Owner reserves the right to occupy and to place and install equipment in completed portions of the Work, prior to Substantial Completion of the Work, provided such occupancy does not interfere with completion of the Work. Such placement of equipment and limited occupancy shall not constitute acceptance of the total Work.

1. Architect will prepare a Certificate of Substantial Completion for each specific portion of the Work to be occupied before prior to Owner acceptance of the completed Work.

2. Obtain a Certificate of Occupancy from authorities having jurisdiction before limited Owner occupancy.

3. Before limited Owner occupancy, mechanical and electrical systems shall be fully operational, and required tests and inspections shall be successfully completed. On occupancy, Owner will operate and maintain mechanical and electrical systems serving occupied portions of Work.

4. On occupancy, Owner will assume responsibility for maintenance and custodial service for occupied portions of Work.

1.8 WORK RESTRICTIONS

A. Work Restrictions, General: Comply with restrictions on construction operations.

1. Comply with limitations on use of public streets and with other requirements of authorities having jurisdiction.

B. On-Site Work Hours: Limit work to normal business working hours of 7:00 AM to 5:00 PM Monday through Friday, except as otherwise indicated.
C. Do not perform work during the following times until written permission from Owner has been obtained:
   1. Weekends.
   2. Early mornings before 7:00 AM.
   3. Evenings after 5:00 PM.

D. Do not perform the following types of work until written agreement as to allowable times has been obtained from Owner:
   1. Work involving utility shutdowns.
   2. Core drilling or other noisy activity.

E. Existing Utility Interruptions: Do not interrupt utilities serving facilities occupied by Owner or others unless permitted under the following conditions and then only after arranging to provide temporary utility services according to requirements indicated.
   1. Notify Owner not less than 5 working days in advance of proposed utility interruptions.
   2. Do not proceed with utility interruptions without written permission from Owner.

F. Noise, Vibration, and Odors: Coordinate operations that may result in high levels of noise and vibration, odors, or other disruption to Owner occupancy with Owner.
   1. Notify Owner not less than 5 working days in advance of proposed disruptive operations.
   2. Do not proceed with disruptive operations without written permission from Owner.

G. Use of tobacco products including smoking and other controlled substances on the Project site is prohibited.

1.9 SPECIFICATION AND DRAWING FORMATS AND CONVENTIONS

A. Specification Format: The Specifications are organized into Divisions and Sections using the 49-division format CSI’s “MasterFormat” numbering system, 2010 edition.
   1. Division 1 General Requirements: Sections in Division 1 govern the execution of the Work of all Sections in the Specifications.

B. Specification Content: The Specifications use certain conventions for the style of language and the intended meaning of certain terms, words, and phrases when used in particular situations. These conventions are as follows:
   1. Abbreviated Language: Language used in Specifications and other Contract Documents is abbreviated. Words and meanings shall be interpreted as appropriate. Words implied, but not stated, shall be inferred as the sense requires. Singular words shall be interpreted as plural, and plural words shall be interpreted as singular where applicable as the context of the Contract Documents indicates.
   2. Imperative mood and streamlined language are generally used in the Specifications. The words “shall,” “shall be,” or “shall comply with,” depending on the context, are implied where a colon (:) is used within a sentence or phrase.
3. Specification requirements are to be performed by Contractor unless specifically stated otherwise.

C. Drawing Coordination: Requirements for materials and products identified on Drawings are described in detail in the Specifications. One or more of the following are used on Drawings to identify materials and products:
   1. Terminology: Materials and products are identified by the typical generic terms used in the individual Specification Sections.

PART 2 - PRODUCTS (Not Used) PART 3 - EXECUTION

3.1 SCHEDULE OF OWNER-FURNISHED PRODUCTS
   1. TBD

END OF SECTION 01 11 00
SECTION 01 21 00 ALLOWANCES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes administrative and procedural requirements governing allowances.
   1. Certain items are specified in the Contract Documents by allowances. Allowances have been established in lieu of additional requirements and to defer selection of actual materials and equipment to a later date when direction will be provided to Contractor. If necessary, additional requirements will be issued by Change Order.

B. Type of allowances include the following:
   1. Contingency allowances.

C. Related Sections include:
   1. Divisions 2 through 49 Sections for items of Work covered by allowances.

1.3 SELECTION AND PURCHASE

A. At the earliest practical date after award of the Contract, advise Architect of the date when final selection and purchase of each product or system described by an allowance must be completed to avoid delaying the Work.

B. At Architect’s request, obtain proposals for each allowance for use in making final selections. Include recommendations that are relevant to performing the Work.

C. Purchase products and systems selected by Architect from the designated supplier.

D. In the event that the cost of the purchased products are greater than or less than the allowance, the difference will be included in a Change Order to adjust the Contract Sum.

1.4 ACTION SUBMITTALS

A. Submit proposals for purchase of products or systems included in allowances, in the form specified for Change Orders.

1.5 INFORMATIONAL SUBMITTALS

A. Submit invoices or delivery slips to show actual quantities of materials delivered to
the site for use in fulfillment of each allowance.

B. Submit time sheets and other documentation to show labor time and cost for installation of allowance items that include installation as part of the allowance.

C. Coordinate and process submittals for allowance items in same manner as for other portions of the Work.

1.6 COORDINATION

A. Coordinate allowance items with other portions of the Work. Furnish templates as required to coordinate installation.

1.7 CONTINGENCY ALLOWANCES

A. Use the contingency allowance only as directed by the PMT for Owner’s purposes and only by Change Orders that indicate amounts to be charged to the allowance.

B. Show contingency allowance in Schedule of Values as a single line item. Use of the allowance will be reflected in Change Order and Schedule of Values to be updated accordingly.

C. Contractor’s overhead, profit, and related costs for products and equipment ordered by Owner under the contingency allowance are included in the allowance and are not part of the Contract Sum. These costs include delivery, installation, taxes, insurance, equipment rental, and similar costs.

D. Change Orders authorizing use of funds from the contingency allowance will include Contractor’s related costs and reasonable overhead and profit margins.

E. At Project closeout, credit unused amounts remaining in the contingency allowance to Owner by Change Order.

1.8 ADJUSTMENT OF ALLOWANCES

A. Allowance Adjustment: Adjust allowance amounts by preparing and submitting a Proposed Change Order in accordance with requirements of Section 01 26 00 “Contract Modification Procedures,” based on the difference between purchase amount and the allowance, multiplied by final measurement of work-in-place where applicable. If applicable, include reasonable allowances for cutting losses, tolerances, mixing wastes, normal product imperfections, and similar margins.

1. Include installation costs in purchase amount only where indicated as part of the allowance.

2. If requested, prepare explanation and documentation to substantiate distribution of overhead costs and other margins claimed.

3. Owner reserves right to establish actual quantity of work-in-place by independent quantity survey, measure, or count.
B. Submit claims for increased costs because of a change in scope or nature of the allowance described in the Contract Documents, whether for the purchase order amount or Contractor’s handling, labor, installation overhead, and profit.

1. Do not include Contractor’s or subcontractor’s indirect expense in the Change Order cost amount unless it is clearly shown that the nature or extent of work has changed from what could have been foreseen from information in the Contract Documents.

2. No change to Contractor’s indirect expense is permitted for selection of higher- or lower-priced materials or systems of the same scope and nature as originally indicated.

PART 2 - PRODUCTS (Not Used) PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine products covered by an allowance promptly on delivery for damage or defects. Return damaged or defective products to manufacturer for replacement.

3.2 PREPARATION

A. Coordinate materials and their installation for each allowance with related materials and installations to ensure that each allowance item is completely integrated and interfaced with related work.

3.3 SCHEDULE OF ALLOWANCES

A. **Allowance No. 1 (Contingency)**: Include the sum of $TBD for costs associated with additional Work, labor, and materials beyond that indicated in Contract Documents, to be utilized at sole discretion of the Owner.

END OF SECTION 01 21 00
SECTION 01 25 00 SUBSTITUTION PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes administrative and procedural requirements for substitutions.
   1. During bidding.
   2. After award of contract.

B. Related Sections include:
   1. Section 01 60 00" Product Requirements" for requirements for selection of products for use in Project.

1.3 DEFINITIONS

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


1.4 ACTION SUBMITTALS

A. Substitution Requests: Submit each request for consideration. Identify product or fabrication or installation method to be replaced. Include Specification Section number and title and Drawing numbers and titles.
   1. Submittal Format: Submit in
      a. PDF electronic file: Submit electronic submittals via the PMIS as PDF electronic files.
   2. Substitution Request Form: Use forms provided at end of this Section.
      a. For substitution requests during bidding, use form entitled “Substitution Request Form – For Use During Bidding Phase.”
b. For substitution requests after award of contract, use form entitled “Substitution Request Form – For Use During Construction Phase.”

3. Supporting Documentation: Show compliance with requirements for substitutions and the following, as applicable:
   a. Statement indicating why specified material, product, fabrication, or installation cannot be provided, if applicable
   b. Coordination information, including a list of changes or modifications needed to other parts of the Work and to construction performed by Owner and separate contractors, that will be necessary to accommodate proposed substitution.
   c. Detailed comparison of significant qualities of proposed substitution with those of the Work specified. Include annotated copy of applicable Specification Section. Significant qualities may include attributes such as performance, weight, size, durability, visual effect, sustainable design characteristics, warranties, and specific features and requirements indicated. Indicate deviations, if any, from the Work specified.
   d. Product Data, including drawings and descriptions of products and fabrication and installation procedures.
   e. Samples, where applicable or requested.
   f. Certificates and qualification data, where applicable or requested.
   g. List of similar installations for completed projects with project names and addresses and names and addresses of architects and owners.
   h. Material test reports from a qualified testing agency indicating and interpreting test results for compliance with requirements indicated.
   i. Research/evaluation reports evidencing compliance with building code in effect for Project, from ICC-ES or other model code organization acceptable to authorities having jurisdiction.
   j. Contractor’s waiver of rights to additional payment or time that may subsequently become necessary because of failure of proposed substitution to produce indicated results.
   k. If occurring after award of contract, include the following:
      i) Detailed comparison of Contractor’s construction schedule using proposed substitution with products specified for the Work, including effect on the overall Contract Time. If specified product or method of construction cannot be provided within the Contract Time, include letter from manufacturer, on manufacturer’s letterhead, stating date of receipt of purchase order, lack of availability, or delays in delivery.
      ii) Cost information, including a proposal of change, if any, in the Contract Sum.
      iii) Contractor’s certification that proposed substitution complies with requirements in the Contract Documents, except as indicated in substitution request, is compatible with related materials, and is appropriate for applications indicated.

-Attach Substitution Warranty, on Contractor’s letterhead, in format matching sample at end of this Section.
iv) Contractor’s waiver of rights to additional payment or time that may subsequently become necessary because of failure of proposed substitution to produce intended results.

1.5 QUALITY ASSURANCE

A. Compatibility of Substitutions: Investigate and document compatibility of proposed substitution with related products and materials. Engage a qualified testing agency to perform compatibility tests recommended by manufacturers.
   1. Each Contractor is responsible for providing products and construction methods compatible with products and construction methods of other contractors.
   2. If a dispute arises between Contractors over concurrently selectable but incompatible products, Program Management Team will determine which products shall be used.

1.6 PROCEDURES

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

PART 2 - PRODUCTS

2.1 SUBSTITUTIONS DURING BIDDING

A. Submit requests for substitution not later than 10 working days prior to bid date.
   1. Conditions: OWNER will consider bidder’s request for substitution when the following conditions are satisfied.
      a. Requested substitution is consistent with the Contract Documents and will produce indicated results.
      b. Substitution request is fully documented and properly submitted.
      c. Requested substitution will not adversely affect Contractor’s construction schedule.
      d. Requested substitution has received necessary approvals of authorities having jurisdiction.
      e. Requested substitution is compatible with other portions of the Work.
      f. Requested substitution has been coordinated with other portions of the Work.
      g. Requested substitution provides specified warranty.

If requested substitution involves more than one contractor, requested substitution has been coordinated with other portions of the Work, is uniform and consistent, is compatible with other products, and is acceptable to all contractors involved.

2.2 SUBSTITUTIONS AFTER AWARD OF CONTRACT

A. Substitutions for Cause: Submit requests for substitution immediately on discovery of need for change, but not later than [15] working days prior to time required for
preparation and review of related submittals.

1. **Conditions:** OWNER will consider Contractor’s request for substitution when the following conditions are satisfied. If the following conditions are not satisfied, PMT will return requests without action, except to record noncompliance with these requirements:
   a. Requested substitution is consistent with the Contract Documents and will produce indicated results.
   b. Substitution request is fully documented and properly submitted.
   c. Requested substitution will not adversely affect Contractor’s construction schedule.
   d. Requested substitution has received necessary approvals of authorities having jurisdiction.
   e. Requested substitution is compatible with other portions of the Work.
   f. Requested substitution has been coordinated with other portions of the Work.
   g. Requested substitution provides specified warranty.
   h. If requested substitution involves more than one contractor, requested substitution has been coordinated with other portions of the Work, is uniform and consistent, is compatible with other products, and is acceptable to all contractors involved.

B. **Substitutions for Convenience:** OWNER will consider requests for substitution if received within 10 working days after issuance of **Notice to Proceed**. Requests received after that time may be considered or rejected at discretion of OWNER.

1. **Conditions:** OWNER will consider Contractor’s request for substitution when the following conditions are satisfied. If the following conditions are not satisfied, PMT will return requests without action, except to record noncompliance with these requirements:
   a. Requested substitution offers Owner a substantial advantage in cost, time, energy conservation, or other considerations, after deducting additional responsibilities Owner must assume. Owner’s additional responsibilities may include compensation to Architect for redesign and evaluation services, increased cost of testing and inspection, increased cost of other construction by Owner, and similar considerations. Cost of Owner’s additional responsibilities will be deducted from Contract Sum by Change Order.
      i) Substitution request will not be considered if necessitated by failure to pursue the Work promptly or coordinate activities in a timely manner.
   b. Requested substitution does not require extensive revisions to the Contract Documents.
   c. Requested substitution is consistent with the Contract Documents and will produce indicated results.
   d. Substitution request is fully documented and properly submitted.
   e. Requested substitution will not adversely affect Contractor’s construction
f. Requested substitution has received necessary approvals of authorities having jurisdiction.

g. Requested substitution is compatible with other portions of the Work.

h. Requested substitution has been coordinated with other portions of the Work.

i. Requested substitution provides specified warranty.

j. If requested substitution involves more than one contractor, requested substitution has been coordinated with other portions of the Work, is uniform and consistent, is compatible with other products, and is acceptable to all contractors involved.

C. Submittal procedures as specified in Section 01 33 00 "Submittals Procedures," do not constitute an acceptable method of requesting substitutions. Architect’s review of such submittals does not constitute approval of substitutions that may be contained therein.

PART 3 - EXECUTION (Not Used)

END OF SECTION 01 25 00
SECTION 01 26 00 CONTRACT MODIFICATION PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section specifies administrative and procedural requirements for handling and processing Contract modifications.

B. Related Sections include:
   1. Section 01 25 00 "Substitution Procedures" for administrative procedures for handling requests for substitutions.
      a. During bidding.
      b. After award of contract.

1.3 DEFINITIONS


1.4 PROGRAM MANAGEMENT TEAM’S SUPPLEMENTAL INSTRUCTION (ASI)

A. Program Management Team will issue ARCHITECT’s supplemental instructions authorizing minor changes in the Work, not involving adjustment to the Contract Sum or the Contract Time, on the standard form “Program Management Team’s Supplemental Instruction.”

1. If Program Management Team’s Supplemental Instructions involve, in Contactor’s opinion, changes to Contract Sum or Contract Time, submit Proposed Change Order as specified in “Proposed Change Orders (PCO)” Article.

1.5 PROPOSAL REQUEST (PR)

A. Owner-Initiated Proposal Requests: Program Management Team will issue a detailed description of proposed changes in the Work that may require adjustment to the Contract Sum or the Contract Time. If necessary, the description will include supplemental or revised Drawings and Specifications.

1. Proposal Requests issued by the Program Management Team for purpose of soliciting Proposed Change Order. Do not consider them instructions either to stop work in progress or to execute the proposed change.

2. Unless a shorter time period is specified in Proposal Request, within 10 working
days after receipt of Proposal Request, submit a Proposed Change Order (PCO) in accordance with "Proposed Change Orders (PCO)" Article.

3. Work described in a Proposal Request is not to be commenced until associated Proposed Change Order has been approved in writing with signature of Owner and Program Management Team.

1.6 CONSTRUCTION CHANGE DIRECTIVE

A. Program Management Team may choose to issue a Construction Change Directive (CCD) when necessary to expedite the Work and avoid or minimize delays. Construction Change Directive instructs Contractor to proceed with a change in the Work, for subsequent inclusion in a Change Order.

1. Construction Change Directive contains a complete description of change in the Work. It also designates method to be followed to determine change in the Contract Sum or the Contract Time.

B. Work included in a Construction Change Directive is to be performed under the observation of the Project Inspector.

C. Documentation: Maintain detailed records on a time and material basis of work required by the Construction Change Directive.

1. After completion of change, submit a Proposed Change Order with supporting documentation including itemized account and supporting data necessary to substantiate cost and time adjustments to the Contract, including paid invoices and daily labor reports signed by the Project Inspector.

1.7 PROPOSED CHANGE ORDER (PCO)

A. Submit Proposed Change Order in response to the following:

1. Proposal Request issued by Program Management Team.
2. Circumstances Justifying Contractor-Initiated Proposal:
   a. Program Management Team’s directive which in Contractor’s opinion, involves changes to Contract Sum or Contract Time.
   b. Latent or unforeseen conditions which in Contractor’s opinion involve changes to Contract Sum or Contract Time.

B. Format: Submit Proposed Change Order as PDF electronic file via the PMIS, unless requested otherwise.

C. Form and content of Proposed Change Order to comply with the following.

1. Include a list of quantities of products required or eliminated and unit costs, with total amount of purchases and credits to be made. If requested, furnish survey data to substantiate quantities.
2. Indicate applicable taxes, delivery charges, equipment rental, and amounts of trade discounts.
3. Include costs of labor and supervision directly attributable to the charge.
4. Include an updated Contractor’s Construction Schedule that indicates the effect of the change, including, but not limited to, changes in activity duration, start and finish times, and activity relationship. Use available total float before requesting an extension of the Contract Time.

5. Use forms acceptable to Program Management Team.

6. If Contractor-Initiated:
   a. Include a statement outlining reasons for the change and the effect of the change on the Work. Provide a complete description of the proposed change. Indicate the effect of the proposed change on the Contract Sum and the Contract Time.
   b. Comply with requirements in Section 01 25 00 “Substitution Procedures” if the proposed change requires substitution of one product or system for product or system specified.

D. Work Described in a Proposed Change Order is not to be commenced until approved in writing with signature of Owner and Program Management Team, with the exception of the following:


1.8 CHANGE ORDER PROCEDURES

A. On Owner’s approval of a Proposed Change Order, Program Management Team will incorporate the Proposed Change Order, including adjustments to Contract Sum and/or Contract Time into subsequent Change Order.

1. PCO items which involve changes to the structural, accessibility, or life-safety portions of the DSA-approved Contract Documents shall be submitted to and approved by DSA as a Construction Change Document, as required by California Administrative Code, Title 24, Part 1, Section 4-338, prior to commencement of the Work. Program Management Team shall prepare and submit Construction Change Documents to DSA in compliance with DSA Interpretation of Regulation IR A-6.

PART 2 - PRODUCTS (Not Used) PART 3 - EXECUTION (Not Used)

END OF SECTION 01 26 00
SECTION 01 29 00
PAYMENT PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section specifies administrative and procedural requirements necessary to prepare and process Applications for Payment.

B. Related Sections include:
   1. Section 01 26 00 “Contract Modification Procedures” for administrative procedures for handling changes to the Contract.
   2. Section 01 32 10 “CONSTRUCTION SCHEDULE – CPM” for administrative requirements governing the preparation and submittal of Contractor’s construction schedule.

1.3 DEFINITIONS

A. Schedule of Values: A statement furnished by Contractor allocating portions of the Contract Sum to various portions of the Work and used as the basis for reviewing Contractor’s Applications for Payment.


1.4 SCHEDULE OF VALUES

A. Coordination: Coordinate preparation of the Schedule of Values with preparation of Contractor’s Construction Schedule.
   1. Correlate line items in the Schedule of Values with other required administrative forms and schedules, including the following:
      a. Application for Payment forms with Continuation Sheets.
      b. Submittals Schedule.
      c. Items required to be indicated as separate activities in Contractor’s Construction Schedule.
   2. Submit the Schedule of Values to Program Management Team at earliest possible date but no later than 10 working days before the date scheduled for submittal of initial Applications for Payment.
a. Submittal Format: Submit in the following format:
   i) PDF electronic file: Submit electronic submittals via email as PDF electronic files.

3. Subschedules for Phased Work: Where the Work is separated into phases requiring separately phased payments, provide subschedules showing values correlated with each phase of payment.

B. Format and Content: Use the Project Manual Table of Contents as a guide to establish line items for the Schedule of Values. Provide at least one line item for each Specification Section.

1. Identification: Include the following Project Identification on the Schedule of Values:
   a. Project name and location.
   b. Name of Program Management Team.
   c. Program Management Team’s project number.
   d. Contractor’s name and address.
   e. Date of submittal.

2. Arrange the Schedule of Values in tabular form with separate columns to indicate the following for each item listed:
   a. Related Specification Section or Division.
   b. Description of the Work.
   c. Name of subcontractor.
   d. Name of manufacturer or fabricator.
   e. Name of supplier.
   f. Change Orders (numbers) that affect value.
   g. Dollar value of the following, as a percentage of the Contract Sum to nearest one-hundredth percent, adjusted to total 100 percent:
      i) Labor.
      ii) Materials.
      iii) Equipment.

3. Provide a breakdown of the Contract Sum in enough detail to facilitate continued evaluation of Applications for Payment and progress reports. Coordinate with the Project Manual Table of Contents. Provide multiple line items for principal subcontract amounts in excess of 5 percent of the Contract Sum.
   a. Include separate line items under principal subcontracts for the following Project closeout requirements in an amount totaling 5 percent of the Contract Sum and subcontract amount:
      i) Operation and maintenance manuals.
      ii) Punchlist activities.
      iii) Project record documents.
iv) Demonstration and training activities.

4. Round amounts to nearest whole dollar; total shall equal the Contract Sum.

5. Provide a separate line item in the Schedule of Values for each part of the Work where Applications for Payment may include materials or equipment purchased or fabricated and stored, but not yet installed.
   a. Differentiate between items stored on-site and items stored off-site. If specified, include evidence of insurance or bonded warehousing.

6. Provide separate line items in the Schedule of Values for initial cost of materials, for each subsequent stage of completion, and for total installed value of that part of the Work.

7. Provide separate line item in the Schedule of Values for maintenance and updating of Project Record Documents as specified in Section 01 78 39 “Project Record Documents.”

8. Each item in the Schedule of Values and Applications for Payment shall be complete. Include total cost and proportionate share of general overhead and profit for each item.
   a. Temporary facilities and other major cost items that are not direct cost of actual work-in-place may be shown either as separate line items in the Schedule of Values or distributed as general overhead expense, at Contractor’s option.

9. Schedule Updating: Update and resubmit the Schedule of Values before the next Application for Payment when Change Orders result in a change to the Contract Sum.

1.5 APPLICATIONS FOR PAYMENT

A. Each Application for Payment following the initial Application for Payment shall be consistent with previous applications and payments as certified by Program Management Team Project Inspector and paid by Owner.
   1. Initial Application for Payment, Application for Payment at time of Substantial Completion, and final Application for Payment involve additional requirements.

B. Each Application for Payment shall include Project Inspector's acknowledgement and signature indicating the following:
   1. Progress of Work is as indicated on Application.
   2. Record documents as required in Section 01 78 39 "Project Record Documents" are fully updated to reflect current progress of Work indicated on Application.

C. Payment Application Times: The date for each progress payment is indicated in the Agreement between Owner and Contractor. The period of construction work covered by each Application for Payment is the period indicated in the Agreement.

D. Application for Payment Forms: Use forms provided by Program Management Team for Applications for Payment.
E. Application Preparation: Complete every entry on form. Notarize and execute by a person authorized to sign legal documents on behalf of Contractor. Program Management Team will return incomplete applications without action.

1. Entries shall match data on the Schedule of Values and Contractor’s Construction Schedule. Use updated schedules if revisions were made.
2. Include amounts of Change Orders issued before last day of construction period covered by application.

F. Stored Materials: Include in Application for Payment amounts applied for materials or equipment purchased or fabricated and stored, but not yet installed. Differentiate between items stored on-site and items stored off-site.

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

G. Transmittal: Submit signed and notarized original copies of each Application for Payment to Program Management Team via the PMIS. Include waivers of lien and similar attachments.

1. Transmit each payment submittal with a transmittal form listing attachments and recording appropriate information about application.

H. Waivers of Mechanic’s Lien: With each Application for Payment, submit waivers of mechanic’s liens from subcontractors, sub-subcontractors, and suppliers.

1. Submit partial waivers on each item, after deduction for retainage.
   a. Submit Conditional Waiver on each item for amount requested for construction period covered by Application for Payment being submitted.
   b. Submit Unconditional Waiver on each item for amount requested for construction period covered by previous Application.
2. When an application shows completion of an item, submit conditional final or full waivers.
3. Owner reserves the right to designate which entities involved in the Work must submit waivers.
4. Submit final Application for Payment with or preceded by conditional final waivers from every entity involved with performance of the Work covered by the application who is lawfully entitled to a lien.
5. **Waiver Forms:** Submit waivers of lien on forms, executed in a manner acceptable to Owner.

I. **Updated Contractor’s Construction Schedule:** as specified in Section 01 32 00 “Construction Progress Documentation,” must be submitted prior to submittal of each Application for Payment.

J. **Initial Application for Payment:** Administrative actions and submittals that must precede or coincide with submittal of first Application for Payment include the following:
   1. List of subcontractors.
   2. Schedule of Values.
   3. Contractor’s Construction Schedule (preliminary if not final).
   4. Products list (preliminary if not final).
   5. Submittals Schedule (preliminary if not final).
   8. Certificates of insurance and insurance policies.
   10. Data needed to acquire Owner’s insurance.
   11. Initial settlement survey and damage report if required.

K. **Application for Payment at Substantial Completion:** After Program Management Team’s issuance of the Certificate of Substantial Completion, submit an Application for Payment showing 100 percent completion for portion of the Work claimed as substantially complete.
   1. Include documentation supporting claim that the Work is substantially complete and a statement showing an accounting of changes to the Contract Sum.
   2. This application shall reflect Certificates of Partial Substantial Completion issued previously for Owner occupancy of designated portions of the Work.

L. **Final Payment Application:** After completing Project closeout requirements, submit final Application for Payment with releases and supporting documentation not previously submitted and accepted, including, but not limited, to the following:
   1. Evidence of completion of all Project closeout requirements.
      a. Refer to Section 01 77 00 “Closeout Procedures” for closeout requirements.
      b. Refer to Section 01 78 23 “Operation and Maintenance Data” for requirements for submittal of operation and maintenance manuals.
      c. Refer to Section 01 78 39 “Project Record Documents” for record document requirements.
      d. Refer to Section 01 79 00 “Demonstration and Training” for training of Owner’s personnel in operation of systems.
2. Evidence of completion of all Project Punchlist items.
3. DSA Form DSA-6, Final Verified Report, fully executed and signed by Contractor, indicating 100% completion.
4. Insurance certificates for products and completed operations where required and proof that taxes, fees, and similar obligations were paid.
5. Updated final statement, accounting for final changes to the Contract Sum.
6. AIA Document G706 “Contractor’s Affidavit of Payment of Debts and Claims.”
8. AIA Document G707, “Consent of Surety to Final Payment.”
9. Evidence that claims have been settled.
10. Final meter readings for utilities, a measured record of stored fuel, and similar data as of date of Substantial Completion or when owner took possession of and assumed responsibility for corresponding elements of the Work.
11. Final, liquidated damages settlement statement.

M. Upon completion of the Work of this contract, Contractor shall file affidavit with Owner, sworn to before a Notary Public, stating that all workers and persons employed, all firms supplying materials, and all subcontractors have been paid in full and that there are no bills outstanding against the project for either labor or materials, except those items, if any, to be set forth in such affidavit, covering disputed claims or items in connection with Notices to Withhold (Mechanics Lien or Stop Notice) which have been filed under the provisions of the statutes of the State of California. At the same time, Contractor shall execute a Contractor’s Affidavit of Release of Liens, with separate release or waiver of lien from each subcontractor and material or equipment supplier.

PART 2 - PRODUCTS (Not Used) PART 3 - EXECUTION (Not Used)

END OF SECTION 01 29 00
SECTION 01 31 00
PROJECT MANAGEMENT AND COORDINATION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section specifies administrative requirements for coordinating construction operations on Project including, but not limited to, the following:
   1. General coordination procedures.
   2. Supervision.
   3. Coordination Drawings.
   4. Requests for Information (RFI’s).
   5. Project website.
   6. Project meetings.

B. Related Sections include:
   1. Section 01 32 10 “CONSTRUCTION SCHEDULE – CPM” for preparing and submitting Contractor’s Construction Schedule.
   2. Section 01 70 00 “Field Engineering and Execution Requirements” for procedures for coordinating general installation and field-engineering services, including establishment of benchmarks and control points.
   3. Section 01 77 00 “Closeout Procedures” for coordinating closeout of the Contract.

1.3 DEFINITIONS

A. RFI: Request from Contractor seeking information required by or clarification of the Contract Documents.


1.4 INFORMATIONAL SUBMITTALS

A. Subcontract List: Prepare a written summary identifying individuals or firms proposed for each portion of the Work, including those who are to furnish products or equipment fabricated to a special design. Include the following information in tabular form:
1. Name, address, and telephone number of entity performing subcontract or supplying products.
2. Number and title of related Specification Section(s) covered by subcontract.
3. Drawing number and detail references, as appropriate, covered by subcontract.

B. Key Personnel Names: Within 10 working days of starting construction operations, submit a list of key personnel assignments, including superintendent and other personnel in attendance at Project site. Identify individuals and their duties and responsibilities; list addresses, telephone numbers, including both office and cellular telephone numbers, and email addresses. Provide names, addresses, telephone numbers, and email addresses of individuals assigned as alternates in the absence of individuals assigned to Project.

1. Post copies of list in project meeting room, in temporary field office, and by each temporary telephone. Keep list current at all times.
2. Post the list on the PMIS. Keep online list current at all times.

1.5 GENERAL COORDINATION PROCEDURES

A. Coordination: Coordinate construction operations included in different Sections of the Specifications to ensure efficient and orderly installation of each part of the Work. Coordinate construction operations, included in different Sections that depend on each other for proper installation, connection, and operation.

1. The manner in which the Specifications are divided into Divisions and Sections is not intended to indicate division of work between trades nor indicate trade union or jurisdictional agreements.
   a. Assign and subcontract construction activities, and employ workers in a manner that will not risk jurisdictional disputes that could result in conflicts, delays, claims, or losses.
2. Coordinate structural, mechanical, and electrical elements prior to installation. All penetrations of structural elements must first receive approval of Program Management Team. Rerouting of ductwork, piping, or conduit caused by failure to coordinate beforehand is the responsibility of the affected subcontractor and will not be considered justification for additional cost.
3. Schedule construction operations in sequence required to obtain the best results where installation of one part of the Work depends on installation of other components, before or after its own installation.
4. Coordinate installation of different components to ensure maximum performance and accessibility for required maintenance, service, and repair.
5. Make adequate provisions to accommodate items scheduled for later installation.

B. Prepare memoranda for distribution to each party involved, outlining special procedures required for coordination. Include such items as required notices, reports, and list of attendees at meetings.

1. Prepare similar memoranda for Owner and separate contractors if coordination of their Work is required.
C. Administrative Procedures: Coordinate scheduling and timing of required administrative procedures with other construction activities to avoid conflicts and to ensure orderly progress of the Work. Such administrative activities include, but are not limited to, the following:

1. Preparation of Contractor’s Construction Schedule.
2. Preparation of the Schedule of Values.
3. Installation and removal of temporary facilities and controls.
4. Delivery and processing of submittals.
5. Progress meetings.
6. Preinstallation conferences.
7. Project closeout activities.
8. Startup and adjustment of systems.

D. Conservation: Coordinate construction activities to ensure that operations are carried out with consideration given to conservation of energy, water, and materials. Coordinate use of temporary facilities to minimize waste.

1. Salvage materials and equipment involved in performance of, but not actually incorporated into, the Work. Refer to other Sections for disposition of salvaged materials that are designated as Owner’s property.

1.6 SUPERVISION

A. General: In addition to Project superintendent, provide other administrative and supervisory personnel as required for proper performance of the Work.

B. Contractor is solely responsible for construction means, methods, techniques, sequences, and procedures for performing Work.

1.7 COORDINATION DRAWINGS

A. Coordination Drawings: Prepare coordination drawings according to requirements in individual Sections, and additionally where installation is not completely shown on Shop Drawings, where limited space availability necessitates coordination, or if coordination is required to facilitate integration of products and materials fabricated or installed by more than one entity.

1. Content: Project-specific information, drawn accurately to a scale large enough to indicate and resolve conflicts. Do not base coordination drawings on reproductions of the Contract Documents or standard printed data. Include the following information, as applicable.

   a. Use applicable Drawings as a basis for preparation of coordination drawings. Prepare sections, elevations, and details as needed to describe relationship of various systems and components.
   b. Coordinate the addition of trade-specific information to the coordination drawings by multiple contractors in a sequence that best provides for coordination of the information and resolution of conflicts between installed components before submitting for review.
c. Indicate functional and spatial relationships of components of architectural, structural, civil, mechanical, plumbing, and electrical systems.

d. Indicate space requirements for routine maintenance and for anticipated replacement of components during the life of the installation.

e. Show location and size of access doors required for access to concealed dampers, valves, and other controls.

f. Indicate required installation sequences.

Indicate dimensions shown on the Drawings. Specifically note dimensions that appear to be in conflict with submitted equipment and minimum clearance requirements. Provide alternate sketches to Program Management Team indicating proposed resolution of such conflicts. Minor dimension changes and difficult installations will not be considered changes to the Contract.

g. Indicate key plan, north arrow, and sufficient grid lines to provide cross reference to Contract Drawings.

B. Coordination Drawing Organization: Organize coordination drawings as follows:

1. Floor Plans and Reflected Ceiling Plans: Show architectural and structural elements, and mechanical, plumbing, fire-protection, fire-alarm, and electrical Work. Show locations of visible ceiling-mounted devices relative to acoustical ceiling grid. Supplement plan drawings with section drawings, where required to adequately represent the Work.

2. Plenum Space: Indicate subframing for support of ceiling and wall systems, mechanical and electrical equipment, and related Work. Locate components within ceiling plenum to accommodate layout of light fixtures indicated on Drawings. Indicate areas of conflict between light fixtures and other components.

3. Mechanical Rooms: Provide coordination drawings for mechanical rooms showing plans and elevations of mechanical, plumbing, fire-protection, fire-alarm, and electrical equipment.

4. Structural Penetrations: Indicate penetrations and openings required for all disciplines.

5. Slab Edge and Embedded Items: Indicate slab edge locations and sizes and locations of embedded items for metal fabrications, sleeves, anchor bolts, bearing plates, angles, door floor closers, slab depressions for floor finishes, curbs and housekeeping pads, and similar items.

6. Mechanical and Plumbing Work: Show the following:
   a. Sizes and bottom elevations of ductwork, piping, and conduit runs, including insulation, bracing, flanges, and support systems.
   b. Dimensions of major components, such as dampers, valves, diffusers, access doors, cleanouts, and electrical distribution equipment.
   c. Fire-rated enclosures around ductwork.

7. Electrical Work: Show the following:
a. Runs of vertical and horizontal conduit 1-1/4 inches in diameter and larger.
b. Light fixture, exit light, emergency battery pack, smoke detector, and other
   fire-alarm locations.
c. Panel board, switch board, switchgear, transformer, busway, generator,
   and motor control center locations.
d. Location of pull boxes and junction boxes, dimensioned from column
   center lines.

8. Review: Program Management Team will review coordination drawings to
   confirm that the Work is being coordinated, but not for the details of the
   coordination, which are Contractor’s responsibility. If Program Management
   Team determines that coordination drawings are not being prepared in sufficient
   scope or detail, or are otherwise deficient, Program Management Team will so
   inform Contractor.

C. Sheet Size: At least 11 inches by 17 inches, but no larger than 30 inches by 40 inches.
   1. Provide title block on each sheet with locations for signatures from all
      subcontractors involved. Include statement that each subcontractor has
      reviewed coordination drawings in detail and coordinated work of their
      respective trade.

D. Submittal Format: Submit in one of the following formats:
   1. PDF Electronic File: Submit electronic submittals via the PMIS as PDF
      electronic files.
      a. At Contractor’s written request, read-only digital data files will be made
         available to Contractor.
         i) Program Management Team makes no representations as to the
            accuracy or completeness of digital data as it relates to the Contract
            Drawings.
         ii) Contractor shall execute an electronic file release agreement in the
             form of Agreement form provided by or acceptable to Program
             Management Team.

1.8 REQUESTS FOR INFORMATION (RFI’s)

A. General: Immediately on discovery of the need for interpretation of the Contract
   Documents, and if not possible to request interpretation at Project meeting, prepare
   and submit an RFI in the form specified.
   1. Do not submit an RFI until due diligence has been exercised in attempting to
      locate needed information in Contract Documents. If information requested is
      apparent from field observations, is contained in the Contract Documents, or is
      reasonably inferred by them, Contractor shall be responsible to Owner for all
      reasonable costs charged by Program Management Team for additional
      services required to provide such information.
2. RFI’s shall originate with the Contractor. RFI’s submitted by entities other than Contractor, including entities controlled by Contractor, will be returned with no response.

3. Coordinate and submit RFI’s in a prompt manner so as to avoid delays in Contractor’s work or work of subcontractors.

B. Content of RFI: Include a detailed, legible description of item needing interpretation or clarification, and the following:

1. Project name.
2. Date.
3. Name of Contractor.
4. Name of Program Management Team.
5. RFI number, numbered sequentially.
6. RFI topic.
7. Specification Section number and title and related paragraphs, as appropriate.
8. Drawing number and detail references, as appropriate.
9. Field dimensions and conditions, as appropriate.
10. Contractor’s suggested resolution. If Contractor’s suggested resolution impacts the Contract Time or the Contract Sum, Contractor shall state impact in the RFI.
11. Contractor’s signature.
12. Attachments: Include drawings, descriptions, measurements, photos, Product Data, Shop Drawings, coordination drawings, and other information necessary to fully describe items needing interpretation.
   a. Include dimensions, thicknesses, structural grid references, and details of affected materials, assemblies, and attachments on attached sketches.

C. RFI Format: Use form acceptable to Program Management Team.

1. Identify each page of attachments with the RFI number and sequential page number.

D. RFI Submittal Procedure: Submit to Program Management Team via the PMIS using format as follows:

1. RFI form and attachments in the form of a PDF electronic file.

E. Program Management Team’s Action: Program Management Team will review each RFI, determine action required, and respond. Allow 10 working days for Program Management Team’s response for each RFI. RFI’s received after 1:00 P.M. will be considered as received the following working day.

1. No extension of Contract Time will be authorized due to Contractor’s failure to allow sufficient time for Program Management Team’s RFI review.
2. The following RFI’s will be returned without action:
   a. Requests for approval of submittals.
   b. Requests for approval of substitutions.
   c. Requests for approval of Contractor’s mean and methods.
d. Requests for coordination information already indicated in the Contract Documents.

e. Requests for adjustments in the Contract Time or Contract Sum.

f. Requests for interpretation of Program Management Team’s actions on submittals.

g. Incomplete RFI’s or RFI’s with numerous errors.

3. Program Management Team’s response may include a request for additional information, in which case Program Management Team’s time for response will date from time of receipt of additional information.

4. Program Management Team’s action on RFI’s that may result in a change to the Contract Time or the Contract Sum may be eligible for Contractor to submit Proposed Change Order (PCO) according to Section 01 26 00 “Contract Modification Procedures.”

   a. If Contractor believes the RFI response warrants change in the Contract Time or the Contract Sum, notify Program Management Team in writing via the PMIS within 5 working days of receipt of the RFI response.

F. RFI Log: Prepare, maintain, and submit a tabular log of RFI’s organized by the RFI number using the PMIS. Update log as RFI’s are submitted or responded to or as requested by Program Management Team. Include the following:

   1. Project name.
   2. Name and address of Contractor.
   3. Name and address of Program Management Team.
   4. RFI number including RFI’s that were returned without action or withdrawn.
   5. RFI description.
   6. Date the RFI was submitted.
   7. Date Program Management Team’s response was received.
   8. Identification of related Program Management Team’s Supplemental Instruction (ASI), Construction Change Directive (CCD), and Proposal Request (PR), as appropriate.

G. On receipt of Program Management Team’s action, update the RFI log. Review response and notify Program Management Team within 5 working days if Contractor disagrees with response.

1.9 PROJECT MEETINGS

A. General: Schedule and conduct meetings and conferences at Project site, unless otherwise indicated.

   1. Attendees: Inform participants and others involved, and individuals whose presence is required, of date and time of each meeting. Notify Owner Project Inspector, and Program Management Team of scheduled meeting dates and times.

   2. Agenda: Prepare the meeting agenda. Distribute the agenda to all invited attendees.
3. Minutes: Record significant discussions and agreements achieved, unless minutes are indicated to be recorded by others. Distribute the meeting minutes to everyone concerned, including Owner and Program Management Team, within 4 working days of the meeting.

B. Preconstruction Conference: Program Management Team will schedule and conduct a preconstruction conference before starting construction, at a time convenient to Owner, Project Inspector, and Program Management Team, but no later than 10 working days after execution of the Agreement. Hold the conference at Project site or another convenient location.

1. Conduct the meeting to review responsibilities and personnel assignments.
2. Attendees: Authorized representatives of Owner, Program Management Team, and their consultants; Contractor and its superintendent; major subcontractors; suppliers, representatives of state agencies having jurisdiction and other concerned parties shall attend the conference. All participants at the conference shall be familiar with Project and authorized to conclude matters relating to the Work.

3. Agenda: Discuss items of significance that could affect progress, including the following:
   a. Tentative construction schedule.
   b. Phasing.
   c. Critical work sequencing and long-lead items.
   d. Designation of key personnel and their duties.
   e. Lines of communications.
   f. Procedures for processing field decisions and Change Orders.
   g. Procedures for RFI’s.
   h. Procedures for testing and inspecting.
   i. Procedures for processing Applications for Payment.
   j. Distribution of the Contract Documents.
   k. Submittal procedures.
   l. Preparation of record documents.
   m. Use of the premises
   n. Work restrictions.
   o. Working hours.
   p. Owner’s occupancy requirements.
   q. Responsibility for temporary facilities and controls.
   r. Procedures for moisture and mold control.
   s. Procedures for disruptions and shutdowns.
   t. Parking availability.
   u. Office, work, and storage areas.
   v. Equipment deliveries and priorities.
   w. First aid.
4. Minutes: Entity responsible for conducting meeting will record and distribute meeting minutes to parties present and parties not present but requiring the information.

C. Preinstallation Conferences: Conduct a preinstallation conference at Project site before each construction activity that requires coordination with other construction.

1. Attendees: Installer and representatives of manufacturers and fabricators involved in or affected by the installation and its coordination or integration with other materials and installations that have preceded or will follow, shall attend the meeting. Advise Program Management Team of scheduled meeting dates.

2. Agenda: Review progress of other construction activities and preparations for the particular activity under consideration, including requirements for the following:
   b. Options.
   c. Related RFI’s.
   d. Related Change Orders.
   e. Purchases.
   f. Deliveries.
   g. Submittals.
   h. Possible conflicts.
   i. Compatibility problems.
   j. Time schedules.
   k. Weather limitations.
   l. Manufacturer’s written instructions.
   m. Warranty requirements.
   n. Compatibility of materials.
   o. Acceptability of substrates.
   p. Temporary facilities and controls.
   q. Space and access limitations.
   r. Regulations of authorities having jurisdiction.
   s. Testing and inspecting requirements.
   t. Installation procedures.
   u. Coordination with other work.
   v. Required performance results.
   w. Protection of adjacent work.
   x. Protection of construction and personnel.

3. Record significant conference discussions, agreements, and disagreements, including required corrective measures and actions.
4. Reporting: Distribute minutes of the meeting to each party present and to parties not present but requiring the information.

5. Do not proceed with installation if the conference cannot be successfully concluded. Initiate whatever actions are necessary to resolve impediments to performance of the Work and reconvene the conference at earliest feasible date.

D. Progress Meetings: Conduct progress meetings at weekly intervals.

1. Coordinate dates of meetings with preparation of payment requests.

2. Attendees: In addition to representatives of Owner, Project Inspector, and Program Management Team, each contractor, subcontractor, supplier, and other entity concerned with current progress or involved in planning, coordination, or performance of future activities shall be represented at these meetings. All participants at the conference shall be familiar with Project and authorized to conclude matters relating to the Work.

3. Agenda: Review and correct or approve minutes of previous progress meeting. Review other items of significance that could affect progress. Include topics for discussion as appropriate to status of Project.

   a. Contractor’s Construction Schedule: Review progress since the last meeting. Determine whether each activity is on time, ahead of schedule, or behind schedule, in relation to Contractor’s Construction Schedule. Determine how construction behind schedule will be expedited; secure commitments from parties involved to do so. Discuss whether schedule revisions are required to ensure that current and subsequent activities will be completed within the Contract Time.

      i) Review schedule for next period.

   b. Review present and future needs of each entity present, including the following:

      i) Interface requirements.
      ii) Sequence of operations.
      iii) Status of submittals.
      iv) Deliveries.
      v) Off-site fabrication.
      vi) Access.
      vii) Site utilization.
      viii) Temporary facilities and controls.
      ix) Work hours.
      x) Hazards and risks.
      xi) Progress cleaning.
      xii) Quality and work standards.
      xiii) Status of correction of deficient work items.
      xiv) Field observations.
      xv) Status of RFI’s.
      xvi) Status of Proposal Requests.
xvii) Pending changes.

xviii) Status of Change Orders.

xix) Pending claims and disputes.

xx) Documentation of information for payment requests.

4. Minutes: Entity responsible for conducting meeting will record and distribute meeting minutes to each party present and to parties not present but requiring the information.

   a. Schedule Updating: Revise Contractor’s Construction Schedule after each progress meeting where revisions to the schedule have been made or recognized. Issue revised schedule concurrently with the report of each meeting.

E. Project Closeout Conference: Schedule and conduct a project closeout conference, at a time convenient to Owner and Program Management Team, but no later than 60 days prior to scheduled date of Substantial Completion.

1. Conduct the conference to review requirements and responsibilities related to Project closeout.

2. Attendees: Authorized representatives of Owner, Program Management Team, and their consultants; Contractor and its superintendent; major subcontractors; suppliers, and other concerned parties shall attend the meeting. Participants at the meeting shall be familiar with Project and authorized to conclude matters relating to the Work.

3. Agenda: Discuss items of significance that could affect or delay Project closeout, including the following:

   a. Preparation of record documents.

   b. Procedures required prior to inspection for Substantial Completion and for final inspection for acceptance.

   c. Submittal of written warranties.

   d. Requirements for preparing operations and maintenance data.

   e. Requirements for delivery of material samples, attic stock, and spare parts.

   f. Requirements for demonstration and training.

   g. Preparation of Contractor’s punchlist.

   h. Procedures for processing Applications for Payment at Substantial Completion and for final payment.

   i. Submittal procedures.

   j. Owner’s partial occupancy requirements.

   k. Installation of Owner’s furniture, fixtures, and equipment.

   l. Responsibility for removing temporary facilities and controls.

4. Minutes: Entity responsible for conducting meeting will record and distribute meeting minutes to each party present and to parties not present but requiring the information.
PART 2 - PRODUCTS (Not Used) PART 3 - EXECUTION (Not Used)

END OF SECTION 01 31 00
1.00  GENERAL

1.01  SECTION INCLUDES

A. Construction Schedule procedures, preparation, submittals, reviews, updates, and revisions.

1.02  RELATED SECTIONS

Section 01340: Submittals.

B. Section 01 78 5: Project Record Documents.

1.03  PROCEDURES

A. Within 7 calendar days after Award of Contract, Contractor shall submit, for review, to the District Project Manager, a detailed Construction Schedule (Baseline) setting forth requirements for complete execution of work.

B. Contractor will include in the initial schedule a written narrative sufficiently comprehensive to explain basis and assumptions of Contractor's approach to work, including manpower flow and average crew equipment sizes over the period of work on the project.

C. If the Construction Schedule is considered by the District Project Manager to be in non-compliance with any requirement of the Contract, Contractor will be notified to review and revise Construction Schedule and bring it into compliance. Failure of the Contractor to submit a Construction Schedule in full compliance with the Contract may result in a delay in the processing of progress payments, since the approved Construction Schedule will be used in evaluating progress for payment approval.

D. Simultaneously with each submittal of Progress Payment Request, Contractor shall deliver to the District Project Manager an updated Construction Schedule reflecting work progress as of end of previous reporting period. Each such Construction Schedule shall show actual progress to date in execution of work, together with a projected schedule for completion of work. No changes in logic will be permitted unless agreed upon with District Project Manager.

E. Schedule submittals are subject to review and acceptance by the District. The District retains the right to withhold progress payments until Contractor submits a Construction Schedule acceptable to the District Project Manager.

F. Concurrent with acceptance of Contractor's submitted Construction Schedule by the District Project Manager, shall be Contractor's signature of acceptance.

1.04  PREPARATION GUIDELINES

A. Construction Schedule shall be prepared using Critical Path Method (CPM) of scheduling.
B. Contract Baseline Schedule:

1. The initial Contract Baseline Schedule shall be submitted for review by the District Project Manager within 7 calendar days of award.

2. After the Contractor and the District agree to an acceptable Contract Baseline schedule, it will become the established construction schedule and be considered part of the Contract Documents.

3. Contractor shall utilize the Oracle Primavera (P6) software and employ the Critical Path Method (CPM) in development and maintenance of the contract Schedule network in Precedence Diagram Mode (PDM). The schedule software shall be loaded with costs. It shall be utilized in the generating of time-scaled logic diagrams, cost histograms and profiles, bar-charts and layouts. It should also be utilized for generating reports with any/all activity detail.

4. No later than receipt of Award of Contract, Contractor shall begin development of a comprehensive time-scaled CPM network encompassing all portions of the Work.
   
   a. The CPM network shall incorporate activity descriptions, sequence, logic relationships, duration estimates, schedule values, cost loading and other information as defined herein.

   b. The CPM network shall include all Contract Milestones defined herein as well as all engineering, fabrication and delivery dates required to support Contract Milestones.

   c. Activities to be integrated and shown in the CPM network shall include, in addition to all construction activities: milestones representing Contractor's submittal dates of all critical submittals, and activities representing Owner's review period of each submittal (which review period shall in no case be scheduled for less than 15 working days); Contractor's procurement of materials and equipment; manufacture and/or fabrication, testing and delivery to the job site of special material and major equipment; equipment installation and preliminary, final and performance testing of equipment or systems installed under the Contract.

   d. The Contractor's Schedule shall also show start and finish dates for all temporary works; all construction of mock-ups, prototypes and/or samples, punch listing; Owner interfaces and Owner-furnished-item requirement dates; interfaces with Separate Contractors; regulatory agency approvals; and permits required for the performance of the Work.

   e. The Contractor's Schedule shall take into account all foreseeable factors or risks affecting, or which may affect, the performance of the Work, including historical and predicted weather conditions, applicable laws, regulations or collective bargaining agreements pertaining to labor, transportation, traffic, air quality, noise and any other applicable regulatory requirements.

   f. Contractor shall not use any “float suppression” techniques such as preferential sequencing or logic, special lead/lag constraints or unjustifiably over-estimating activity durations in preparing its Contract Schedule (Finish no later than constraints for Contract Milestones only will be permissible).

5. When submitting initial Contract Baseline Schedule, Contractor shall attach a narrative report which explains Contractor’s chosen method of determination and/or assumptions
used for activity durations, its assumptions regarding crew sizes, equipment requirements and production rates, any potential areas of concern or specific areas requiring coordination it may have identified and any long-lead time materials or equipment in the Work.

6. When completed, the CPM network shall represent Contractor's plan for the Work, compliant with the Contract Milestones and other Contract Documents.

7. Owner will notify Contractor of acceptance or of any changes necessary to the CPM network within 5 work-days from the formal presentation by Contractor. The Contractor shall effect any required changes to the CPM network and resubmit it for acceptance within 3 work-days, certifying in writing that all information contained therein complies with the Contract requirements.

8. Upon notification by Owner of acceptance of the CPM network, Contractor shall prepare schedule exhibits and printouts, and complete its submission of the Contract Schedule, which shall include the following, as a minimum.

   a. Bar Charts, for:

      (1) Contract Milestones only;
      (2) Summary Level (sorted by craft/trade and area);
      (3) Detail (sorted by Dates);
      (4) Detail (sorted by Responsibility), and;

   b. Reports, for:

      (1) Float (sorted low to high)
      (2) Cost Loading

Activities must be coded/identified in P6 as follows: The Contractor shall include, as a minimum, Phase, Area, Responsibility (all sub-contractors/trades and work performed by the General Contractor) and Milestones (as separate codes). The cost-loading shall be according to the Divisions in the Specification Section provided in the Contract Documents. The key milestones shall be, as a minimum:

Notice to Proceed
Completion of each individual Area of work.
Completion of the Project.

   c. Provide all software backup/export data and layout files electronically.

9. Prepare primary updated Working Schedule by the following:

When updating current schedule with actual progress only (non logic changes), status current Working Schedule with actual start and finish dates, remaining durations, and percent completion of activities and submit to the PM for review as specified above.

   b. When updating current schedule with logic changes, approved Change Orders, delay / disruption activities, or recovery plans, prepare a preliminary updated working Schedule by adjusting and attaching a copy of current Working Schedule and submit to PM for review.
Incorporate only approved changes into current Working Schedule prior to DATA DATE.

10. Upon first acceptance by Owner, the Contract Construction Schedule shall become the “Baseline Schedule” against which all subsequent Schedule Updates shall be made, and against which Contractor shall report progress and variances and by which Owner shall measure Contractor’s performance.

11. When commencing new work associated with a Change Order or a work authorization Change Notice, incorporate work into the current Working Schedule submittal as new activities after discussion with PM concerning how change will be placed into Working Schedule. After an official Change Order or work authorization Change Notice has been issued for work, add it to the schedule. All CO’s and CCD/CO’s added to the schedule are resource-loaded with material unit quantities and corresponding cost account, resources account codes, activity description, and accepted costs. The activity ID identifies the PM number of the change.

C. The Construction Schedule shall represent a practical plan to complete work within time requirements of the Contract.

   1. A schedule extending beyond Contract time will not be acceptable.

   2. For a schedule indicating work completed in less than Contract time, Contractor shall indicate any “float”

   3. A schedule found unacceptable by the District Project Manager shall be revised by Contractor and resubmitted within 3 working days.

D. Construction schedule shall clearly indicate sequence of construction activities and specifically indicate:

   1. Start and completion of all items of work, their major components, and interim milestone completion dates as determined by Contractor and District.

   2. Activities for procurement, delivery, installation of equipment, materials and other supplies, including:

      a. Time for submittals, resubmittal, and reviews. Include decision dates for selection of finishes.

      b. Time for fabrication and delivery of manufactured products for work.

      c. Interdependence of procurement and construction activities.

      d. Dates for testing, and final inspection.

E. Schedule shall be in sufficient detail to assure adequate planning and execution of work.

   1. Each activity shall not exceed 5 workdays, with except of procurement activities, unless directed otherwise by the District.

   2. Schedule shall be designed, in judgment of the District Project Manager, to
allow monitoring and evaluation of progress in performance of work; it shall be calendar time-scaled in precedence diagramming method (PDM).

3. Activities shall include:
   a. Description: what is to be accomplished and where.
   b. Workday duration.

4. All specified codes, mentioned above.

5. Network shall show continuous flow from left to right.

6. Identify days per week, non-work days and holidays.

7. Identify activities that constitute controlling operations, i.e., milestones or critical path.

8. The District Project Manager may require additional coding of activities.

F. Failure to include any element/scope of work required for performance of this Contract shall not excuse Contractor from completing work required to comply with Contract Documents, notwithstanding acceptance of Construction Schedule.

G. Submittal of the Construction Schedule shall be interpreted as Contractor's confirmation that schedule meets requirements of the Contract Documents, and that the work will be executed in sequence indicated in schedule.

1.05 CONTRACT MILESTONES

A. “Contract Milestones” are Milestones that may or may not be on the critical path of the Work and within the Contract Time, at which certain portions of the Work must be complete in order for Contractor to be in compliance with the Contract.

1. Where “complete” is used in the description of a Contract Milestone, it shall be construed to mean that all portions of the Work which occur in the indicated area or “zone” are complete, are accepted by Owner and are suitable for recognition by Owner of Substantial (or Partial Substantial) Completion as defined in of the General Conditions (notwithstanding that such recognition by Owner may be reserved until all Work of the Contract is Substantially Complete, at Owner’s sole discretion), and that no further duties or obligations of Contractor remain unfulfilled in that area or zone.

B. Contractor shall identify all Contract Milestones in its schedule submittals, whether or not Owner has identified those dates in the Bidding or Contract Documents. Contract Milestones, whether specified by Owner or Contractor's schedule submissions, shall be conspicuous in all Contractor-submitted schedules, and shall serve as an essential instrument of measurement by Owner of Contractor's compliance with the terms of the Contract.

C. Failure by Contractor to achieve Milestones may result in Owner availing itself of contractual remedies, as required, in order to regain the Contract Schedule.
1.06 SCHEDULE SECTION

A. Contractor shall, provide a monthly updated Contract Construction Schedule.

1. Contract Schedule shall incorporate a Schedule of Submittals and updating of it.

2. Contract Schedule shall incorporate a Material Procurement Schedule, and updating of it.

B. Contractor shall attend Weekly Schedule Review Meetings and Monthly Schedule Review Meetings, as defined herein.

1. Reflect current progress in updates.

2. Provide all reporting specified herein.

3. Take remedial action to mitigate schedule variances.

C. Submit upon Award of Contract, for Owner’s approval the name and professional history of the person designated by Contractor as its authorized schedule representative.

D. The Contractor shall employ/engage at least one scheduler with experience using automated scheduling systems. Scheduler will cooperate with District Project Manager (PM) and continuously monitor and maintain the Contractor’s detailed cost / schedule integration system. PM has right to refuse to accept the scheduler based upon lack of experience as required in this Specification. If PM refuses to accept scheduler proposed by Contractor, provide another scheduler meeting experience requirements stated herein.

E. All costs associated with compliance with this Section shall be included in the Contract Sum. All Schedules to be provided by Contractor shall fully integrate the work of all subcontractors and major suppliers and must comply fully with the Contract Milestones identified herein.

F. Float is not for exclusive use or benefit of either District or Contractor but is an expiring resource available to both parties on a non-discriminatory basis. Either party as needed to meet Contract milestones and Contract completion dates uses float. Contract time extensions for Contract performance will be granted only to extent that delays or disruptions to affected work path exceed total float along those paths of current Working Schedule (updated schedule) in effect at time of delay or disruptions. These delays or disruptions must also cause end date of Work to exceed current contract date and be beyond control and without fault or negligence of Contractor or any subcontractor at any tier. Delays or disruptions impact an already negative float path; Contractor will not receive a time extension unless and until activity with highest negative float is driven even further negative. Delays or disruptions will not be a basis for time extension to this Contract unless, and until, such delays or disruptions are resolved as set forth in General Conditions.

G. Pursuant to float sharing requirements of this Section, use of float suppression techniques such as preferential sequencing or logic, special lead / lag logic restraints, and extended activity times or durations are prohibited and use of float time disclosed or implied by
use of alternate float suppression techniques shall be shared to proportionate benefit of the Authority and Contractor. Use of any network technique solely for purpose of suppressing float will be cause for rejection of schedule submittal.

1.08 FAILURE TO COMPLY WITH REQUIREMENTS

A. If Contractor fails to comply with the requirements specified herein, Owner reserves the right, but will not be required, to engage an independent scheduling consultant or provide its own expertise to fulfill those requirements, and back-charge Contractor an amount equal to the payment Contractor would have been due had it self-performed the delinquent or non-complying work.

B. In such event, Owner will require the participation of Contractor to ensure that the information produced accurately reflects Contractor's plan to execute the Work and the progress of the Work, in compliance with the Contract.

C. If Contractor fails to promptly cooperate by participating with Owner or its Consultant in developing or in implementing the jointly-developed Schedule, Owner will complete the effort to the best of its ability with the information provided by Contractor and issue that Schedule for the mandatory and immediate utilization by Contractor in a unilateral Change Order to the Contract.

1.09 SPECIFIC SCHEDULING REQUIREMENTS

A. Contractor shall make its Authorized Schedule Representative available throughout the Contract Time and authorize that person to make scheduling commitments binding on Contractor, as required to fulfill the Scheduling Requirements.

B. Schedule of Submittals:

1. Within 7 calendar days of notice of award, the Contractor shall develop and submit their initial Schedule of Submittals for Owner's review. The Schedule of Submittals shall derive from and incorporate a complete listing of all submittals required by the Contract Documents for the duration of the Contract Time. Each submittal activity shall separately depict the duration the Contractor has allocated for Owner's review. A minimum of 21 calendar days is required for owner's review.

2. Key submittal activities shall be incorporated into the baseline schedule.

3. Material Procurement Schedule: Within 7 calendar days of notice of award, Contractor shall develop and submit its Material Procurement Schedule for Owner's review. The Material Procurement Schedule shall incorporate all material or equipment required by the Contract having a lead time of 30 calendar days or greater. All key items shall be incorporated into the schedule.

1.10 REQUIREMENTS FOR SCHEDULE REVIEW AND UPDATING

A. Weekly Reviews:

The Contractor shall submit to the District Project Manager, a 3 week look-ahead report that shall
show all the work activities to be performed with in the next 3 weeks. The 3 week look-ahead reports shall be in bar-chart/layout format and shall show work completed the previous week and work to be performed in the following 3 weeks. The District Project Manager shall have the option to request any further schedule reports or printouts, if deemed necessary.

B. Monthly reviews:

1. The owner’s representative and Contractor agree to conduct monthly reviews to determine: "planned" versus "actual" progress to date; compliance with Contract submittal requirements, Contract Milestones and accepted Contract Schedule; and determination of any changes to the work plan or implementation which must be made by Contractor to comply with the Contract Schedule. The monthly schedule review shall include, at a minimum:

   a. All requirements of Weekly Reviews listed above. Monthly update/status of electronic file shall include recording of all Actual Start Dates and Actual Finish Dates and status of activities in progress.

   b. Review of "planned" versus "actual" work force allocations and progress for the preceding month.

   c. Review of revisions, added or deleted work and how those are being integrated into Contractor's work plan.

   d. Review of Contractor's interface and coordination with other work on the Project.

   e. Review of all impacts to the work during the preceding month and to date, Contractor's evaluation of those impacts and any recovery plans or remedial actions required to comply with the Contract Schedule.

2. Following review of the above and all other information relevant to the progress of the Work, Contractor shall adjust its work plan as required to assure compliance with the Contract Schedule. The requirement for additional work force allocations, additional shifts, overtime, etc., will not entitle Contractor to additional compensation except to the extent expressly provided for by the Contract or Change Order.

3. The Contract Schedule shall be updated weekly (the "Schedule Update") and submitted monthly for Owner's review concurrent with each payment application submitted by Contractor. The Update shall incorporate actual status to date and shall include the following:

   a. Computer generated CPM network exhibits

   b. Bar Charts generated separately using the format template provided by Owner for:

   (1) Contract Milestones only (Baseline vs. forecast)
   (2) Summary Level (sorted by craft/trade and area);
   (3) Detail (sorted by Dates);
   (4) Detail (sorted by Responsibility), and;
   (5) Variance (Baseline vs. forecast);
   (6) Progress Curves (baseline vs. earned/forecast);
   (7) Float (sorted low to high), and;
   (8) Cost Histogram.
4. Provide all software backup/export data and layout files electronically.

C. Written Narrative Report: Include a "stand-alone" narrative of sufficient detail to explain basis of Contractor’s submittal with each schedule submittal.

1. Baseline Submittals – Explain determination of activity duration and describe Contractor’s approach for meeting required interim and final completion milestone dates, as specified in the Contract. Include as a minimum: basis and assumptions used in preparing submittal including crew sizes, equipment requirements, and anticipated delivery dates, restraints: critical path activities that contain time contingencies for impacts to be expected from normal rainfall; holidays and other non-work days; potential problem areas; permits; coordination required with Authority, railroad, utilities and other parties; and long lead delivery items requiring more than 30 calendar days from order to delivery.

2. Update Schedule Submittals - State in narrative, Work actually completed and reflect progress along critical path in terms of days ahead of or behind allowable dates. Specific requirements of narrative are as follows:
   a. If updated Working Schedule indicates an actual or potential delay to Contract completion date or interim milestone dates as specified under Special Provisions or modify by Change Order, identify causes of delays, disruptions and interruptions and provide explanation of Work affected and proposed corrective action to meet milestone dates involved or to mitigate potential delays or disruptions, Document and log in matrix format all activities with non-mitigated float until the negative float is mitigated. Identify any deviation from previous month’s critical path. The matrix will include applicable activity number, description, approved planned start and finish dates, current start and finish dates and float quantity.
   b. Identify activities in progress and one scheduled to be completed, by activity number and description,
   c. Identify by activity number and description, activities to be started during month following report period. Show Contractor’s forecast early and late start and finish dates.
   d. Discuss added Change Order Work items.

3. A detailed time-impact analysis with a narrative shall be submitted explaining the means and methods, basis and assumptions for the same. The process used to develop the time impact and fragnet shall be detailed.

4. If it becomes necessary for Owner to furnish the suggested logic and/or duration revisions as a result of Contractor's failure to furnish acceptable data, and if Contractor has objections to those revisions furnished, it shall so advise Owner in writing within 3 days, providing also an acceptable alternate plan. If Contractor fails to so note any objections and provide an acceptable alternate plan, or if Contractor implements the revisions provided by Owner without so noting any objections, Contractor will be deemed to have waived all objections and concurred with the suggested logic/duration revisions provided by Owner.

5. In updating status of Contract Schedule, Contractor shall make no modifications to Activity ID numbers in the accepted Contract Schedule, schedule calculation rules/criteria or the Activity Coding Structure provided by Owner without the explicit written permission of Owner,
which permission Owner may withhold at its sole discretion.

1.11 CONTRACTOR'S RESPONSIBILITY

   A. Nothing in these requirements shall be deemed to be a usurpation of Contractor's authority and responsibility to plan and schedule work as Contractor sees fit, subject to all other requirements of Contract Documents.

   B. Contractor shall provide at all times sufficient competent labor, materials, and equipment to properly carry on work and to ensure completion of each part in accordance with Construction Schedule and within time agreed.

1.12 SUSPENSION OF PAYMENTS

   A. Initial Submittal: The District has the right to withhold progress payments until the District Project Manager accepts the Construction Baseline Schedule.

   B. Monthly Submittals: The District has the right to withhold progress payments if Contractor fails to update and submit Construction Schedule and reports as specified.

1.13 RECORD COPY

   A. At completion of work items, submit as-built report and time-scaled network diagram reflecting project as-built critical paths.

1.14 FORM OF SUBMITTAL

   A. All Construction Schedule submittals shall be transmitted with a Letter of Transmittal and shall include 3 copies and one electronic copy.

PART 2 - PRODUCTS - NOT USED

PART 3 - EXECUTION - NOT USED

END OF SECTION 01 32 10
PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes requirements for the Submittal Schedule, and administrative and procedural requirements for submitting Shop Drawings, Product Data, Samples, and other submittals.

B. Related Sections include:
1. Section 01 25 00 "Substitution Procedures" for submitting substitution requests.
2. Section 01 26 00 "Contract Modification Procedures" for submitting Proposed Change Orders.
3. Section 01 29 00 "Payment Procedures" for submitting Applications for Payment and the Schedule of Values.
4. Section 01 31 00 "Project Management and Coordination" for submitting Coordination Drawings and RFI's.
5. Section 01 32 00 "Construction Progress Documentation" for submitting schedules and reports, including Contractor's Construction Schedule, and Daily Construction Reports.
6. Section 01 41 00 "Quality Requirements" for submitting test and inspection reports and for mockup requirements.
7. Section 01 77 00 "Closeout Procedures" for submitting warranties.
8. Section 01 78 39 "Project Record Documents" for submitting Record Drawings, Record Specifications, and Record Product Data.
9. Section 01 78 23 "Operation and Maintenance Data" for submitting operation and maintenance manuals.
10. Section 01 79 00 "Demonstration and Training" for submitting video recordings of demonstration of equipment and training of Owner's personnel.
11. Divisions 2 through 49 Sections for specific requirements for submittals in those Sections.

1.3 DEFINITIONS

A. Action Submittals: Written and graphic information and physical samples that require Architect's responsive action. Action submittals are those submittals indicated in individual Specification Sections as “Action Submittals.”

B. Informational Submittals: Written and graphic information and physical samples that
do not require Architect’s responsive action. Submittals may be rejected for not complying with requirements. Informational submittals are those submittals indicated in individual Specification Sections as “Informational Submittals.”


1.4 ACTION SUBMITTALS

A. Submittal Schedule: Submit a schedule of submittals via the PMIS, arranged in chronological order by dates required by construction schedule. Include time required for review, ordering, manufacturing, fabrication, and delivery when establishing dates. Include additional time required for making corrections or revisions to submittals noted by Architect and additional time for handling and reviewing submittals required by those corrections.

1. Coordinate Submittal Schedule with list of subcontracts, the Schedule of Values, and Contractor’s Construction Schedule.

2. Initial Submittal: Submit concurrently with Startup Construction Schedule. Include submittals required during the first 60 calendar days of construction. List those submittals required to maintain orderly progress of the Work and those required early because of long lead time for manufacture or fabrication.

3. Final Submittal: Submit concurrently with the first complete submittal of Contractor’s Construction Schedule.

a. Submit revised Submittal Schedule to reflect changes in current status and timing for submittals.

4. Format: Arrange the following information in a tabular format:

a. Scheduled date for first submittal.

b. Specification Section number and title.

c. Submittal Category: Action; informational.

d. Name of subcontractor.

e. Description of the Work covered.

f. Scheduled date for Architect’s final release or approval.

g. Scheduled date of fabrication.

h. Scheduled dates for purchasing.

i. Scheduled dates for installation.

ej. Activity or event number.

1.5 SUBMITTAL ADMINISTRATIVE REQUIREMENTS

A. Architect’s Digital Data Files: Electronic digital data files of the Contract Drawings will not be provided by Architect for Contractor’s use in preparing submittals.

1. At Contractor’s written request, read-only digital data files can be made available to Contractor. Architect makes no representations as to the accuracy or completeness of digital data as it relates to the Contract Drawings.
2. Contractor shall execute an electronic file release agreement in the form of Agreement form provided by or acceptable to Architect.

B. Coordination: Coordinate preparation and processing of submittals with performance of construction activities.
   1. Coordinate each submittal with fabrication, purchasing, testing, delivery, other submittals, and related activities that require sequential activity.
   2. Submit all submittal items required for each Specification Section concurrently unless partial submittals for portions of the Work are indicated on approved submittal schedule.
   3. Submit action submittals and informational submittals required by the same Specification Section as separate packages under separate transmittals.
   4. Coordinate transmittal of different types of submittals for related parts of the Work so processing will not be delayed because of need to review submittals concurrently for coordination.
      a. Architect reserves the right to withhold action on a submittal requiring coordination with other submittals until related submittals are received.

C. Processing Time: Allow minimum time for submittal review, including time for resubmittals, as follows below. Time for review shall commence on Architect’s receipt of submittal, except submittals received after 1:00 PM will be considered as received the following working day. No extension of Contract Time will be authorized because of failure to transmit submittals enough in advance of the Work to permit processing, including resubmittals. Submittal review times indicated below are minimums. Longer review times may occur within timeframe not impacting critical path affected by submittal being reviewed, as verified by Contractor’s Construction Schedule.
   1. Initial Review: Allow 15 working days for initial review of each submittal. Allow additional time if coordination with subsequent submittals is required. Architect will advise Contractor when a submittal being processed must be delayed for coordination.
   2. Intermediate Review: If intermediate submittal is necessary, process it in the same manner as initial submittal.
   3. Resubmittal Review: Allow 12 working days for review of each resubmittal.
   4. Sequential Review: Where sequential review of submittals by Architect's consultants, Owner, or other parties is indicated, allow 15 working days for initial review of each submittal.

D. Electronic Submittals: Identify and incorporate information in each electronic submittal file as follows:
   1. Assemble complete submittal package into a single indexed file incorporating submittal requirements of a single Specification Section and transmittal form with links enabling navigation to each item.
   2. Name file with submittal number or other unique identifier, including revision identifier.
      a. File name shall use an identifier indicating submittal number (e.g. sub01). Resubmittals shall include an alphabetic suffix after a decimal point (e.g.
3. Provide means for insertion to permanently record Contractor’s review and approval markings and action taken by Architect.

4. Transmittal Form for Electronic Submittals: Use electronic form acceptable to Owner, containing the following information:
   a. Project name.
   b. Date.
   c. Name and address of Architect.
   d. Name of Program Management Team.
   e. Name of Contractor.
   f. Name of firm or entity that prepared submittal.
   g. Names of subcontractor, manufacturer, and supplier.
   h. Category and type of submittal.
   i. Submittal purpose and description.
   j. Specification Section number and title.
   k. Specification paragraph number or drawing designation and generic name for each of multiple items.
   l. Drawing number and detail references, as appropriate.
   m. Location(s) where product is to be installed, as appropriate.
   n. Related physical samples submitted directly.
   o. Indication of full or partial submittal.
   p. Transmittal number, numbered consecutively.
   q. Submittal and transmittal distribution record.
   r. Other necessary identification.
   s. Remarks.

E. Options: Identify options requiring selection by Architect.

F. Deviations and Additional Information: On an attached separate sheet, prepared on Contractor’s letterhead, record relevant information, requests for data, revisions other than those requested by Architect on previous submittals, and deviations from requirements in the Contract Documents, including minor variations and limitations. Include same identification information as related submittal.

G. Resubmittals: Make resubmittals in same form as initial submittal.
   1. Note date and content of previous submittal.
   2. Note date and content of revision in label or title block and clearly indicate extent of revision.
   3. Resubmit submittals until they are marked “No Exceptions Taken” or “Make Corrections Noted” on Architect’s action stamp.

H. Distribution: Furnish copies of final submittals to manufacturers, subcontractors, suppliers, fabricators, installers, authorities having jurisdiction, and others as...
necessary for performance of construction activities. Show distribution on transmittal forms.

I. Use for Construction; Use only final action submittals with notation from Architect indicating “No Exceptions Taken” or “Make Corrections Noted.”
1. Make corrections requested by Architect on submittals marked “Make Corrections Noted.”

PART 2 - PRODUCTS

2.1 SUBMITTAL PROCEDURES

A. General Submittal Procedure Requirements: Prepare and submit submittals required by individual Specification Sections to ARCHITECT via the PMIS unless indicated otherwise. Types of submittals are indicated in individual Specification Sections.
1. Submittals Other Than Samples: Submit in PDF format:

2. Sample Submittals: Refer to “Samples” paragraph below for required quantities of Samples.
3. Certificates and Certifications Submittals: Provide a statement that includes signature of entity responsible for preparing certification. Certificates and certifications shall be signed by an officer or other individual authorized to sign documents on behalf of that entity.

B. Product Data: Collect information into a single submittal for each element of construction and type of product or equipment.
1. If information must be specifically prepared for submittal because standard published data are not suitable for use, submit as Shop Drawings, not as Product Data.
2. Mark each copy of each submittal to show which products and options are applicable.
3. Include the following information, as applicable:
   a. Manufacturer’s catalog cuts.
   b. Manufacturer’s product specifications.
   c. Standard color charts.
   d. Statement of compliance with specified referenced standards.
   e. Testing by recognized testing agency.
   f. Application of testing agency labels and seals.
   g. Notation of coordination requirements.
   h. Availability and delivery time information.
4. For equipment, include the following in addition to the above, as applicable.
   a. Wiring diagrams showing factory-installed wiring.
   b. Printed performance curves.
c. Operational range diagrams.
d. Clearances required to other construction, if not indicated on accompanying Shop Drawings.

5. Submit Product Data before or concurrent with Samples.
6. Format: Submit Product Data in format specified in “General Submittal Procedure Requirements” paragraph above.

C. Shop Drawings: Prepare Project-specific information, drawn accurately to scale. Do not base Shop Drawings on reproductions of the Contract Documents or standard printed data.

1. Preparation: Fully illustrate requirements in the Contract Documents. Include the following information, as applicable:
   a. Identification of products.
   b. Schedules.
   c. Compliance with specified standards.
   d. Notation of coordination requirements.
   e. Notation of dimensions established by field measurement.
   f. Relationship and attachment to adjoining construction clearly indicated.
   g. Seal and signature of professional engineer, if specified.

2. Sheet Size: Except for templates, patterns, and similar full-size drawings, submit Shop Drawings on sheets at least 8-1/2 inches by 11 inches, but no larger than 30 inches by 42 inches.

3. Format: Submit Shop Drawings in format specified in “General Submittal Procedure Requirements” paragraph above.

D. Samples: Submit Samples for review of kind, color, pattern, and texture for a check of these characteristics with other elements and for a comparison of these characteristics between submittal and actual component as delivered and installed.

1. Transmit Samples that contain multiple, related components such as accessories together in one submittal package.

2. Identification: Attach label on unexposed side of Samples that includes the following:
   a. Generic description of Sample.
   b. Product name and name of manufacturer.
   c. Sample source.
   d. Number and title of applicable Specification Section.

3. Provide corresponding electronic submittal of Sample transmittal, digital image file illustrating Sample characteristics, and identification information for record.

4. Disposition: Maintain sets of approved Samples at Project site, available for quality-control comparisons throughout the course of construction activity. Sample sets may be used to determine final acceptance of construction associated with each set.
   a. Samples that may be incorporated into the Work are indicated in individual
Specification Sections. Such Samples must be in undamaged condition at time of use.

b. Samples not incorporated into the Work, or otherwise designated as Owner’s property, are the property of Contractor.

5. Samples for Initial Selection: Submit manufacturer’s color charts consisting of units or sections of units showing the full range of colors, textures, and patterns available.
   a. Number of Samples: Submit two full sets of available choices where color, pattern, texture, or similar characteristics are required to be selected from manufacturer’s product line. Architect will return submittal with options selected.

6. Samples for Verification: Submit full-size units of Samples of size indicated, prepared from same material to be used for the Work, cured and finished in manner specified, and physically identical with material or product proposed for use, and that show full range of color and texture variations expected.
   a. Samples include, but are not limited to, the following: partial sections of manufactured or fabricated components; small cuts or containers of materials; complete units of repetitively used materials; swatches showing color, texture, and pattern; color range sets; and components used for independent testing and inspection.
   b. Number of Samples: Submit two sets of Samples. Architect will retain one Sample sets; remainder will be returned.
      i) If variation in color, pattern, texture, or other characteristic is inherent in material or product represented by a Sample, submit at least three sets of paired units that show approximate limits of variations.

E. Product Schedule: As required in individual Specification Sections, prepare a written summary indicating types of products required for the Work and their intended location. Include the following information in tabular form:
   1. Type of product. Include unique identifier for each product indicated in the Contract Documents or assigned by Contractor if none is indicated.
   2. Manufacturer and product name, and model number, if applicable.
   3. Number and name of room or space.
   4. Location within room or space.
   5. Submit Product Schedule as a PDF file via the PMIS.

F. Coordination Drawing Submittals: Comply with requirements specified in Section 01 31 00 “Project Management and Coordination.”

G. Contractor’s Construction Schedule: Comply with requirements specified in Section 01 32 00 “Construction Progress Documentation.”

H. Application for Payment and Schedule of Values: Comply with requirements specified in Section 01 29 00 “Payment Procedures.”

I. Test and Inspection Reports and Schedule of Tests and Inspections Submittals: Comply with requirements specified in Section 01 43 00 “Quality Assurance.”
J. Closeout Submittals and Maintenance Material Submittals: Comply with requirements specified in Section 01 77 00 “Closeout Procedures.”

K. Maintenance Data: Comply with requirements specified in Section 01 78 23 “Operation and Maintenance Data.”

L. Qualification Data: Prepare written information that demonstrates capabilities and experience of firm or person. Include lists of completed projects with project names and addresses, contact information of architects and owners, and other information specified.

M. Welding Certificates: Prepare written certification that welding procedures and personnel comply with requirements in the Contract Documents. Submit record of Welding Procedure Specification and Procedure Qualification Record on AWS forms. Include names of firms and personnel certified.

N. Installer Certificates: Submit written statements on manufacturer’s letterhead certifying that Installer complies with requirements in the Contract Documents and, where required, is authorized by manufacturer for this specific project.

O. Manufacturer Certificates: Submit written statements on manufacturer’s letterhead certifying that manufacturer complies with requirements in the Contract Documents. Include evidence of manufacturing experience where required.

P. Product Certificates: Submit written statements on manufacturer’s letterhead certifying that product complies with requirements in the Contract Documents.

Q. Material Certificates: Submit written statements on manufacturer’s letterhead certifying that material complies with requirements in the Contract Documents.

R. Material Test Reports: Submit reports written by a qualified testing agency, on testing agency’s standard form, indicating and interpreting test results of material for compliance with requirements in the Contract Documents.

S. Product Test Reports: Submit written reports indicating that current product produced by manufacturer complies with requirements in the Contract Documents. Base reports on evaluation of tests performed by manufacturer and witnessed by a qualified testing agency, or on comprehensive tests performed by a qualified testing agency.

T. Research Reports: Submit written evidence, from a model code organization acceptable to authorities having jurisdiction, that product complies with building code in effect for Project. Include the following information:
   1. Name of evaluation organization.
   2. Date of evaluation.
   3. Time period when report is in effect.
   4. Product and manufacturers’ names.
   5. Description of product.
6. Test procedures and results.
7. Limitations of use.

U. Preconstruction Test Reports: Submit reports by a qualified testing agency, on testing agency’s standard form, indicating and interpreting results of tests performed before installation of product, for compliance with performance requirements in the Contract Documents.

V. Compatibility Test Reports: Submit reports written by a qualified testing agency, on testing agency’s standard form, indicating and interpreting results of compatibility tests performed before installation of product. Include written recommendations for primers and substrate preparation needed for adhesion.

W. Field Quality Control Reports: Submit written reports indicating and interpreting results of field tests performed either during installation of product or after product is installed in its final location, for compliance with requirements in the Contract Documents.

X. Design Data: Prepare and submit written and graphic information, including, but not limited to, performance and design criteria, list of applicable codes and regulations, and calculations. Include list of assumptions and other performance and design criteria and a summary of loads. Include load diagrams if applicable. Provide name and version of software, if any, used for calculations. Include page numbers.

2.2 DELEGATED-DESIGN SERVICES

A. Performance and Design Criteria: Where professional design services or certifications by a design professional are specifically required of Contractor by the Contract Documents, provide products and systems complying with specific performance and design criteria indicated.

1. If criteria indicated are not sufficient to perform services or certification required, submit a written request for additional information to Architect.

B. Delegated-Design Services Certification: In addition to Shop Drawings, Product Data, and other required submittals, submit digitally signed PDF electronic file, signed and sealed by the responsible design professional, for each product and system specifically assigned to Contractor to be designed or certified by a design professional.

1. Indicate that products and systems comply with performance and design criteria in the Contract Documents. Include list of codes, loads, and other factors used in performing these services.

PART 3 - EXECUTION

3.1 CONTRACTOR’S REVIEW

A. Action and Informational Submittals: Review each submittal and check for coordination with other Work of the Contract and for compliance with the Contract Documents. Note corrections and field dimensions. Mark with approval stamp before
submitting.

B. Project Closeout and Maintenance Material Submittals: See requirements in Section 01 77 00 “Closeout Procedures.”

C. Approval Stamp: Stamp each submittal with a uniform, approval stamp. Include Project name and location, submittal number, Specification Section title and number, name of reviewer, date of Contractor’s approval, and statement certifying that submittal has been reviewed, checked, and approved for compliance with the Contract Documents.

3.2 ARCHITECT’S ACTIONS

A. General: Architect will not review submittals that do not bear Contractor’s approval stamp and will return them without action.

B. Action Submittals: Architect will review each submittal, make marks to indicate corrections or modifications required, and return it. Architect’s review is for general conformance with design concept, only, and does not relieve Contractor in any way from compliance with Contract Documents, nor does it in any way constitute a Change Order. Contractor remains solely responsible for details and accuracy, all quantities and dimensions, and selection of fabrication processes.

C. Architect will stamp each submittal with an action stamp and will mark stamp appropriately to indicate action, as follows:

1. No Exceptions Taken: Work covered by submittal may proceed provided it complies with the requirements of the Contract Documents. Compliance with Contract Documents will be a condition of acceptance of Work.

2. Make Corrections Noted: Work covered by submittal may proceed, provided it complies with Architect/Engineer’s notations or corrections. Compliance with Contract Documents will be a condition of acceptance of Work.

3. Revise and Resubmit: Do not proceed with Work covered by submittal, including purchasing, fabrication, delivery, or other activity. Revise submittal in accordance with Architect/Engineer’s notations and resubmit without delay. Repeat if necessary.

4. Rejected, See Remarks: Do not proceed with Work covered by submittal, including purchasing, fabrication, delivery, or other activity. Revise submittal or prepare new submittal in accordance with Architect/Engineer’s notations and resubmit without delay.

5. Remarks Attached: Follow Architect/Engineer’s remarks and instructions attached to submittal. Remarks may be in conjunction with one of the four actions listed above.

D. Informational Submittals: Architect will review each submittal and will not return it, or will return it if it does not comply with requirements. Architect will forward each submittal to appropriate party.

E. Partial submittals prepared for a portion of the Work will be reviewed when use of partial submittals has received prior approval from Architect.
F. Incomplete submittals are not acceptable, will be considered nonresponsive, and will be returned for resubmittal without review.

G. Submittals not required by the Contract Documents may be returned by Architect without action.

END OF SECTION 01 33 00
SECTION 01 35 16
ALTERATION PROJECT PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes special procedures for alteration work.

1.3 REFERENCES

A. American National Standards Institute (ANSI)/American Society of Safety Engineers (ASSE):
   1. ANSI/ASSE A10.6: Safety Requirements for Demolition Operations.

B. Code of Federal Regulations (CFR):

C. National Fire Protection Association (NFPA):
   1. NFPA 51B: Standard for Fire Prevention During Welding, Cutting and Other Hot Work.

1.4 DEFINITIONS

A. Alteration Work: This term includes remodeling, renovation, repair, and maintenance work performed within existing spaces or on existing surfaces as part of the Project.

B. Consolidate: To strengthen loose or deteriorated materials in place.

C. Design Reference Sample: A sample that represents the Program Management Team’s prebid selection of work to be matched; it may be existing work or work specially produced for the Project.

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

E. Match: To blend with adjacent construction and manifest no apparent difference in material type, species, cut, form, detail, color, grain, texture, or finish; as approved by Program Management Team.
F. Refinish: To remove existing finishes to base material and apply new finish to match original, or as otherwise indicated.

G. Repair: To correct damage and defects, retaining existing materials, features, and finishes. This includes patching, piecing-in, splicing, consolidating, or otherwise reinforcing or upgrading materials.

H. Replace: To remove, duplicate, and reinstall entire item with new material. The original item is the pattern for creating duplicates unless otherwise indicated.

I. Replicate: To reproduce in exact detail, materials, and finish unless otherwise indicated.

J. Reproduce: To fabricate a new item, accurate in detail to the original, and from either the same or a similar material as the original, unless otherwise indicated.

K. Retain: To keep existing items that are not to be removed or dismantled.

L. Strip: To remove existing finish down to base material unless otherwise indicated.

1.5 COORDINATION

A. Alteration Work Subschedule: A construction schedule coordinating the sequencing and scheduling of alteration work for entire Project, including each activity to be performed, and based on Contractor’s Construction Schedule. Secure time commitments for performing critical construction activities from separate entities responsible for alteration work.

1. Schedule construction operations in sequence required to obtain best Work results.

2. Coordinate sequence of alteration work activities to accommodate the following:
   a. Owner’s continuing occupancy of portions of existing building.
   b. Owner’s partial occupancy of completed Work.
   c. Other known work in progress.
   d. Tests and inspections.

3. Detail sequence of alteration work, with start and end dates.

4. Utility Services: Indicate how long utility services will be interrupted. Coordinate shutoff, capping, and continuation of utility services.

5. Use of elevator and stairs.

6. Equipment Data: List gross loaded weight, axle-load distribution, and wheel-base dimension data for mobile and heavy equipment proposed for use in existing structure. Do not use such equipment without certification from Contractor’s professional engineer that the structure can support the imposed loadings without damage.

B. Pedestrian and Vehicular Circulation: Coordinate alteration work with circulation patterns within Project building(s) and site. Some work is near circulation patterns
and adjacent to restricted areas. Circulation patterns cannot be closed off entirely and in places can be only temporarily redirected around small areas of work. Access to restricted areas may not be obstructed. Plan and execute the Work accordingly.

1.6 PROJECT MEETINGS FOR ALTERATION WORK

A. Preliminary Conference for Alteration Work: Before starting alteration work, Program Management Team will conduct conference at Project site.

1. Attendees: In addition to representatives of Owner, Program Management Team, and Contractor, testing service representative, specialists, and chemical-cleaner manufacturer(s) shall be represented at the meeting.

2. Agenda: Discuss items of significance that could affect progress of alteration work, including review of the following:
   a. Alteration Work Subschedule: Discuss and finalize; verify availability of materials, specialists’ personnel, equipment, and facilities needed to make progress and avoid delays.
   b. Fire-prevention plan.
   c. Governing regulations.
   d. Areas where existing construction is to remain and the required protection.
   e. Hauling routes.
   f. Sequence of alteration work operations.
   g. Storage, protection, and accounting for salvaged and specially fabricated items.
   h. Existing conditions, staging, and structural loading limitations of areas where materials are stored.
   i. Qualifications of personnel assigned to alteration work and assigned duties.
   j. Requirements for extent and quality of work, tolerances, and required clearances.
   k. Embedded work such as flashings and lintels, special details, collection of waste, protection of occupants and the public, and condition of other construction that affects the Work or will affect the work.

3. Reporting: Program Management Team will record conference results and distribute copies to everyone in attendance and to others affected by decisions or actions resulting from conference.

B. Coordination Meetings: Conduct coordination meetings specifically for alteration work at TBD intervals. Coordination meetings are in addition to specific meetings held for other purposes, such as progress meetings and preinstallation conferences.

1. Attendees: In addition to representatives of Owner, Program Management Team, and Contractor, each specialist, supplier, installer, and other entity concerned with progress or involved in planning, coordination, or performance of alteration work activities shall be represented at these meetings. All participants at conference shall be familiar with Project and authorized to conclude matters relating to alteration work.
2. Agenda: Review and correct or approve minutes of previous coordination meeting. Review other items of significance that could affect progress of alteration work. Include topics for discussion as appropriate to status of Project.
   a. Alteration Work Subschedule: Review progress since last coordination meeting. Determine whether each schedule item is on time, ahead of schedule, or behind schedule. Determine how construction behind schedule will be expedited with retention of quality; secure commitments from parties involved to do so. Discuss whether schedule revisions are required to ensure that current and subsequent activities are completed within the Contract Time.
   b. Schedule Updating: Revise Contractor’s Alteration Work Subschedule after each coordination meeting where revisions to schedule have been made or recognized. Issue revised schedule concurrently with report of each meeting.
   c. Review present and future needs of each entity present, including review items listed in the “Preliminary Conference for Alteration Work” Paragraph in this Article and the following:
      i) Interface requirements of alteration work with other Project Work.
      ii) Status of submittals for alteration work.
      iii) Access to alteration work locations.
      iv) Effectiveness of fire-prevention plan.
      v) Quality and work standards of alteration work.
      vi) Change Orders for alteration work.

3. Reporting: Record meeting results and distribute copies to everyone in attendance and to others affected by decisions or actions resulting from each meeting.

1.7 MATERIALS OWNERSHIP

   A. Historic items, relics, and similar objects including, but not limited to, cornerstones and their contents, commemorative plaques and tablets, antiques, and other items of interest or value to Owner may be encountered or uncovered during the Work, regardless of whether they were previously documented, remain Owner’s property.

   1. Carefully dismantle and salvage each item or object in a manner to prevent damage and protect it from damage, then promptly deliver it to Owner where directed.

1.8 INFORMATIONAL SUBMITTALS

   A. Alteration Work Subschedule:
      1. Submit alteration work subschedule within 30 days of date established for commencement of alteration work.

   B. Preconstruction Documentation: Show preexisting conditions of adjoining construction and site improvements that are to remain, including finish surfaces, that might be misconstrued as damage caused by Contractor’s alteration work operations.
C. Alteration Work Program: Submit 30 days before work begins.

D. Fire-Prevention Plan: Submit 30 days before work begins.

1.9 QUALITY ASSURANCE

A. Specialist Qualifications: An experienced firm regularly engaged in specialty work similar in nature, materials, design, and extent to alteration work as specified in each Section and that has completed a minimum of five recent projects with a record of successful in-service performance that demonstrates the firm’s qualifications to perform this work.

1. Field Supervisor Qualifications: Full-time supervisors experienced in specialty work similar in nature, material, design, and extent to that indicated for this Project. Supervisors shall be on-site when specialty work begins and during its progress. Supervisors shall not be changed during Project except for causes beyond the control of the specialist firm.
   a. Construct new mockups of required work whenever a supervisor is replaced.

B. Title X Requirement: Each firm conducting activities that disturb painted surfaces shall be a “Lead-Safe Certified Firm” according to 40 CFR 745, Subpart E, and use only workers that are trained in lead-safe work practices.

C. Alteration Work Program: Prepare a written plan for alteration work for whole Project, including each phase or process and protection of surrounding materials during operations. Show compliance with indicated methods and procedures specified in this and other Sections. Coordinate this whole-Project alteration work program with specific requirements of programs required in other alteration work Sections.

1. Dust and Noise Control: Include locations of proposed temporary dust- and noise-control partitions and means of egress from occupied areas coordinated with continuing on-site operations and other known work in progress.

2. Debris Hauling: Include plans clearly marked to show debris hauling routes, turning radii, and locations and details of temporary protective barriers.

D. Fire-Prevention Plan: Prepare a written plan for preventing fires during the Work, including placement of fire extinguishers, fire blankets, rag buckets, and other fire-control devices during each phase or process. Coordinate plan with Owner’s fire-protection equipment and requirements. Include fire-watch personnel’s training, duties, and authority to enforce fire safety.

E. Safety and Health Standard: Comply with ANSI/ASSE A10.6.

1.10 STORAGE AND HANDLING OF SALVAGED MATERIALS

A. Salvaged Materials for Reinstallation:
   1. Repair and clean items for reuse as indicated.
   2. Pack or crate items after cleaning and repairing; cushion against damage during
handling. Label contents of containers.

3. Protect items from damage during transport and storage.

4. Reinstall items in locations indicated. Comply with installation requirements for new materials and equipment unless otherwise indicated. Provide connections, supports, and miscellaneous materials to make items functional for use indicated.

B. Existing Materials to Remain: Protect construction indicated to remain against damage and soiling from construction work. Where permitted by Program Management Team, items may be dismantled and taken to a suitable, protected storage location during construction work and reinstalled in their original locations after alteration and other construction work in the vicinity is complete.

C. Storage: Catalog and store items within a weathertight enclosure where they are protected from moisture, weather, condensation, and freezing temperatures.
   1. Identify each item for reinstallation with a nonpermanent mark to document its original location: Indicate original locations on plans, elevations, sections, or photographs by annotating the identifying marks.
   2. Secure stored materials to protect from theft.
   3. Control humidity so that it does not exceed 85 percent. Maintain temperatures 5 degrees F or more above the dew point.

D. Storage Space:
   1. Owner will arrange for limited on-site locations(s) for free storage of salvaged material. This storage space does not include security and climate control for stored material.
   2. Arrange for off-site locations for storage and protection of salvaged material that cannot be stored and protected on-site.

1.11 FIELD CONDITIONS

A. Survey of Existing Conditions: Record existing conditions that affect the Work by use of preconstruction photographs. Post photographs in the PMIS Discrepancies. Notify Program Management Team of discrepancies between existing conditions and Drawings before proceeding with removal and dismantling work.

B. Owner's Removals: Before beginning alteration work, verify in correspondence with Owner that the following items have been removed:
   1. District to remove entire contents of space.

C. Size Limitations in Existing Spaces: Materials, products, and equipment used for performing the Work and for transporting debris, materials, and products shall be of sizes that clear surfaces within existing spaces, areas, rooms, and openings, including temporary protection, by 12 inches or more.

PART 2 - PRODUCTS (Not Used) PART 3 - EXECUTION

3.1 PROTECTION
A. Protect persons, motor vehicles, surrounding surfaces of building, building site, plants, and surrounding buildings from harm resulting from alteration work.
   1. Use only proven protection methods, appropriate to each area and surface being protected.
   2. Provide temporary barricades, barriers, and directional signage to exclude the public from areas where alteration work is being performed.
   3. Erect temporary barriers to form and maintain fire-egress routes.
   4. Erect temporary protective covers over walkways and at points of pedestrian and vehicular entrance and exit that must remain in service during alteration work.
   5. Contain dust and debris generated by alteration work, and prevent it from reaching the public or adjacent surfaces.
   6. Provide shoring, bracing, and supports as necessary. Do not overload structural elements.
   7. Protect floors and other surfaces along hauling routes from damage, wear, and staining.
   8. Provide supplemental sound-control treatment to isolate demolition work from other areas of the building.

B. Temporary Protection of Materials to Remain:
   1. Protect existing materials with temporary protections and construction. Do not remove existing materials unless otherwise indicated.
   2. Do not attach temporary protection to existing surfaces except as indicated as part of the alteration work program.

C. Comply with each product manufacturer’s written instructions for protections and precautions. Protect against adverse effects of products and procedures on people and adjacent materials, components, and vegetation.

D. Utility and Communications Services:
   1. Notify Owner, Program Management Team, authorities having jurisdiction, and entities owning or controlling wires, conduits, pipes, and other services affected by alteration work before commencing operations.
   2. Disconnect and cap pipes and services as required by authorities having jurisdiction, as required for alteration work.
   3. Maintain existing services unless otherwise indicated; keep in service, and protect against damage during operations. Provide temporary services during interruptions to existing utilities.

E. Existing Drains: Prior to the start of work in an area, test drainage system to ensure that it is functioning properly. Notify Program Management Team immediately of inadequate drainage or blockage. Do not begin work in an area until the drainage system is functioning properly.
   1. Prevent solids such as adhesive or mortar residue or other debris from entering...
the drainage system. Clean out drains and drain lines that become sluggish or blocked by sand or other materials resulting from alteration work.

2. Protect drains from pollutants. Block drains or filter out sediments, allowing only clean water to pass.

3.2 PROTECTION FROM FIRE

A. General: Follow fire-prevention plan and the following:
   1. Comply with NFPA 241 requirements unless otherwise indicated.
   2. Remove and keep area free of combustibles, including rubbish, paper, waste, and chemicals, unless necessary for the immediate work.
      a. If combustible material cannot be removed, provide fire blankets to cover such materials.

B. Heat-Generating Equipment and Combustible Materials: Comply with the following procedures while performing work with heat-generating equipment or combustible materials, including welding, torch-cutting, soldering, brazing, removing paint with heat, or other operations where open flames or implements using high heat or combustible solvents and chemicals are anticipated:
   1. Obtain Owner’s approval for operations involving use of welding or other high-heat equipment. Use of open-flame equipment is not permitted. Notify Owner at least 72 hours before each occurrence, indicating location of such work.
   2. As far as practicable, restrict heat-generation equipment to shop areas or outside the building.
   3. Do not perform work with heat-generating equipment in or near rooms or in areas where flammable liquids or explosive vapors are present or thought to be present. Use a combustible gas indicator test to ensure that the area is safe.
   4. Use fireproof baffles to prevent flames, sparks, hot gases, or other high-temperature material from reaching surrounding combustible material.
   5. Prevent the spread of sparks and particles of hot metal through open windows, doors, holes, and cracks in floors, walls, ceilings, roofs, and other openings.
   6. Fire Watch: Before working with heat-generating equipment or combustible materials, station personnel to serve as a fire watch at each location where such work is performed. Fire-watch personnel shall have the authority to enforce fire safety. Station fire watch according to NFPA 51B, NFPA 241, and as follows:
      a. Train each fire watch in the proper operation of fire-control equipment and alarms.
      b. Prohibit fire-watch personnel from other work that would be a distraction from fire-watch duties.
      c. Cease work with heat-generating equipment whenever fire-watch personnel are not present.
      d. Have fire-watch personnel perform final fire-safety inspection each day beginning no sooner than 30 minutes after conclusion of work to detect hidden or smoldering fires and to ensure that proper fire prevention is maintained.
      e. Maintain fire-watch personnel at each area of Project site until time period
has elapsed after conclusion of daily work in accordance with referenced standards.

C. Fire-Control Devices: Provide and maintain fire extinguishers, fire blankets, and rag buckets for disposal of rags with combustible liquids. Maintain each as suitable for the type of fire risk in each work area. Ensure that nearby personnel and the fire-watch personnel are trained in fire-extinguisher and blanket use.

D. Sprinklers: Where sprinkler protection exists and is functional, maintain it without interruption while operations are being performed. If operations are performed close to sprinklers, shield them temporarily with guards.
   1. Remove temporary guards at the end of work shifts, whenever operations are paused, and when nearby work is complete.

3.3 PROTECTION DURING APPLICATION OF CHEMICALS

A. Protect motor vehicles, surrounding surfaces of building, building site, plants, and surrounding buildings from harm or spillage resulting from applications of chemicals and adhesives.

B. Cover adjacent surfaces with protective materials that are proven to resist chemicals selected for Project unless chemicals being used will not damage adjacent surfaces as indicated in alteration work program. Use covering materials and masking agents that are waterproof and UV resistant and that will not stain or leave residue on surfaces to which they are applied. Apply protective materials according to manufacturer’s written instructions. Do not apply liquid masking agents or adhesives to painted or porous surfaces. When no longer needed, promptly remove protective materials.

C. Do not apply chemicals during winds of sufficient force to spread them to unprotected surfaces.

D. Neutralize alkaline and acid wastes and legally dispose of off Owner’s property.

E. Collect and dispose of runoff from chemical operations by legal means and in a manner that prevents soil contamination, soil erosion, undermining of paving and foundations, damage to landscaping, or water penetration into building interior.

3.4 GENERAL ALTERATION WORK

A. Have specialty work performed only by qualified specialists.

B. Ensure that supervisory personnel are present when work begins and during its progress.

C. Record existing work before each procedure (preconstruction), and record progress during the work.

D. Perform surveys of Project site as the Work progresses to detect hazards resulting from alterations.
E. Notify Program Management Team of visible changes in the integrity of material or components whether from environmental causes including biological attack, UV degradation, freezing, or thawing or from structural defects including cracks, movement, or distortion.

1. Do not proceed with the work in question until directed by Program Management Team.

END OF SECTION 01 35 16
SECTION 01 41 00
REGULATORY REQUIREMENTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes regulatory requirements.

1.3 GOVERNING REGULATIONS

A. All Work to be in strict conformance with requirements of all applicable codes, ordinances, standards, and other regulations, including the following:
   1. California Code of Regulations, Title 24 - Building Standards.
      b. 2016 California Building Code (Title 24, Part 2).
      c. 2016 California Electrical Code (Title 24, Part 3).
      d. 2016 California Mechanical Code (Title 24, Part 4).
      e. 2016 California Plumbing Code (Title 24, Part 5).
      f. 2016 California Energy Code (Title 24, Part 6).
      g. 2016 California Historical Building Code (Title 24, Part 8).
      h. 2016 California Fire Code (Title 24, Part 9).
      i. 2016 California Existing Building Code (Title 24, Part 10).
      j. 2016 California Green Building Standards Code (Title 24, Part 11).
      k. 2016 California Referenced Standards Code (Title 24, Part 12).

B. Nothing in these Contract Documents shall be construed to permit work not in conformance with applicable codes and regulations. Notify Program Management Team and Project Inspector promptly in writing if there is reason to believe that any portion of Contract Documents is at variance with any applicable codes and regulations.

1.4 INFORMATIONAL SUBMITTALS
A. Permits and Licenses: Submit copies of permits, licenses, inspection reports, certifications, and other similar documents pertaining to compliance with applicable standards and regulations.

PART 2 - PRODUCTS (Not Used) PART 3 - EXECUTION (Not Used)

END OF SECTION 01 41 00
SECTION 01 42 00
DEFINITIONS AND REFERENCES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes definitions and reference standards.

B. Related Sections include:

1. Section 01 41 00 "Regulatory Requirements" for applicable codes and other regulatory requirements.

1.3 DEFINITIONS

A. General: Basic Contract definitions are included in the Conditions of the Contract.

B. “Approved”: When used to convey Architect’s action on Contractor’s submittals, applications, and requests, “approved” is limited to Architect’s duties and responsibilities as stated in the Conditions of the Contract, and does not relieve the Contractor in any way of responsibility for conformance with contract.

C. “Directed”: A command or instruction by Architect. Other terms including “requested,” “authorized,” “selected,” “approved,” “required,” and “permitted” have the same meaning as “directed.”

1. In no way shall any implied meaning be interpreted to extend Architect’s responsibility to construction means and methods or construction site safety.

D. “Indicated”: Requirements expressed by graphic representations or in written form on Drawings, in Specifications, and in other Contract Documents. Other terms including “shown,” “noted,” “scheduled,” and “specified” have the same meaning as “indicated.”

E. “Regulations”: Laws, ordinances, statutes, and lawful orders issued by authorities having jurisdiction, and rules, conventions, and agreements within the construction industry that control performance of the Work.

F. “Furnish”: Supply and deliver to Project site, ready for unloading, unpacking, assembly, installation, and similar operations.

G. “Install”: Operations at Project site including unloading, temporarily storing, unpacking, assembling, erecting, placing, anchoring, applying, working to dimension, finishing, curing, protecting, cleaning, and similar operations.
H. “Provide”: Furnish and install, complete and ready for the intended use.

I. “Project Site”: Space available for performing construction activities. The extent of Project site is shown on Drawings and may or may not be identical with the description of the land on which the Project is to be built.

1.4 INDUSTRY STANDARDS

A. Applicability of Standards: Unless the Contract Documents include more stringent requirements, applicable construction industry standards have the same force and effect as if bound or copied directly into the Contract Documents to the extent referenced. Such standards are made a part of the Contract Documents by reference.

B. Publication Dates: Comply with standards in effect as of date of the Contract Documents, unless otherwise indicated.

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

1.5 ABBREVIATIONS AND ACRONYMS

A. Industry Organizations: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the entities indicated in Gale’s “Encyclopedia of Associations: National Organizations of the U.S.” or in Columbia Books’ “National Trade & Professional Associations of the United States.”

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

C. Federal Government Agencies: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the entities in the following list. This information is believed to be accurate as of the date of the Contract Documents.
   2. DOE – Department of Energy; www.energy.gov.
   3. EPA – Environmental Protection Agency; www.epa.gov.
   4. OSHA – Occupational Safety & Health Administration; www.osha.gov.
D. Standards and Regulations: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the standards and regulations in the following list. This information is believed to be accurate as of the date of the Contract Documents.


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

1. CCR; California Code of Regulations; Office of Administrative Law; California Title 24; www.calregs.com.
2. CDPH; California Department of Public Health; Indoor Air Quality Program; www.cal-iaq.org.
3. SCAQMD; South Coast Air Quality Management District; www.aqmd.gov.

PART 2 - PRODUCTS (Not Used) PART 3 - EXECUTION (Not Used)

END OF SECTION 01 42 00
SECTION 01 43 00 QUALITY ASSURANCE

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes administrative and procedural requirements for quality assurance and quality control.

B. Testing and inspecting services are required to verify compliance with requirements specified or indicated. These services do not relieve Contractor of responsibility for compliance with the Contract Document requirements.

1. Specific quality-assurance and quality-control requirements for individual construction activities are specified in the Sections that specify those activities. Requirements in those Sections may also cover production of standard products.

2. Specified tests, inspections, and related actions do not limit Contractor's other quality-assurance and quality-control procedures that facilitate compliance with Contract Document requirements.

3. Requirements for Contractor to provide quality-assurance and quality-control services required by Architect, Owner, or authorities having jurisdiction are not limited by provisions of this Section.

4. Specific test and inspection requirements are not specified in this Section.

C. Related Sections include:

1. Section 01 32 00 "Construction Progress Documentation" for developing a schedule of required tests and inspections.

2. Section 01 73 29 "Cutting and Patching" for repair and restoration of construction disturbed by testing and inspecting activities.

3. Divisions 2 through 49 Sections for specific test and inspection requirements.

1.3 REFERENCES

A. ASTM International (American Society for Testing and Materials):


B. Code of Federal Regulations (CFR):

1. 29 CFR 1910, Subpart A, Section 1910.7: Definitions and Requirements for a Nationally Recognized Testing Laboratory.
Section 01 43 00
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Kern Community College District
BAKERSFIELD COLLEGE INFRASTRUCTURE CENTRAL PLANT
MATH/SCIENCE COIL REPLACEMENT

1.4 DEFINITIONS

A. Quality-Assurance Services: Activities, actions, and procedures performed before and during execution of the Work to guard against defects and deficiencies and substantiate that proposed construction will comply with requirements.

B. Quality-Control Services: Tests, inspections, procedures, and related actions during and after execution of the Work to evaluate that actual products incorporated into the Work and completed construction comply with requirements. Services do not include contract enforcement activities performed by Architect.

C. Mockups: Full-size, physical assemblies that are constructed on-site. Mockups are used to verify selections made under Sample submittals, to demonstrate aesthetic effects and, where indicated, qualities of materials and execution, and to review construction, coordination, testing, or operation; to show interface between dissimilar materials; and to demonstrate compliance with specified installation tolerances. Mockups are not Samples. Unless otherwise indicated, approved mockups establish the standard by which the Work will be judged.

1. Laboratory Mockups: Full-size, physical assemblies that are constructed at testing facility to verify performance characteristics.

2. Integrated Exterior Mockups: Mockups of the exterior envelope erected separately from the building but on Project site, consisting of multiple products, assemblies, and subassemblies.

3. Room Mockups: Mockups of typical interior spaces complete with wall, floor, and ceiling finishes, doors, windows, millwork, casework, specialties, furnishings and equipment, and lighting.

D. Preconstruction Testing: Tests and inspections that are performed specifically for the Project before products and materials are incorporated into the Work to verify performance or compliance with specified criteria.

E. Product Testing: Tests and inspections that are performed by an NRTL, an NVLAP, or a testing agency qualified to conduct product testing and acceptable to authorities having jurisdiction, to establish product performance and compliance with specified requirements.

F. Source Quality-Control Testing: Tests and inspections that are performed at the source, e.g., plant, mill, factory, or shop.

G. Field Quality-Control Testing: Tests and inspections that are performed on-site for installation of the Work and for completed Work.

H. Testing Agency: An entity engaged to perform specific tests, inspections, or both. Testing laboratory shall mean the same as testing agency.

I. Installer/Applicator/Erector: Contractor or another entity engaged by Contractor as an employee, Subcontractor, or Sub-subcontractor, to perform a particular construction
operation, including installation, erection, application, and similar operations.

1. Using a trade-specific terminology such as “carpentry” in referring to a trade or entity does not require that certain construction activities be performed by accredited or unionized individuals, or that requirements specified apply exclusively to specific trades.

J. Experienced: When used with an entity or individual, “experienced” means having successfully completed a minimum of five previous projects similar in nature, size, and extent to this Project; being familiar with special requirements indicated; and having complied with requirements of authorities having jurisdiction.


1.5 CONFLICTING REQUIREMENTS

A. General: If compliance with two or more standards is specified and the standards establish different or conflicting requirements for minimum quantities or quality levels, comply with the most stringent requirement. Refer conflicting requirements that are different, but apparently equal, to Architect for a decision before proceeding.

B. Minimum Quantity or Quality Levels: The quantity or quality level shown or specified shall be the minimum provided or performed. The actual installation may comply exactly with the minimum quantity or quality specified, or it may exceed the minimum within reasonable limits. To comply with these requirements, indicated numeric values are minimum or maximum, as appropriate, for the context of requirements. Refer uncertainties to Architect for a decision before proceeding.

1.6 ACTION SUBMITTALS

A. Shop Drawings: For mockups, provide plans, sections, and elevations, indicating materials and size of mockup construction.
   1. Indicate manufacturer and model number of individual components.
   2. Provide axonometric drawings for conditions difficult to illustrate in two dimensions.

1.7 INFORMATIONAL SUBMITTALS

A. Contractor’s Statement of Responsibility: When required by authorities having jurisdiction, submit copy of written statement of responsibility sent to authorities having jurisdiction before starting work on the following systems:
   1. Seismic-force-resisting systems, designated seismic system, or component listed in the designated seismic system quality-assurance plan prepared by Architect.

B. Testing Agency Qualifications: For testing agencies specified in “Quality Assurance”
Article to demonstrate their capabilities and experience. Include proof of qualifications in the form of a recent report on the inspection of the testing agency by a recognized authority.

C. Schedule of Tests and Inspections: Prepare in tabular form and include the following:
   1. Specification Section number and title.
   2. Entity responsible for performing tests and inspections.
   3. Description of test and inspection.
   4. Identification of applicable standards.
   5. Identification of test and inspection methods.
   6. Number of tests and inspections required.
   7. Time schedule or time span for tests and inspections.
   8. Requirements for obtaining samples.
   9. Unique characteristics of each quality-control service.

1.8 REPORTS AND DOCUMENTS

A. Test and Inspection Reports: Prepare and submit certified written reports specified to be performed by Contractor in other Sections. Include the following:
   1. Date of issue.
   2. Project title and number.
   3. Division of the State Architect project application number.
   4. Name, address, and telephone number of testing agency.
   5. Dates and locations of samples and tests or inspections.
   6. Names of individuals making tests and inspections.
   7. Description of the Work and test and inspection method.
   8. Identification of product and Specification Section.
   9. Complete test or inspection data.
   10. Test and inspection results and an interpretation of test results.
   11. Record of temperature and weather conditions at time of sample taking and testing and inspecting.
   12. Comments or professional opinion on whether tested or inspected Work complies with the Contract Document requirements.
   13. Name and signature of laboratory inspector.

B. Manufacturer’s Technical Representative’s Field Reports: Prepare written information documenting manufacturer’s technical representative’s tests and inspections specified in other Sections. Include the following:
   1. Name, address, and telephone number of technical representative making report.
   2. Statement on condition of substrates and their acceptability for installation of
product.
3. Statement that products at Project site comply with requirements.
4. Summary of installation procedures being followed, whether they comply with requirements and, if not, what corrective action was taken.
5. Results of operational and other tests and a statement of whether observed performance complies with requirements.
6. Statement whether conditions, products, and installation will affect warranty.
7. Other required items indicated in individual Specification Sections.

C. Factory-Authorized Service Representative’s Reports: Prepare written information documenting manufacturer’s factory-authorized service representative’s tests and inspections specified in other Sections. Include the following:
1. Name, address, and telephone number of factory-authorized service representative making report.
2. Statement that equipment complies with requirements.
3. Results of operational and other tests and a statement of whether observed performance complies with requirements.
4. Statement whether conditions, products, and installation will affect warranty.
5. Other required items indicated in individual Specification Sections.

D. Permits, Licenses, and Certificates: For Owner’s records, submit copies of permits, licenses, certifications, inspection reports, releases, jurisdictional settlements, notices, receipts for fee payments, judgments, correspondence, records, and similar documents, established for compliance with standards and regulations bearing on performance of the Work.

1.9 QUALITY ASSURANCE

A. General: Qualifications paragraphs in this Article establish the minimum qualification levels required; individual Specification Sections specify additional requirements.

B. Manufacturer Qualifications: A firm experienced in manufacturing products or systems similar to those indicated for this Project and with a record of successful in-service performance, as well as sufficient production capacity to produce required units.

C. Fabricator Qualifications: A firm experienced in producing products similar to those indicated for this Project and with a record of successful in-service performance, as well as sufficient production capacity to produce required units.

D. Installer Qualifications: A firm or individual with experience in installing, erecting, or assembling work similar in material, design, and extent to that indicated for this Project, whose work has resulted in construction with a record of successful in-service performance.
1. Minimum Experience: 5 years or 5 projects, unless indicated otherwise.

E. Professional Engineer Qualifications: A professional engineer who is legally qualified to practice in jurisdiction where Project is located and who is experienced in providing engineering services of the kind indicated. Engineering services are defined as those
performed for installations of the system, assembly, or product that are similar in material, design, and extent to those indicated for this Project.

F. Specialists: Certain Specification Sections require that specific construction activities shall be performed by entities who are recognized experts in those operations. Specialists shall satisfy qualification requirements indicated and shall be engaged for the activities indicated.
   1. Requirements of authorities having jurisdiction shall supersede requirements for specialists.

G. Testing Agency Qualifications: An NRTL, an NVLAP, or an independent agency with the experience and capability to conduct testing and inspecting indicated, as documented according to ASTM E 329; and with additional qualifications specified in individual Sections; and acceptable to authorities having jurisdiction, where approval by said authorities is required.
   1. NRTL: A nationally recognized testing laboratory according to 29 CFR 1910.7.
   2. NVLAP: A testing agency accredited according to NIST’s National Voluntary Laboratory Accreditation Program.

H. Manufacturer’s Technical Representative Qualifications: An authorized representative of manufacturer who is trained and approved by manufacturer to observe and inspect installation of manufacturer’s products that are similar in material, design, and extent to those indicated for this Project.

I. Factory-Authorized Service Representative Qualifications: An authorized representative of manufacturer who is trained and approved by manufacturer to inspect installation of manufacturer’s products that are similar in material, design, and extent to those indicated for this Project.

J. Preconstruction Testing: Where testing agency is indicated to perform preconstruction testing for compliance with specified requirements for performance and test methods, comply with the following:
   1. Contractor responsibilities include the following:
      a. Provide test specimens representative of proposed products and construction.
      b. Submit specimens in a timely manner with sufficient time for testing and analyzing results to prevent delaying the Work.
      c. Provide sizes and configurations of test assemblies, mockups, and laboratory mockups, to adequately demonstrate capability of products to comply with performance requirements.
      d. Build site-assembled test assemblies and mockups using installers who will perform same tasks for Project.
      e. Build laboratory mockups at testing facility using personnel, products, and methods of construction indicated for the completed Work.
      f. When testing is complete, remove test specimens, assemblies, mockups, and laboratory mockups; do not reuse products on Project.
   2. Testing Agency Responsibilities: Submit a certified written report of each test,
inspection, and similar quality-assurance service to Architect with copy to Contractor. Interpret tests and inspections and state in each report whether tested and inspected work complies with or deviates from the Contract Documents.

K. Mockups: Before installing portions of the Work requiring mockups, build mockups for each form of construction and finish required to comply with the following requirements, using materials indicated for the completed Work.

1. Build mockups in location and of size indicated or, if not indicated, as directed by Architect.
2. Notify Architect 5 working days in advance of dates and times when mockups will be constructed.
3. Employ supervisory personnel who will oversee mockup construction. Employ workers that will be employed during the construction at Project.
4. Demonstrate the proposed range of aesthetic effects and workmanship.
5. Obtain Architect’s approval of mockups before starting work, fabrication, or construction.
   a. Allow 5 working days for initial review and each re-review of each.
6. Maintain mockups during construction in an undisturbed condition as a standard for judging the completed Work.
7. Demolish and remove mockups when directed, unless otherwise indicated.

1.10 QUALITY CONTROL

A. Owner Responsibilities: Where quality-control services are indicated as Owner’s responsibility, Owner will engage a qualified testing agency to perform these services.

1. Owner will furnish Contractor with names, addresses, and telephone numbers of testing agencies engaged and description of types of testing and inspecting they are engaged to perform.
2. Notify Project Inspector and testing agencies, at least 2 working days in advance of time when Work that requires testing or inspecting will be performed.
3. Costs for retesting and reinspecting construction that replaces or is necessitated by work that failed to comply with the Contract Documents will be charged to Contractor, and the Contract Sum will be adjusted by Change Order.

B. Contractor Responsibilities: Tests and inspections not explicitly assigned to Owner are Contractor’s responsibility. Perform additional quality-control activities required to verify that the Work complies with requirements, whether specified or not.

1. Unless otherwise indicated, provide quality-control services specified and those required by authorities having jurisdiction. Perform quality-control services required of Contractor by authorities having jurisdiction, whether specified or not.
2. Where services are indicated as Contractor’s responsibility, engage a qualified testing agency to perform these quality-control services.
   a. Contractor shall not employ same entity engaged by Owner, unless agreed to in writing by Owner.
3. Notify Project Inspector and testing agencies, at least 2 working days or as indicated otherwise in advance of time when Work that requires testing or inspecting will be performed.

4. Where quality-control services are indicated as Contractor’s responsibility, submit a certified written report, as two paper copies or in PDF electronic form, of each quality-control service.

5. Testing and inspecting requested by Contractor and not required by the Contract Documents are Contractor’s responsibility.

6. Submit additional copies of each written report as two hard copies or in PDF electronic form directly to authorities having jurisdiction, when they so direct.

C. Manufacturer’s Field Service: Where indicated, engage a factory-authorized service representative to inspect field-assembled components and equipment installation, including service connections. Report results in writing and submit as hard copies or in PDF electronic form as specified in Section 01 33 00 “Submittal Procedures.”

D. Manufacturer’s Technical Services: Where indicated, engage a manufacturer’s technical representative to observe and inspect the Work. Manufacturer’s technical representative’s services include participation in preinstallation conferences, examination of substrates and conditions, verification of materials, observation of installer activities, inspection of completed portions of the Work, and submittal of written reports.

E. Retesting/Reinspecting:
1. Where quality-control services are Contractor’s responsibility, provide quality-control services, including retesting and reinspecting, for construction that replaces or is necessitated by Work that failed to comply with the Contract Documents.
2. Where quality-control services are Owner’s responsibility, costs for retesting and reinspecting construction that replaces or is necessitated by Work that failed to comply with the Contract Documents will be charged to Contractor, by way of a deductive Change Order.

1. Notify Architect, Inspector, and Contractor promptly of irregularities or deficiencies observed in the Work during performance of its services.
2. Determine the location from which test samples will be taken and in which in-situ tests are conducted.
3. Conduct and interpret tests and inspections and state in each report whether tested and inspected work complies with or deviates from requirements.
4. Submit a certified written report, in writing or PDF electronic form, of each test, inspection, and similar quality-control service through Contractor.
5. Do not release, revoke, alter, or increase the Contract Document requirements or approve or accept any portion of the Work.
6. Do not perform any duties of Contractor.
G. Associated Services: Cooperate with agencies performing required tests, inspections, and similar quality-control services, and provide reasonable auxiliary services as requested. Notify agency sufficiently in advance of operations to permit assignment of personnel. Provide the following:
1. Access to the Work.
2. Incidental labor and facilities necessary to facilitate tests and inspections.
3. Adequate quantities of representative samples of materials that require testing and inspecting. Assist agency in obtaining samples.
4. Facilities for storage and field curing of test samples.
5. Delivery of samples to testing agencies.
6. Preliminary design mix proposed for use for material mixes that require control by testing agency.
7. Security and protection for samples and for testing and inspecting equipment at Project site.

H. Coordination: Coordinate sequence of activities to accommodate required quality-assurance and -control services with a minimum of delay and to avoid necessity of removing and replacing construction to accommodate testing and inspecting.
1. Schedule times for tests, inspections, obtaining samples, and similar activities. Provide timely notice of the Work’s readiness for all required tests and inspections.

I. Schedule of Tests and Inspections: Prepare a schedule of tests, inspections, and similar quality-control services required by the Contract Documents. Coordinate and submit concurrently with Contractor’s construction schedule. Update as the Work progresses.
1. Distribution: Distribute schedule to Owner, Architect, Inspector, testing agencies, and each party involved in performance of portions of the Work where tests and inspections are required.

1.11 SPECIAL TESTS AND INSPECTIONS

A. Special Tests and Inspections: Owner will engage a qualified testing agency/Special Inspector to conduct special tests and inspections as required by authorities having jurisdiction as the responsibility of Owner, as indicated in DSA Structural Tests and Inspections sheet (DSA Form 103-1) end of this Section, and in individual Specification Sections. Performance of Special Testing and Inspection will include the following:
1. Verification that manufacturer maintains detailed fabrication and quality-control procedures and reviewing the completeness and adequacy of those procedures to perform the Work.
2. Notification of Architect, Inspector, and Contractor promptly of irregularities and deficiencies observed in the Work during performance of its services.
3. Submittal of certified written report of each test, inspection, and similar quality-control service via PMIS to PMT, Architect, Inspector, to Contractor and to authorities having jurisdiction.
4. Submittal of final report of special tests and inspections at Substantial Completion, which includes a list of unresolved deficiencies.

5. Interpretation of tests and inspections, stating in each report whether tested and inspected work complies with or deviates from the Contract Documents.

6. Retesting and reinspecting of corrected work.

1.12 PROJECT INSPECTOR

A. Owner will engage a qualified Inspector acceptable to Architect, and authorities having jurisdiction. Primary duty of the Inspector is to inspect the Work for compliance with the Contract Documents.

1. The duties of the Inspector are defined in Title 24, Part 1, Chapter 4.

2. The Inspector will report to the Owner and Architect.

B. Provide free access to all parts of the Work at all times, so as to allow continuous observation by the Inspector. Presence of the Inspector does not relieve the Contractor in any way from requirement to comply with the Contract Documents.

C. Notify Inspector at least 2 working days in advance of time when work that requires inspecting will be performed.

D. Provide reasonable facilities for Inspector’s use in performing inspection duties, as specified in Section 01 50 00 "Temporary Facilities and Controls."

E. Inspector will alert Owner, Contractor, and Architect in the event of noncompliance with the Contract Documents.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 TEST AND INSPECTION LOG

A. Prepare a record of tests and inspections. Include the following:

1. Date test or inspection was conducted.

2. Description of the Work tested or inspected.

3. Date test or inspection results were transmitted to Architect.

4. Identification of testing agency or Special Inspector conducting test or inspection.

B. Maintain log on PMIS website. Post changes and modifications as they occur. Provide access to test and inspection log for Architect’s, Inspector’s, reference during normal working hours.

3.2 REPAIR AND PROTECTION

A. General: On completion of testing, inspecting, sample taking, and similar services,
repair damaged construction and restore substrates and finishes.

1. Provide materials and comply with installation requirements specified in other Specification Sections or matching existing substrates and finishes. Restore patched areas and extend restoration into adjoining areas with durable seams that are as invisible as possible. Comply with the Contract Document requirements for cutting and patching in Section 01 73 29 "Cutting and Patching."

B. Protect construction exposed by or for quality-control service activities.

C. Repair and protection are Contractor’s responsibility, regardless of the assignment of responsibility for quality-control services.

END OF SECTION 01 43 00
SECTION 01 50 00
TEMPORARY FACILITIES AND CONTROLS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes requirements for temporary utilities, support facilities, and security and protection facilities.

B. Related Sections include:
   1. Section 01 10 00 "Summary of Work" for limitations on utility interruptions and other work restrictions.
   2. Section 01 33 00 "Submittal Procedures" for procedures for submitting copies of implementation and termination schedule and utility reports.
   3. Section 01 70 00 "Field Engineering and Execution Requirements" for progress cleaning requirements.
   4. Divisions 2 through 49 Sections for temporary heat, ventilation, and humidity requirements for products in those Sections.

1.3 REFERENCES

A. National Fire Protection Association (NFPA):

1.4 DEFINITIONS

A. Permanent Enclosure: As determined by Architect, permanent or temporary roofing is complete, insulated, and weathertight; exterior walls are insulated and weathertight; and all openings are closed with permanent construction or substantial temporary closures.

1.5 USE CHARGES

A. General: Installation and removal of and use charges for temporary facilities shall be included in the Contract Sum unless otherwise indicated. Allow other entities to use temporary services and facilities without cost, including, but not limited to, Architect, testing agencies, and authorities having jurisdiction.

B. Sewer Service: Pay sewer-service use charges for sewer usage by all entities for construction operations.
C. Water Service: Pay water-service use charges for water used by all entities for construction operations.

D. Electric Power Service: Pay electric power service use charges for electricity used by all entities for construction operations.

1.6 ACTION SUBMITTALS

A. Shop Drawing: Project Identification Sign. Show dimensions, graphics, and layout.

1.7 INFORMATIONAL SUBMITTALS

A. Site Plan: Show temporary facilities, enclosures, utility hookups, staging areas, and parking areas for construction personnel.

B. Erosion- and Sedimentation-Control Plan: Show compliance with requirements of EPA Construction General Permit or authorities having jurisdiction, whichever is more stringent.

C. Fire-Safety Program: Show compliance with requirements of NFPA 241 and authorities having jurisdiction. Indicate Contractor personnel responsible for management of fire-prevention program.

D. Moisture-Protection Plan: Describe procedures and controls for protecting materials and construction from water absorption and damage.
   1. Describe delivery, handling, and storage provisions for materials subject to water absorption or water damage.
   2. Indicate procedures for discarding water-damaged materials, protocols for mitigating water intrusion into completed Work, and replacing water-damaged Work.
   3. Indicate sequencing of work that requires water, such as sprayed fire-resistive materials, plastering, and terrazzo grinding, and describe plans for dealing with water from these operations. Show procedures for verifying that wet construction has dried sufficiently to permit installation of finish materials.

E. Dust- and HVAC-Control Plan: Submit coordination drawing and narrative that indicates the dust- and HVAC-control measures proposed for use, proposed locations, and proposed time frame for their operation. Identify further options if proposed measures are later determined to be inadequate. Include the following:
   1. Locations of dust-control partitions at each phase of work.
   2. HVAC system isolation schematic drawing.
   3. Location of proposed air-filtration system discharge.
   5. Other dust-control measures.

1.8 QUALITY ASSURANCE
A. Electric Service: Comply with NECA, NEMA, and UL standards and regulations for temporary electric service. Install service to comply with NFPA 70.

B. Tests and Inspections: Arrange for authorities having jurisdiction to test and inspect each temporary utility before use. Obtain required certifications and permits.

1.9 PROJECT CONDITIONS

A. Temporary Use of Permanent Facilities: Installer of each permanent service shall assume responsibility for operation, maintenance, and protection of each permanent service during its use as a construction facility before Owner’s acceptance, regardless of previously assigned responsibilities.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Pavement: Hot-laid, hot-mix asphalt plant mixes designed according to Caltrans Standard Specifications Section 39 requirements for Type B asphalt concrete.

B. Chain-Link Fencing: Minimum 2-inch, 0.148-inch (9 gage), galvanized-steel, chain-link fabric fencing; minimum 6 feet high with galvanized steel pipe posts; minimum 2-3/8-inch-OD line posts and 2-7/8-inch-OD corner and pull posts, with 1-5/8 inch OD top rail. Provide concrete or galvanized steel bases for supporting posts.

C. Lumber and Plywood:
   2. Plywood: ½-inch C-D with exterior glue.

D. Steel Studs and Track: ASTM C 645, 0.0209 (25 gage) thickness.

E. Gypsum Board: Minimum ½ inch thick by 48 inches wide by maximum available lengths; regular-type panels with tapered edges. Comply with ASTM C 36.
   1. Provide 5/8 inch thick Type X where temporary partitions are required to be fire-rated.

F. Insulation: Unfaced mineral-fiber blanket, manufactured from glass, slag wool, or rock wool; with maximum flame-spread and smoke-developed indexes of 25 and 50, respectively.

G. Polyethylene Sheet: Reinforced, fire-resistive sheet, 10-mil minimum thickness, with flame-spread rating of 15 or less per ASTM E 84 and passing NFPA 701 Test Method 2.

H. Paint: Suitable for intended use, as recommended in writing by paint manufacturer.

2.2 TEMPORARY FACILITIES
A. Field Offices, General: Prefabricated or mobile units with serviceable finishes, temperature controls, and foundations adequate for normal loading.

B. Common-Use Field Office: Of sufficient size to accommodate needs of Owner, Architect, construction personnel office activities and to accommodate Project meetings specified in other Division 1 Sections. Keep office clean and orderly. Furnish and equip offices as follows:
   1. Furniture required for Project-site documents including file cabinets, plan tables, plan racks, and bookcases.
   2. Conference room of sufficient size to accommodate meetings of 10 individuals. Provide electrical power service and 120V AC duplex receptacles, with not less than one receptacle on each wall. Furnish room with conference table, chairs, and four-foot square tack and marker boards.
   3. Drinking water and private toilet.
   5. Heating and cooling equipment necessary to maintain a uniform indoor temperature of 68 to 72 deg F.
   6. Lighting fixtures capable of maintaining average illumination of 20 fc at desk height.

2.3 EQUIPMENT

A. Fire Extinguishers: Portable, UL rated; with class and extinguishing agent as required by locations and classes of fire exposures according to NFPA 10.

B. HVAC Equipment: Unless Owner authorizes use of permanent HVAC system, provide vented, self-contained, liquid-propane-gas or fuel-oil heaters with individual space thermostatic control.
   1. Use of gasoline-burning space heaters, open-flame heaters, or salamander-type heating units is prohibited.
   2. Heating Units: Listed and labeled for type of fuel being consumed, by a qualified testing agency acceptable to authorities having jurisdiction, and marked for intended location and application.
   3. Permanent HVAC System: If Owner authorizes use of permanent HVAC system for temporary use during construction, provide filter with MERV of 8 at each return-air grille in system and remove at end of construction, and clean HVAC system as required in Section 01 77 00 “Closeout Procedures.”

C. Air-Filtration Units: Primary and secondary HEPA-filter-equipped portable units with four-stage filtration. Provide single switch for emergency shutoff. Configure to run continuously.

D. First Aid Supplies: In compliance with governing regulations.
PART 3 - EXECUTION

3.1 INSTALLATION, GENERAL

A. Locate facilities where they will serve Project adequately and result in minimum interference with performance of Work. Relocate and modify facilities as required by progress of the Work.
   1. Locate facilities to limit site disturbance.

B. Provide each facility ready for use when needed to avoid delay. Do not remove until facilities are no longer needed or are replaced by authorized use of completed permanent facilities.

3.2 TEMPORARY UTILITY INSTALLATION

A. General: Install temporary service or connect to existing service.
   1. Arrange with utility company, Owner, and existing users for time when service can be interrupted, if necessary, to make connections for temporary services.
   2. If temporary service is not available, provide mobile or portable solutions, adequate to meet expected demand.

B. Sewers and Drainage: Provide temporary utilities to remove effluent lawfully.
   1. Connect temporary sewers to private system indicated as directed by authorities having jurisdiction.

C. Water Service: Use of or connection to Owner’s existing water service facilities will be permitted, as long as facilities are cleaned and maintained in a condition acceptable to Owner. At Substantial Completion, restore these facilities to condition existing before initial use.
   1. Where installation below an outlet might be damaged by spillage or leakage, provide a drip pan of suitable size to minimize water damage. Drain accumulated water promptly from pans.

D. Sanitary Facilities: Provide temporary toilets, wash facilities, and drinking water for use by construction personnel. Comply with authorities having jurisdiction for type, number, location, operation, and maintenance of fixtures and facilities. Provide fully stocked supply of toilet tissue, paper towels, and other disposable materials as needed for sanitary facilities.

E. Heating and Cooling: Provide temporary heating and cooling required by construction activities for curing or drying of completed installations or for protecting installed construction from adverse effects of low temperatures or high humidity. Select equipment that will not have a harmful effect on completed installations or elements being installed.

F. Isolation of Work Areas in Occupied Facilities: Prevent dust, fumes, and odors from entering occupied areas.
   1. Prior to commencing work, isolate the HVAC system in area where work is to
be performed according to coordination drawings.

a. Disconnect supply and return ductwork in work area from HVAC systems servicing occupied areas.

b. Maintain negative air pressure within work area using HEPA-equipped air-filtration units, starting with commencement of temporary partition construction, and continuing until removal of temporary partitions is complete.

2. Maintain dust partitions during the Work. Use vacuum collection attachments on dust-producing equipment. Isolate limited work within occupied areas using portable dust-containment devices.

3. Perform daily construction cleanup and final cleanup using approved, HEPA-filter-equipped vacuum equipment.

G. Ventilation and Humidity Control: Provide temporary ventilation required by construction activities for curing or drying of completed installations or for protecting installed construction from adverse effects of high humidity. Select equipment that will not have a harmful effect on completed installations or elements being installed. Coordinate ventilation requirements to produce ambient condition required and minimize energy consumption.

1. Provide dehumidification systems when required to reduce substrate moisture levels to level required to allow installation or application of finishes.

H. Electric Power Service: Provide electric power service and distribution system of sufficient size, capacity, and power characteristics required for construction operations.

1. Install electric power service overhead unless otherwise indicated.

2. Connect temporary service to Owner’s existing power source, as directed by Owner.

I. Lighting: Provide temporary lighting with local switching that provides adequate illumination for construction operations, observations, inspections, and traffic conditions.

1. Install and operate temporary lighting that fulfills security and protection requirements without operating entire system.

2. Install lighting for Project identification sign.

J. Telephone Service: Provide temporary telephone service in common-use facilities for use by all construction personnel. Install one telephone line for each field office.

1. In addition to telephone lines specified above, provide telephone lines for the following:

   a. Provide a dedicated telephone line for each facsimile machine and each computer.

2. At each telephone, post a list of important telephone numbers.

   a. Police and fire departments.

   b. Ambulance service.
3. Provide superintendent with cellular telephone or portable two-way radio for use when away from field office.

3.3 SUPPORT FACILITIES INSTALLATION

A. General: Comply with the following:
   1. Provide construction for temporary offices, shops, and sheds located within construction area or within 30 feet of building lines that is noncombustible according to ASTM E 136. Comply with NFPA 241.
   2. Maintain support facilities until near Substantial Completion inspection. Remove before Substantial Completion. Personnel remaining after Substantial Completion will be permitted to use permanent facilities, under conditions acceptable to Owner.

B. Temporary Roads and Paved Areas: Construct and maintain temporary roads and paved areas adequate for construction operations. Locate temporary roads and paved areas within construction limits indicated.
   1. Provide dust-control treatment that is nonpolluting and nontracking. Reapply treatment as required to minimize dust.

C. Traffic Controls: Comply with requirements of authorities having jurisdiction.
   1. Protect existing site improvements to remain including curbs, pavement, and utilities.
   2. Maintain access for fire-fighting equipment and access to fire hydrants.

D. Parking: Use designated areas of Owner’s existing parking areas for construction personnel.

E. Dewatering Facilities and Drains: Comply with requirements of authorities having jurisdiction. Maintain Project site, excavations, and construction free of water.
   1. Dispose of rainwater in a lawful manner that will not result in flooding Project or adjoining properties nor endanger permanent Work or temporary facilities.
   2. Remove snow and ice as required to minimize accumulations.

F. Project Identification and Temporary Signs: Provide Project identification and other signs. Engage an experienced sign company to produce project signs. Install signs where indicated to inform public and individuals seeking entrance to Project. Unauthorized signs are not permitted.
   1. Temporary Signs: Provide other signs as indicated and as required to inform
public and individuals seeking entrance to Project.

a. Provide temporary, directional signs for construction personnel and visitors.

2. Maintain and touchup signs so they are legible at all times.

3. Conform with all applicable regulations of local authorities.

G. Waste Disposal Facilities: Provide waste-collection containers in sizes adequate to handle waste from construction operations. Comply with requirements of authorities having jurisdiction. Comply with requirements of Section 01 70 00 “Field Engineering and Execution Requirements” for progress cleaning requirements.


H. Lifts and Hoists: Provide facilities necessary for hoisting materials and personnel.

1. Truck cranes and similar devices used for hoisting materials are considered “tools and equipment” and not temporary facilities.

I. Existing Elevator Use: Use of Owner’s existing elevators will be permitted, provided elevators are cleaned and maintained in a condition acceptable to Owner. At Substantial Completion, restore elevators to condition existing before initial use, including replacing worn cables, guide shoes, and similar items of limited life.

1. Do not load elevators beyond their rated weight capacity.

2. Provide protective coverings, barriers, devices, signs, or other procedures to protect elevator car and entrance doors and frame. If, despite such protection, elevators become damaged, engage elevator Installer to restore damaged work so no evidence remains of correction work. Return items that cannot be refinished in field to the shop, make required repairs and refinish entire unit, or provide new units as required.

J. Temporary Stairs: Until permanent stairs are available, provide temporary stairs where ladders are not adequate.

K. Existing Stair Usage: Use of Owner’s existing stairs will be permitted, provided stairs are cleaned and maintained in a condition acceptable to Owner. At Substantial Completion, restore stairs to condition existing before initial use.

1. Provide protective coverings, barriers, devices, signs, or other procedures to protect stairs and to maintain means of egress. If, despite such protection, stairs become damaged, restore damaged areas so no evidence remains of correction work.

L. Temporary Use of Permanent Stairs: Use of new stairs for construction traffic will be permitted, provided stairs are protected and finishes restored to new condition at time of Substantial Completion.

3.4 SECURITY AND PROTECTION FACILITIES INSTALLATION

A. Protection of Existing Facilities: Protect existing vegetation, equipment, structures,
utilities, and other improvements at Project site and on adjacent properties, except those indicated to be removed or altered. Repair damage to existing facilities.

B. Environmental Protection: Provide protection, operate temporary facilities, and conduct construction to comply with environmental regulations and minimize possible air, waterway, and subsoil contamination or pollution or other undesirable effects.
   1. Comply with work restrictions specified in Section 01 11 00 "Summary of Work."

C. Pest Control: Engage pest-control service to recommend practices to minimize attraction and harboring or rodents, roaches, and other pests and to perform extermination and control procedures at regular intervals so Project will be free of pests and their residues at Substantial Completion. Obtain extended warranty for Owner. Perform control operations lawfully, using environmentally safe materials.

D. Site Enclosure Fence: Before construction operations begin, furnish and install site enclosure fence in a manner that will prevent people and animals from easily entering site except by entrance gates.
   1. Extent of Fence: As required to enclose entire Project site or portion determined sufficient to accommodate construction operations.
   2. Maintain security by limiting number of keys and restricting distribution to authorized personnel.

E. Security Enclosure and Lockup: Install substantial temporary enclosure around partially completed areas of construction. Provide lockable entrances to prevent unauthorized entrance, vandalism, theft, and similar violations of security. Lock entrances at end of each work day.
   1. Provide secure lockup for stored materials and equipment which are of value or attractive for theft.

F. Barricades, Warning Signs, and Lights: Comply with requirements of authorities having jurisdiction for erecting structurally adequate barricades, including warning signs and lighting.

G. Temporary Egress: Maintain temporary egress from existing occupied facilities as indicated and as required by authorities having jurisdiction.

H. Covered Walkway: Erect structurally adequate, protective, covered walkway for passage of individuals through or adjacent to Project site. Coordinate with entrance gates, other facilities, and obstructions. Comply with regulations of authorities having jurisdiction.
   1. Construct covered walkways using scaffold or shoring framing.
   2. Provide wood-plank overhead decking, protective plywood enclosure walls, handrails, barricades, warning signs, exit signs, lights, safe and well-drained walkways, and similar provisions for protection and safe passage.
   3. Extend back wall beyond the structure to complete enclosure fence.
4. Paint and maintain appearance of walkway for duration of the Work.

I. Temporary Enclosures: Provide temporary enclosures for protection of construction, in progress and completed, from exposure, foul weather, other construction operations, and similar activities. Provide temporary weathertight enclosure for building exterior.
   1. Where heating or cooling is needed and permanent enclosure is not complete, insulate temporary enclosures.

J. Temporary Partitions: Provide floor-to-ceiling dustproof partitions to limit dust and dirt migration and to separate areas occupied by Owner and tenants from fumes and noise.
   1. Construct dustproof partitions with two layers of polyethylene sheet on each side. Cover floor with two layers of polyethylene sheet, extending sheets 18 inches up the sidewalls. Overlap and tape full length of joints. Cover floor with fire-retardant plywood.
      a. Construct vestibule and airlock at each entrance through temporary partition with not less than 48 inches between doors. Maintain water-dampened foot mats in vestibule.
   2. Where fire-resistance-rated temporary partitions are indicated or are required by authorities having jurisdiction, construct partitions according to the rated assemblies.
   3. Insulate partitions to provide noise protection to occupied areas.
   4. Seal joints and perimeter. Equip partitions with gasketed dustproof doors and security locks where openings are required.
   5. Protect air-handling equipment.
   6. Provide walk-off mats at each entrance through temporary partition.

K. Temporary Fire Protection: Install and maintain temporary fire-protection facilities of types needed to protect against reasonably predictable and controllable fire losses. Comply with NFPA 241; manage fire-prevention program.
   1. Prohibit smoking in construction areas.
   2. Supervise welding operations, combustion-type temporary heating units, and similar sources of fire ignition according to requirements of authorities having jurisdiction.
   3. Develop and supervise an overall fire-prevention and fire-protection program for personnel at Project site. Review needs with local fire department and establish procedures to be followed. Instruct personnel in methods and procedures. Post warnings and information.
   4. Provide temporary standpipes and hoses for fire protection. Hang hoses with a warning sign stating that hoses are for fire-protection purposes only and are not to be removed. Match hose size with outlet size and equip with suitable nozzles.
   5. Locate fire extinguishers where convenient and effective for their intended purpose, but not less than one extinguisher on each floor at or near each usable stairwell.
7. Maintain unobstructed access to fire extinguishers, fire hydrants, temporary fire protection facilities, stairways and other access routes for fighting fires.

3.5 MOISTURE AND MOLD CONTROL
A. Contractor’s Moisture-Protection Plan: Avoid trapping water in finished work. Document visible signs of mold that may appear during construction.

B. Exposed Construction Phase: Before installation of weather barriers, when materials are subject to wetting and exposure and to airborne mold spores, protect as follows:
1. Protect porous materials from water damage.
2. Protect stored and installed material from flowing or standing water.
3. Keep porous and organic materials from coming into prolonged contact with concrete.
4. Remove standing water from decks.
5. Keep deck openings covered or dammed.

C. Partially Enclosed Construction Phase: After installation of weather barriers but before full enclosure and conditioning of building, when installed materials are still subject to infiltration of moisture and ambient mold spores, protect as follows:
1. Do not load or install drywall or other porous materials or components, or items with high organic content, into partially enclosed building.
2. Keep interior spaces reasonable clean and protected from water damage.
3. Periodically collect and remove waste containing cellulose or other organic matter.
4. Discard or replace water-damaged material.
5. Do not install material that is wet.
6. Discard, replace, or clean stored or installed material that begins to grow mold.
7. Perform work in a sequence that allows any wet materials adequate time to dry before enclosing the material in drywall or other interior finishes.

D. Controlled Construction Phase of Construction: After completing and sealing of the building enclosure but prior to the full operation of permanent HVAC systems, maintain as follows:
1. Control moisture and humidity inside building by maintaining effective dry-in conditions.
2. Use permanent HVAC system to control humidity.
3. Comply with manufacturer’s written instructions for temperature, relative humidity, and exposure to water limits.
   a. Hygroscopic materials that may support mold growth, including wood and gypsum-based products, that become wet during the course of construction and remain wet for 48 hours are considered defective.
   b. Measure moisture content of materials that have been exposed to
moisture during construction operations or after installation. Record readings beginning at time of exposure and continuing daily for 48 hours. Identify materials containing moisture levels higher than allowed. Report findings in writing to Architect.

c. Remove materials that cannot be completely restored to their manufactured moisture level within 48 hours.

3.6 OPERATION, TERMINATION, AND REMOVAL

A. Supervision: Enforce strict discipline in use of temporary facilities. To minimize waste and abuse, limit availability of temporary facilities to essential and intended uses.

B. Maintenance: Maintain facilities in good operating condition until removal.
   1. Maintain operation of temporary enclosures, heating, cooling, humidity control, ventilation, and similar facilities on a 24-hour basis where required to achieve indicated results and to avoid possibility of damage.

C. Operate Project-identification-sign lighting daily from dusk until 12:00 midnight.

D. Temporary Facility Changeover: Do not change over from using temporary security and protection facilities to permanent facilities until Substantial Completion.

E. Termination and Removal: Remove each temporary facility when need for its service has ended, when it has been replaced by authorized use of a permanent facility, or no later than Substantial Completion. Complete or, if necessary, restore permanent construction that may have been delayed because of interference with temporary facility. Repair damaged Work, clean exposed surfaces, and replace construction that cannot be satisfactorily repaired.
   1. Materials and facilities that constitute temporary facilities are property of Contractor. Owner reserves right to take possession of Project Identification signs.
   2. Remove temporary roads and paved areas not intended for or acceptable for integration into permanent construction. Where area is intended for landscape development, remove soil and aggregate fill that do not comply with requirements for fill or subsoil. Remove materials contaminated with road oil, asphalt and other petrochemical compounds, and other substances that might impair growth of plant materials or lawns. Repair or replace street paving, curbs, and sidewalks at temporary entrances, as required by authorities having jurisdiction.
   3. At Substantial Completion, repair, renovate, and clean permanent facilities used during construction period. Comply with final cleaning requirements specified in Section 01 77 00 “Closeout Procedures.”

END OF SECTION 01 50 00
SECTION 01 60 00
PRODUCT REQUIREMENTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes administrative and procedural requirements for selection of products for use in Project; product delivery, storage, and handling; manufacturer’s standard warranties on products; and special warranties.

B. Related Sections include:
   1. Section 01 25 00 01630 "Substitution Procedures" for requests for substitutions.
   2. Section 01 42 00 01420 "Definitions and References" for applicable industry standards for products specified.
   3. Section 01 77 00 "Closeout Procedures" for submitting warranties for Contract closeout.
   4. Divisions 2 through 49 Sections for specific requirements for warranties on products and installations specified to be warranted.

1.3 DEFINITIONS

A. Products: Items obtained for incorporating into the Work, whether purchased for Project or taken from previously purchased stock. The term “product” includes the terms “material,” “equipment,” “system,” and terms of similar intent.

   1. Named Products: Items identified by manufacturer’s product name, including make or model number or other designation shown or listed in manufacturer’s published product literature that is current as of date of the Contract Documents.

   2. New Products: Items that have not previously been incorporated into another project or facility, except that products consisting of recycled-content materials are allowed, unless explicitly stated otherwise. Products salvaged or recycled from other projects are not considered new products.

   3. Comparable Product: Product that is demonstrated and approved through submittal process to have the indicated qualities related to type, function, dimensions, in-service performance, physical properties, appearance, and other characteristics that equal or exceed those of specified intent.

1.4 ACTION SUBMITTALS
A. Where Specifications include a list of manufacturers and products preceded by the term “Available Manufacturers” or “Available Products,” and an unnamed manufacturer and product is proposed to be incorporated, submit request for consideration of each comparable product. Identify product or fabrication or installation method to be replaced. Include Specification Section number and title and Drawing numbers and titles.

1. Include data to indicate compliance with requirements specified in Part 2 “Comparable Products” Article.

2. Architect’s Action: If necessary, Architect will request additional information or documentation for evaluation within 5 working days of receipt of a comparable product request. Architect will notify Contractor of approval or rejection of proposed comparable product request within 10 working days of receipt of request, or 5 working days of receipt of additional information or documentation, whichever is later.
   a. Form of Approval: As specified for action submittals in Section 01 33 00 "Submittal Procedures."
   b. Use products specified if Architect does not issue a decision on use of a comparable product request within time allocated.

3. Where Specifications include a list of manufacturers or products with the term “or equal,” and an unnamed manufacturer and product is proposed to be incorporated, comply with provisions in Section 01 25 00 "Substitution Procedures.”

1.5 QUALITY ASSURANCE

A. Compatibility of Options: If Contractor is given option of selecting between two or more products for use on Project, select product compatible with products previously selected, even if previously selected products were also options.

1. Each Prime Contractor is responsible for providing products and construction methods compatible with products and construction methods of other contractors.

2. If a dispute arises between Contractors over concurrently selectable but incompatible products, Architect will determine which products shall be used.

1.6 PRODUCT DELIVERY, STORAGE, AND HANDLING

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

B. Delivery and Handling:

1. Schedule delivery to minimize long-term storage at Project site and to prevent overcrowding of construction spaces.

2. Coordinate delivery with installation time to ensure minimum holding time for items that are flammable, hazardous, easily damaged, or sensitive to deterioration, theft, and other losses.

3. Deliver products to Project site in an undamaged condition in manufacturer’s
original sealed container or other packaging system, complete with labels and instructions for handling, storing, unpacking, protecting, and installing.

4. Inspect products on delivery to ensure compliance with the Contract Documents and to determine that products are undamaged and properly protected.

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

1.7 PRODUCT WARRANTIES

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

B. Special Warranties: Prepare a written document that contains appropriate terms and identification, ready for execution.
   1. Manufacturer’s Standard Form: Modified to include Project-specific information and properly executed.
   2. Specified Form: When specified forms are included with the Specifications, prepare a written document using indicated form properly executed.
   3. Refer to other Sections in Divisions 2 through 49 for specific content requirements and particular requirements for submitting special warranties.

C. Warranty Requirements:
   1. Related Damages and Losses: When correcting warranted work that has
failed, remove and replace other Work that has been damaged as a result of such failure or that must be removed and replaced to provide access for correction of warranted Work.

2. Reinstatement of Warranty: When work covered by a warranty has failed and been corrected by replacement or rebuilding, reinstate the warranty by written endorsement. The reinstated warranty shall extend and be equal to the original warranty with an equitable adjustment for depreciation.

3. Replacement Cost: Upon determination that Work covered by a warranty has failed, replace or rebuild the Work to an acceptable condition complying with requirements of Contract Documents. Replace or rebuild defective Work regardless of whether Owner has benefited from use of the Work through a portion of its anticipated useful service life.

4. Owner’s Recourse: Written warranties made to the Owner are in addition to implied warranties, and shall not limit the duties, obligations, rights, and remedies otherwise available under the law, nor shall warranty periods be interpreted as limitations on time in which Owner can enforce such other duties, obligations, rights, or remedies.

   a. Rejection of Warranties: Owner reserves the right to reject warranties and to limit selections to products with warranties not in conflict with requirements of the Contract Documents.

   b. Owner reserves the right to refuse to accept Work for the Project where a special warranty, certification, or similar commitment is required on such Work or part of the Work, until evidence is presented that entities required to countersign such commitments are willing to do so.

D. Submittal Time: Comply with requirements in Section 01 77 00 "Closeout Procedures."

PART 2 - PRODUCTS

2.1 PRODUCT SELECTION PROCEDURES

A. General Product Requirements: Provide products that comply with the Contract Documents, are undamaged and, unless otherwise indicated, are new at time of installation.

   1. Provide products complete with accessories, trim, finish, fasteners, and other items needed for a complete installation and indicated use and effect.

   2. Standard Products: If available, and unless custom products or nonstandard options are specified, provide standard products of types that have been produced and used successfully in similar situations on other projects.

   3. Owner reserves the right to limit selection to products with warranties not in conflict with requirements of the Contract Documents.

   4. Where products are accompanied by the term “as selected,” Architect will make selection.

   5. Where products are accompanied by the term “match sample,” sample to be matched is Architect’s.

   6. Descriptive, performance, and reference standard requirements in the
Specifications establish salient characteristics of products.

7. Equal Products: For products specified by name and accompanied by the term “or equal,” comply with requirements in Section 01 25 00 "Substitution Procedures.” Standard submittals procedure is not an acceptable means of obtaining approval of proposed product substitutions.

B. Product Selection Procedures: For each of the following methods of product selection used in other Division 2 through 49 Sections, conform with requirements as indicated.

1. Product: Where Specifications name a single manufacturer and product, provide the named product that complies with requirements. Comparable products or substitutions for Contractor’s convenience will not be considered.

2. Manufacturer/Source: Where Specifications name a single manufacturer or source, provide a product by the named manufacturer or source that complies with requirements. Comparable products or substitutions for Contractor’s convenience will not be considered.

3. Products and Equal Products: Where Specifications include a list of names of both manufacturers and products followed by the statement or item “Equal product,” provide one of the products listed that complies with requirements, or comply with provisions in Section 01 25 00 "Substitution Procedures” for consideration of an unnamed product.

4. Manufacturers and Manufacturers of Equal Products: Where Specifications include a list of manufacturer’s names, provide a product by one of the manufacturers listed that complies with requirements, or comply with provisions in Section 01 25 00 "Substitution Procedures” for consideration of an unnamed manufacturer.

5. Available Products: Where Specifications include a list of names of both products and manufacturers, preceded by the statement, “products that may be incorporated into the Work include, but are not limited to the following,” provide one of the products listed, or an unnamed product, that complies with requirements. Comply with provisions in Part 2 “Comparable Products” Article for consideration of an unnamed product.

6. Available Manufacturers: Where Specifications include a list of manufacturers, preceded by the statement, “manufacturers offering products that may be incorporated into the Work include, but are not limited to the following,” provide a product by one of the manufacturers listed, or an unnamed manufacturer, that complies with requirements. Comply with provisions in Part 2 “Comparable Products” Article for consideration of an unnamed product.

C. Visual Matching Specification: Where Specifications require “match Architect’s sample,” provide a product that complies with requirements and matches Architect’s sample. Architect’s decision will be final on whether a proposed product matches.

1. If no product available within specified category matches and complies with other specified requirements, comply with requirements in Section 01 25 00 "Substitution Procedures” for proposal of product.

D. Visual Selection Specification: Where Specifications include the phrase “as selected from manufacturer’s colors, patterns, textures” or a similar phrase, select a product that complies with other specified requirements.
1. Standard Range: Where Specifications include the phrase “as selected from manufacturer’s standard range” or similar phrase, Architect will select color, gloss, pattern, density, or texture from manufacturer’s product line that does not include premium items.

2. Full Range: Where Specifications include the phrase “as selected from full range of colors, patterns, textures” or similar phrase, Architect will select color, gloss, pattern, density, or texture from manufacturer’s product line that includes both standard and premium items.

2.2 COMPARABLE PRODUCTS

A. Conditions: Architect will consider Contractor’s request for comparable product when the following conditions are satisfied. If the following conditions are not satisfied, Architect will return requests without action, except to record noncompliance with these requirements:

1. Evidence that the proposed product does not require extensive revisions to the Contract Documents, that it is consistent with the Contract Documents and will produce the indicated results, and that it is compatible with other portions of the Work.

2. Detailed comparison of significant qualities of proposed product with those named in the Specifications. Significant qualities include attributes such as performance, weight, size, durability, visual effect, and specific features and requirements indicated.

3. Evidence that proposed product provides specified warranty.

4. List of similar installations for completed projects with project names and addresses and names and addresses of architects and owners, if requested.

5. Samples, if requested.

PART 3 - EXECUTION (Not Used)
SECTION 01 70 00 FIELD ENGINEERING AND EXECUTION REQUIREMENTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes general administrative and procedural requirements governing execution of the Work including, but not limited to, the following:
   2. Field engineering and surveying.
   3. Installation of the Work.
   4. Coordination of Owner-installed products.
   5. Progress cleaning.
   6. Starting and adjusting.
   7. Protection of installed construction.
   8. Correction of the Work.

B. Related Sections include:
   1. Section 01 11 00 “Summary of Work” for limits on use of Project site.
   2. Section 01 31 00 "Project Management and Coordination" for procedures for coordinating field engineering with other construction activities.
   3. Section 01 33 00 “Submittal Procedures” for submitting surveys.
   4. Section 01 73 29 "Cutting and Patching" for procedural requirements for cutting and patching necessary for the installation or performance of other components of the Work.
   5. Section 01 77 00 "Closeout Procedures" for submitting final property survey with Project Record Documents, recording of Owner-accepted deviations from indicated lines and levels, and final cleaning.

1.3 REFERENCES


1.4 DEFINITIONS

1.5 INFORMATIONAL SUBMITTALS

A. Landfill Receipts: Submit copy of receipts issued by a landfill facility, licensed to accept hazardous materials, for hazardous waste disposal.

B. Certified Surveys: Work performed and record survey data, signed by land surveyor. Submit in PDF electronic file via the PMIS.


1.6 QUALITY ASSURANCE

A. Manufacturer’s Installation Instruction: Obtain and maintain on-site manufacturer’s written recommendations and instructions for installation of products and equipment.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 EXAMINATION

A. Existing Conditions: The existence and location of underground and other utilities and construction indicated as existing are not guaranteed. Before beginning work, investigate and verify the existence and location of underground utilities, mechanical and electrical systems, and other construction affecting the Work

1. Before construction, verify the location and invert elevation at points of connection of sanitary sewer, storm sewer, and water-service piping; underground electrical services, and other utilities.

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

B. Examination and Acceptance of Conditions: Before proceeding with each component of the Work, examine substrates, areas, and conditions, with Installer or Applicator present where indicated, for compliance with requirements for installation tolerances and other conditions affecting performance. Record observations.

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

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

3. Verify compatibility with and suitability of substrates, including compatibility with existing finishes or primers.

C. Written Report: Where a written report listing conditions detrimental to performance of the Work is required by other Sections, include the following:

1. Description of the Work.
2. List of detrimental conditions, including substrates.
3. List of unacceptable installation tolerances.
4. Recommended corrections.

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

3.2 PREPARATION

A. Existing Utility Information: Furnish information to Owner that is necessary to adjust, move, or relocate existing utility structures, utility poles, lines, services, or other utility appurtenances located in or affected by construction. Coordinate with authorities having jurisdiction.

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

C. Space Requirements: Verify space requirements and dimensions of items shown diagrammatically on Drawings.

D. Review of Contract Documents and Field Conditions: Immediately on discovery of the need for clarification of the Contract Documents caused by differing field conditions outside the control of Contractor, submit a Request For Information to Architect in accordance with Section 01 31 00 “Project Management and Coordination.” Include a detailed description of problem encountered, together with recommendations for modifications, if needed.

3.3 CONSTRUCTION LAYOUT

A. Verification: Before proceeding to lay out the Work, verify layout information shown on Drawings, in relation to the property survey and existing benchmarks. If discrepancies are discovered, notify Architect promptly.

B. Site Improvements: Locate and lay out site improvements, including pavements, grading, fill and topsoil placement, utility slopes, and invert elevations.

3.4 INSTALLATION

A. General: Locate the Work and components of the Work accurately, in correct alignment and elevation, as indicated.
   1. Make vertical work plumb and make horizontal work level.
   2. Where space is limited, install components to maximize space available for maintenance and ease of removal for replacement.
   3. Conceal pipes, ducts, and wiring in finished areas, unless otherwise indicated.
4. Maintain minimum headroom clearance of 96 inches (8'-0") in occupied spaces, and 90 inches (7'-6") in unoccupied spaces.

B. Comply with manufacturer’s written instructions and recommendations for installing products in applications indicated.

C. Install products at the time and under conditions that will ensure the best possible results. Maintain conditions required for product performance until Substantial Completion.

D. Conduct construction operations so no part of the Work is subjected to damaging operations or loading in excess of that expected during normal conditions of occupancy.

E. Sequence the Work and allow adequate clearances to accommodate movement of construction items on site and placement in permanent locations.

F. Tools and Equipment: Do not use tools or equipment that produce harmful noise levels.

G. Templates: Obtain and distribute to the parties involved templates for work specified to be factory prepared and field installed. Check Shop Drawings of other work to confirm that adequate provisions are made for locating and installing products to comply with indicated requirements.

H. Attachment: Provide blocking and attachment plates and anchors and fasteners of adequate size and number to securely anchor each component in place, accurately located and aligned with other portions of the Work. Where size and type of attachments are not indicated, verify size and type required for load conditions.
   1. Mounting Heights: Where mounting heights are not indicated, mount components at heights directed by Architect.
   2. Allow for building movement, including thermal expansion and contraction.
   3. Coordinate installation of anchorages. Furnish setting drawings, templates, and directions for installing anchorages, including sleeves, concrete inserts, anchor bolts, and items with integral anchors, that are to be embedded in concrete or masonry. Deliver such items to Project site in time for installation.

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

J. Hazardous Materials: Use products, cleaners, and installation materials that are not considered hazardous.

3.5 OWNER-INSTALLED PRODUCTS

A. Site Access: Provide access to Project site for Owner’s construction forces.

B. Coordination: Coordinate construction and operations of the Work with work
performed by Owner’s construction personnel.

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

2. **Preinstallation Conferences:** Include Owner’s construction personnel at preinstallation conferences covering portions of the Work that are to receive Owner’s work. Attend preinstallation conferences conducted by Owner’s construction personnel if portions of the Work depend on Owner’s construction.

### 3.6 PROGRESS CLEANING

**A. General:** Clean Project site and work areas daily, including common areas. Enforce requirements strictly. Dispose of materials lawfully.


2. Do not hold waste materials more than 7 days during normal weather or 3 days if the temperature is expected to rise above 80 deg F.

3. Containerize hazardous and unsanitary waste materials separately from other waste. Mark containers appropriately and dispose of legally, according to regulations.
   a. Use containers intended for holding waste materials of type to be stored.

4. Comply with safety standards for cleaning. Do not burn waste materials. Do not bury debris or excess materials on Owner’s property. Do not discharge volatile, harmful, or dangerous materials into drainage systems. Remove waste materials from Project site and dispose of lawfully.

**B. Site:** Maintain Project site free of waste materials and debris.

1. Dust Control: Palliate dust conditions throughout duration of Project for entire area of work and surrounding site by watering and sprinkling as required to allay dust.

**C. Work Areas:** Clean areas where work is in progress to the level of cleanliness necessary for proper execution of Work.

1. Remove liquid spills promptly.

2. Where dust would impair proper execution of the Work, broom-clean or vacuum the entire work area, as appropriate.

**D. Installed Work:** Keep installed work clean. Clean installed surfaces according to written instructions of manufacturer or fabricator of product installed, using only cleaning materials specifically recommended. If specific cleaning materials are not recommended, use cleaning materials that are not hazardous to health or property and that will not damage exposed surfaces.

**E. Concealed Spaces:** Remove debris from concealed spaces before enclosing the space.
F. Exposed Surfaces in Finished Areas: Clean exposed surfaces and protect as necessary to ensure freedom from damage and deterioration at time of Substantial Completion.

G. Waste Disposal: Do not bury or burn waste materials on-site. Do not wash waste materials down sewers or into waterways. Comply with waste disposal requirements in Section 01 50 00 “Temporary Facilities and Controls.”
   1. Comply with requirements specified in Section 01 74 19 ”Construction Waste Management” for recycling of construction waste.

H. During handling and installation, clean and protect construction in progress and adjoining materials already in place. Apply protective covering where required to ensure protection from damage or deterioration at Substantial Completion.

I. Clean and provide maintenance on completed construction as frequently as necessary through the remainder of the construction period. Adjust and lubricate operable components to ensure operability without damaging effects.

J. Limiting Exposures: Supervise construction operations to assure that no part of the construction, completed or in progress, is subject to harmful, dangerous, damaging, or otherwise deleterious exposure during the construction period.

3.7 STARTING AND ADJUSTING

A. Coordinate startup and adjusting of equipment and operating components with requirements in Section 01 91 13 "General Commissioning Requirements."

B. Start equipment and operating components to confirm proper operation. Remove malfunctioning units, replace with new units, and retest.

C. Adjust equipment for proper operation. Adjust operating components for proper operation without binding.

D. Test each piece of equipment to verify proper operation. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and equipment.

E. Manufacturer’s Field Service: Comply with qualification requirements in Section 01 43 00 “Quality Requirements.”

3.8 PROTECTION OF INSTALLED CONSTRUCTION

A. Provide final protection and maintain conditions that ensure installed Work is without damage or deterioration at time of Substantial Completion.

B. Comply with manufacturer’s written instructions for temperature and relative humidity.

END OF SECTION 01 70 00
SECTION 01 73 29
CUTTING AND PATCHING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes procedural requirements for cutting and patching.

B. Related Sections include:
   1. Section 02 41 19 "Selective Demolition" for demolition of selected portions of the building.
   2. Divisions 2 through 49 Sections for specific requirements and limitations applicable to cutting and patching individual parts of the Work.

1.3 DEFINITIONS

A. Cutting: Removal of in-place construction necessary to permit installation or performance of other Work.

B. Patching: Fitting and repair work required to restore construction to original conditions after installation of other Work.

1.4 INFORMATIONAL SUBMITTALS

A. Cutting and Patching Plan: Submit plan describing procedures at least 15 working days prior to the time cutting and patching will be performed, requesting approval to proceed. Include the following information:
   1. Extent: Describe reason for and extent of each occurrence of cutting and patching.
   2. Changes to In-Place Construction: Describe anticipated results. Include changes to structural elements and operating components as well as changes in building’s appearance and other significant visual elements.
   3. Products: List products to be used for patching and firms or entities that will perform patching work.
   4. Dates: Indicate when cutting and patching will be performed.
   5. Utilities and Mechanical and Electrical Systems: List services and systems that cutting and patching procedures will disturb or affect. List services and systems that will be relocated and those that will be temporarily out of service. Indicate length of time services and systems will be disrupted.
      a. Include description of provisions for temporary services and systems during interruption of permanent services and systems.
6. Structural Elements: Where cutting and patching involve adding reinforcement to structural elements, submit details and engineering calculations showing integration of reinforcement with original structure.

7. Architect’s Approval: Obtain approval of cutting and patching proposal before cutting and patching. Approval does not waive right to later require removal and replacement of unsatisfactory work.

1.5 QUALITY ASSURANCE

A. Structural Elements: When cutting and patching structural elements, notify Architect of locations and details of cutting and await directions from Architect before proceeding. Shore, brace, and support structural elements during cutting and patching. Do not cut and patch structural elements in a manner that could change their load-carrying capacity or increase deflection. Structural elements include but are not limited to:
   1. Foundation construction.
   2. Bearing and retaining walls.
   4. Structural steel.
   5. Wood framing.
   6. Stair systems.

B. Operational Elements: Do not cut and patch operating elements and related components in a manner that results in reducing their capacity to perform as intended or that results in increased maintenance or decreased operational life or safety. Operational elements include the following:
   1. Primary operational systems and equipment.
   2. Fire separation assemblies.
   3. Air or smoke barriers.
   4. Fire-suppression systems.
   5. Mechanical systems piping and ducts.
   6. Control systems.
   7. Communication systems.
   8. Fire-detection and alarm systems.
   9. Conveying systems.
   10. Electrical wiring systems.
   11. Operating systems of special construction.

C. Other Construction Elements: Do not cut and patch other construction elements or components in a manner that could change their load-carrying capacity, that results in reducing their capacity to perform as intended, or that results in increased maintenance or decreased operational life or safety. Other construction elements include but are not limited to the following:
   1. Water, moisture, or vapor barriers.
2. Membranes and flashings.
3. Exterior curtainwall construction.
4. Sprayed fire-resistive material.
5. Equipment supports.
6. Piping, ductwork, vessels, and equipment.
7. Noise- and vibration-control elements and systems.

D. Visual Elements: Do not cut and patch construction in a manner that results in visual evidence of cutting and patching. Do not cut and patch exposed construction in a manner that would, in Architect’s opinion, reduce the building’s aesthetic qualities. Remove and replace construction that has been cut and patched in a visually unsatisfactory manner.

E. Cutting and Patching Conference: Before proceeding, meet at Project site with parties involved in cutting and patching, including mechanical and electrical trades. Review areas of potential interference and conflict. Coordinate procedures and resolve potential conflicts before proceeding.

1.6 WARRANTY

A. Existing Warranties: Remove, replace, patch, and repair materials and surfaces cut or damaged during cutting and patching operations, by methods and with materials so as not to void existing warranties.

PART 2 - PRODUCTS

2.1 MATERIALS

A. General: Comply with requirements specified in other Sections.

B. In-Place Materials: Use materials for patching identical to in-place materials. For exposed surfaces, use materials that visually match in-place adjacent surfaces to the fullest extent possible.

1. If identical materials are unavailable or cannot be used, use materials that, when installed, will provide a match acceptable to Architect for the visual and functional performance of in-place materials.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine surfaces to be cut and patched and conditions under which cutting and patching are to be performed.

1. Compatibility: Before patching, verify compatibility with and suitability of substrates, including compatibility with in-place finishes or primers.

2. Proceed with installation only after unsafe or unsatisfactory conditions have been corrected.
3.2 CUTTING AND PATCHING

A. General: Employ skilled workers to perform cutting and patching. Proceed with cutting and patching at the earliest feasible time, and complete without delay.

1. Cut in-place construction to provide for installation of other components or performance of other construction, and subsequently patch as required to restore surfaces to their original condition.

B. Existing Warranties: Remove, replace, patch, and repair materials and surfaces cut or damaged during installation or cutting and patching operations, by methods and with materials so as not to void existing warranties.

C. Temporary Support: Provide temporary support of work to be cut.

D. Protection: Protect in-place construction during cutting and patching to prevent damage. Provide protection from adverse weather conditions for portions of Project that might be exposed during cutting and patching operations.

E. Adjacent Occupied Areas: Where interference with use of adjoining areas or interruption of free passage to adjoining areas is unavoidable, coordinate cutting and patching according to requirements in Section 01 11 00 “Summary of Work.”

F. Existing Utility Services and Mechanical/Electrical Systems: Where existing services/systems are required to be removed, relocated, or abandoned, bypass such services/systems before cutting to prevent interruption to occupied areas.

G. Cutting: Cut in-place construction by sawing, drilling, breaking, chipping, grinding, and similar operations, including excavation, using methods least likely to damage elements retained or adjoining construction. If possible, review proposed procedures with original Installer; comply with original Installer’s written recommendations.

1. In general, use hand or small power tools designed for sawing and grinding, not hammering and chopping. Cut holes and slots neatly to minimum size required, and with minimum disturbance of adjacent surfaces. Temporarily cover openings when not in use.

2. Finished Surfaces: Cut or drill from the exposed or finished side into concealed surfaces.

3. Concrete and Masonry: Cut using a cutting machine, such as an abrasive saw or a diamond-core drill.

4. Mechanical and Electrical Services: Cut off pipe or conduit in walls or partitions to be removed. Cap, valve, or plug and seal remaining portion of pipe or conduit to prevent entrance of moisture or other foreign matter after cutting.

5. Proceed with patching after construction operations requiring cutting are complete.

H. Patching: Patch construction by filling, repairing, refinishing, closing up, and similar operations following performance of other Work. Patch with durable seams that are as invisible as practicable. Provide materials and comply with installation requirements specified in other Sections, where applicable.

1. Inspection: Where feasible, test and inspect patched areas after completion to
demonstrate integrity of installation.

2. Exposed Finishes: Restore exposed finishes of patched areas and extend finish restoration into retained adjoining construction in a manner that will minimize evidence of patching and refinishing.
   a. Clean piping, conduit, and similar features before applying paint or other finishing materials.
   b. Restore damaged pipe covering to its original condition.

3. Floors and Walls: Where walls or partitions that are removed extend one finished area into another, patch and repair floor and wall surfaces in the new space. Provide an even surface of uniform finish, color, texture, and appearance. Remove in-place floor and wall coverings and replace with new materials, if necessary, to achieve uniform color and appearance.
   a. Where patching occurs in a painted surface, prepare substrate and apply primer and intermediate paint coats appropriate for substrate over the patch and apply final paint coat over entire unbroken surface containing the patch. Provide additional coats until patch blends with adjacent surfaces.

4. Ceilings: Patch, repair, or rehang in-place ceilings as necessary to provide an even-plane surface of uniform appearance.

I. Cleaning: Clean areas and spaces where cutting and patching are performed. Remove paint, mortar, oils, putty, and similar materials from adjacent finished surfaces.
   1. Thoroughly clean piping, conduit, ductwork, and similar features before paint or other finishes are applied.

END OF SECTION 01 73 29
SECTION 01 74 19
CONSTRUCTION WASTE MANAGEMENT AND DISPOSAL

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes administrative and procedural requirements for the following:
   1. Salvaging nonhazardous demolition and construction waste.
   2. Recycling nonhazardous demolition and construction waste.
   3. Disposing of nonhazardous demolition and construction waste.

B. Related Sections include:
   1. Section 02 41 19 "Selective Demolition" for disposition of waste resulting from partial demolition of buildings, structures, and site improvements.

1.3 REFERENCES

A. ASTM International (American Society for Testing and Materials):

1.4 DEFINITIONS

A. Construction Waste: Building and site improvement materials and other solid waste resulting from construction, remodeling, renovation, or repair operations. Construction waste includes packaging.

B. Demolition Waste: Building and site improvement materials resulting from demolition or selective demolition operations.

C. Disposal: Removal off-site of demolition and construction waste and subsequent sale, recycling, reuse, or deposit in landfill or incinerator acceptable to authorities having jurisdiction.

D. EPA: Environmental Protection Agency.

E. Recycle: Recovery of demolition or construction waste for subsequent processing in preparation for reuse.

F. Salvage: Recovery of demolition or construction waste and subsequent sale or reuse in another facility.
G. Salvage and Reuse: Recovery of demolition or construction waste and subsequent incorporation into the Work.

1.5 PERFORMANCE REQUIREMENTS

A. General: Achieve end-of-Project rates for salvage/recycling of a minimum of 50 percent by weight of total non-hazardous solid waste generated by the Work. Practice efficient waste management in the use of materials in the course of the Work. Use all reasonable means to divert construction and demolition waste from landfills and incinerators. Facilitate recycling and salvage of materials, including the following:

1. Demolition Waste:
   a. Wood studs.
   b. Wood joists.
   c. Plywood and oriented strand board.
   d. Structural and miscellaneous steel.
   e. Insulation.
   f. Doors and frames.
   g. Door hardware.
   h. Windows.
   i. Glazing.
   j. Metal studs.
   k. Gypsum board.
   l. Acoustical tile and panels.
   m. Carpet.
   n. Carpet pad.
   o. Demountable partitions.
   p. Cabinets.
   q. Plumbing fixtures.
   r. Piping.
   s. Supports and hangers.
   t. Mechanical equipment.
   u. Refrigerants.
   v. Electrical conduit.
   w. Copper wiring.
   x. Lighting fixtures.
   y. Lamps.
   z. Ballasts.
   aa. Electrical devices.
   bb. Switchgear and panelboards.
2. Construction Waste:
   a. Lumber.
   b. Metals.
   c. Insulation.
   d. Carpet and pad.
   e. Gypsum board.
   f. Piping.
   g. Electrical conduit.
   h. Packaging: Regardless of salvage/recycle goal indicated in paragraph above, salvage or recycle 100 percent of the following uncontaminated packaging materials:
      i) Paper.
      ii) Cardboard.
      iii) Boxes.
      v) Polystyrene packaging.
      vii) Plastic pails.

1.6 ACTION SUBMITTALS

A. Waste Management Plan: Submit plan within 10 working days of date established for the Notice to Proceed.

1.7 INFORMATIONAL SUBMITTALS

A. Waste Reduction Progress Reports: Concurrent with each Application for Payment, submit report. Use Form CWM-7 for construction waste and Form CWM-8 for demolition waste. Include the following information:
   1. Material category.
   2. Generation point of waste.
   3. Total quantity of waste in tons.
   4. Quantity of waste salvaged, both estimated and actual in tons.
   5. Quantity of waste recycled, both estimated and actual in tons.
   6. Total quantity of waste recovered (salvaged plus recycled) in tons.
   7. Total quantity of waste recovered (salvaged plus recycled) as a percentage of total waste.

B. Waste Reduction Calculations: Before request for Substantial Completion, submit calculated end-of-Project rates for salvage, recycling, and disposal as a percentage of total waste generated by the Work.
C. Records of Donations: Indicate receipt and acceptance of salvageable waste donated to individuals and organizations. Indicate whether organization is tax exempt.

D. Records of Sales: Indicate receipt and acceptance of salvageable waste sold to individuals and organizations. Indicate whether organization is tax exempt.

E. Recycling and Processing Facility Records: Indicate receipt and acceptance of recyclable waste by recycling and processing facilities licensed to accept them. Include manifests, weight tickets, receipts, and invoices.

F. Landfill and Incinerator Disposal Records: Indicate receipt and acceptance of waste by landfills and incinerator facilities licensed to accept them. Include manifests, weight tickets, receipts, and invoices.

G. Qualification Data: For waste management coordinator and refrigerant recovery technician.

H. Statement of Refrigerant Recovery: Signed by refrigerant recovery technician responsible for recovering refrigerant, stating that all refrigerant that was present was recovered and that recovery was performed according to EPA regulations. Include name and address of technician and date refrigerant was recovered.

1.8 QUALITY ASSURANCE

A. Refrigerant Recovery Technician Qualifications: Certified by EPA-approved certification program.

B. Regulatory Requirements: Comply with hauling and disposal regulations of authorities having jurisdiction.

C. Waste Management Conference: Conduct conference at Project site to comply with requirements in Section 01 31 00 Project Management and Coordination” for project management and coordination. Review methods and procedures related to waste management including, but not limited to, the following:

1. Review and discuss waste management plan including responsibilities of waste management coordinator.

2. Review requirements for documenting quantities of each type of waste and its disposition.

3. Review and finalize procedures for materials separation and verify availability of containers and bins needed to avoid delays.

4. Review procedures for periodic waste collection and transportation to recycling and disposal facilities.

5. Review waste management requirements for each trade.

1.9 WASTE MANAGEMENT PLAN

A. General: Develop a waste management plan according to ASTM E 1609 and requirements of this Section. Plan shall consist of waste identification, waste
reduction work plan, and cost/revenue analysis. *Distinguish between demolition and construction waste.* Indicate quantities by weight or volume, but use same units of measure throughout waste management plan.

B. Waste Identification: Indicate anticipated types and quantities of demolition waste generated by the Work. Use *Form CWM-1 for construction waste and Form CWM-2 for demolition waste.* Include estimated quantities and assumptions for estimates.

C. Waste Reduction Work Plan: List each type of waste and whether it will be salvaged, recycled, or disposed of in landfill or incinerator. Use *Form CWM-3 for construction waste and Form CWM-4 for demolition waste.* Include points of waste generation, total quantity of each type of waste, quantity for each means of recovery, and handling and transportation procedures.

1. Salvaged Materials for Reuse: For materials that will be salvaged and reused in this Project, describe methods for preparing salvaged materials before incorporation into the Work.

2. Salvaged Materials for Sale: For materials that will be sold to individuals and organizations, include list of their names, addresses, and telephone numbers.

3. Salvaged Materials for Donation: For materials that will be donated to individuals and organizations, include list of their names, addresses, and telephone numbers.

4. Recycled Materials: Include list of local receivers and processors and type of recycled materials each will accept. Include names, addresses, and telephone numbers.

5. Disposed Materials: Indicate how and where materials will be disposed of. Include name, address, and telephone number of each landfill and incinerator facility.

6. Handling and Transportation Procedures: Include method that will be used for separating recyclable waste including sizes of containers, container labeling, and designated location on Project site where materials separation will be performed.

D. Cost/Revenue Analysis: Indicate total cost of waste disposal as if there was no waste management plan and net additional cost or net savings resulting from implementing waste management plan. Use *Form CWM-5 for construction waste and Form CWM-6 for demolition waste.* Include the following:

1. Total quantity of waste.

2. Estimated cost of disposal (cost per unit). Include hauling and tipping fees and cost of collection containers for each type of waste.

3. Total cost of disposal (with no waste management).

4. Revenue from salvaged materials.

5. Revenue from recycled materials.


7. Savings in hauling and tipping fees that are avoided.
8. Handling and transportation costs. Include cost of collection containers for each type of waste.
9. Net additional cost or net savings from waste management plan.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 PLAN IMPLEMENTATION

A. General: Implement approved waste management plan. Provide handling, containers, storage, signage, transportation, and other items as required to implement waste management plan during the entire duration of the Contract.
   1. Comply with operation, termination, and removal requirements om Section 01 50 00 "Temporary Facilities and Controls."

B. Waste Management Coordinator: Engage a waste management coordinator to be responsible for implementing, monitoring, and reporting status of waste management work plan Training: Train workers, subcontractors, and suppliers on proper waste management procedures, as appropriate for the Work.
   1. Distribute waste management plan to everyone concerned within 5 working days of submittal return.
   2. Distribute waste management plan to entities when they first begin work on-site. Review plan procedures and locations established for salvage, recycling, and disposal.

C. Site Access and Temporary Controls: Conduct waste management operations to ensure minimum interference with roads, streets, walks, walkways, and other adjacent occupied and used facilities.
   1. Designate and label specific areas on Project site necessary for separating materials that are to be salvaged, recycled, reused, donated, and sold.
   2. Comply with Section 01 50 00 01500"Temporary Facilities and Controls” for controlling dust and dirt, environmental protection, and noise control.

3.2 SALVAGING DEMOLITION WASTE

A. Salvaged Items for Reuse in the Work: Salvage items for reuse and handle as follows:
   1. Clean salvaged items.
   2. Pack or crate items after cleaning. Identify contents of containers with label indicating elements, date of removal, quantity, and location where removed.
   3. Store items in a secure area until installation.
   4. Protect items from damage during transport and storage.
   5. Install salvaged items to comply with installation requirements for new materials and equipment. Provide connections, supports, and miscellaneous materials necessary to make items functional for use indicated.
B. Salvaged Items for sale not permitted on Project site.

C. Salvaged items for Owner’s Use: Salvage items for Owner’s use and handle as follows:
   1. Clean salvaged items.
   2. Pack or crate items after cleaning. Identify contents of containers with label indicating elements, date of removal, quantity, and location where removed.
   3. Store items in a secure area until delivery to Owner.
   4. Transport items to Owner’s storage area designated by Owner.
   5. Protect items from damage during transport and storage.

D. Doors and Hardware: Brace open end of door frames. Except for removing door closers, leave door hardware attached to doors.

E. Equipment: Drain tanks, piping, and fixtures. Seal openings with caps or plugs. Protect equipment from exposure to weather.

F. Plumbing Fixtures: Separate by type and size.

G. Lighting Fixtures: Separate lamps by type and protect from breakage.

H. Electrical Devices: Separate switches, receptacles, switchgear, transformers, meters, panelboards, circuit breakers, and other devices by type.

3.3 RECYCLING DEMOLITION AND CONSTRUCTION WASTE, GENERAL

A. General: Recycle paper and beverage containers used by on-site workers.

B. Recycling Receivers and Processors: List below is provided for information, only; available recycling receivers and processors include, but are not limited to, the following:

C. Recycling Incentives: Revenues, savings, rebates, tax credits, and other incentives received for recycling waste materials shall be shared equally by Owner and Contractor.

D. Preparation of Waste: Prepare and maintain recyclable waste materials according to recycling or reuse facility requirements. Maintain materials free of dirt, adhesives, solvents, petroleum contamination, and other substances deleterious to the recycling process.

E. Procedures: Separate recyclable waste from other waste materials, trash, and debris. Separate recyclable waste by type at Project site to the maximum extent practical according to approved construction waste management plan.
   1. Provide appropriately marked containers or bins for controlling recyclable waste until removed from Project site. Include list of acceptable and unacceptable materials at each container and bin.
      a. Inspect containers and bins for contamination and remove contaminated
2. Stockpile processed materials on-site without intermixing with other materials. Place, grade, and shape stockpiles to drain surface water. Cover to prevent windblown dust.

3. Stockpile materials away from construction area. Do not store within drip line of remaining trees.

4. Store components off the ground and protect from the weather.

5. Remove recyclable waste off Owner’s property and transport to recycling receiver or processor.

3.4 RECYCLING DEMOLITION WASTE

A. Wood Materials: Sort and stack members according to size, type, and length. Separate lumber, engineered wood products, panel products, and treated wood materials.

B. Metals: Separate metals by type.
   1. Structural Steel: Stack members according to size, type of member, and length.
   2. Remove and dispose of bolts, nuts, washers, and other rough hardware.

C. Gypsum Board: Stack large clean pieces on wood pallets or in container and store in a dry location. Remove edge trim and sort with other metals. Remove and dispose of fasteners.

D. Acoustical Ceiling Panels and Tile: Stack large clean pieces on wood pallets and store in a dry location.

E. Metal Suspension System: Separate metal members including trim, and other metals from acoustical panels and tile and sort with other metals.

F. Carpet: Roll large pieces tightly after removing debris, trash, adhesive, and tack strips.
   1. Store clean, dry carpet in a closed container or trailer provided by Carpet Reclamation Agency or carpet recycler.

G. Carpet Tile: Remove debris, trash, and adhesive.
   1. Stack tile on pallet and store clean, dry carpet in a closed container or trailer provided by Carpet Reclamation Agency or carpet recycler.

H. Piping: Reduce piping to straight lengths and store by type and size. Separate supports, hangers, valves, sprinklers, and other components by type and size.

I. Conduit: Reduce conduit to straight lengths and store by type and size.

3.5 RECYCLING CONSTRUCTION WASTE

A. Packaging:
1. Cardboard and Boxes: Break down packaging into flat sheets. Bundle and store in a dry location.
3. Pallets: As much as possible, require deliveries using pallets to remove pallets from Project site. For pallets that remain on-site, break down pallets into component wood pieces and comply with requirements for recycling wood.
4. Crates: Break down crates into component wood pieces and comply with requirements for recycling wood.

B. Site-Clearing Wastes: Chip brush, branches, and trees at landfill facility.
   1. Comply with requirements in Division 32 requirements for exterior planting for use of chipped organic waste as organic mulch.

C. Wood Materials:
   1. Clean Cut-Offs of Lumber: Grind or chip into small pieces.
   2. Clean Sawdust: Bag sawdust that does not contain painted or treated wood.
      a. Comply with requirements in Division 32 Sections for exterior planting for use of clean sawdust as organic mulch.

D. Gypsum Board: Stack large clean pieces on wood pallets or in container and store in a dry location.
   1. Clean Gypsum Board: Grind scraps of clean gypsum board using small mobile chipper or hammer mill. Screen out paper after grinding.
      a. Comply with requirements in Division 32 Section for exterior planting for use of clean ground gypsum board as inorganic soil amendment.

3.6 DISPOSAL OF WASTE

A. General: Except for items or materials to be salvaged, recycled, or otherwise reused, remove waste materials from Project site and legally dispose of them in a landfill or incinerator acceptable to authorities having jurisdiction.
   1. Except as otherwise specified, do not allow waste materials that are to be disposed of to accumulate on-site.
   2. Remove and transport debris in a manner that will prevent spillage on adjacent surfaces and areas.

B. Burning: Do not burn waste materials.

C. Disposal: Remove waste materials from Owner’s property and legally dispose of them.

3.7 ATTACHMENTS

A. Form CWM-1 for construction waste identification.
B. Form CWM-2 for demolition waste identification.
C. Form CWM-3 for construction waste reduction work plan.
D. Form CWM-4 for demolition waste reduction work plan.
E. Form CWM-5 cost/revenue analysis for construction waste reduction work plan.
F. Form CWM-6 for cost/revenue analysis of demolition waste reduction work plan.
G. Form CWM-7 for construction waste reduction progress report.
H. Form CWM-8 for demolition waste reduction progress report.

END OF SECTION 01 74 19
SECTION 01 77 00
CLOSEOUT PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes administrative and procedural requirements for contract closeout, including, but not limited to, the following:
   1. Substantial Completion procedures.
   2. Final completion procedures.
   3. Warranties.
   4. Final cleaning.
   5. Repair of the Work.

B. Related Sections include:
   1. Section 01 29 00 "Payment Procedures" for requirements for Applications for Payment for Substantial and Final Completion.
   2. Section 01 70 00 "Field Engineering and Execution Requirements" for progress cleaning of Project site.
   3. Section 01 78 39 "Project Record Documents" for submitting Record Drawings, Record Specifications, and Record Product Data.
   4. Section 01 78 23 "Operation and Maintenance Data" for operation and maintenance manual requirements.
   5. Section 01 79 00 "Demonstration and Training" for requirements for instructing Owner’s personnel.
   6. Divisions 2 through 49 Sections for specific closeout and special cleaning requirements for the Work in those Sections.

1.3 DEFINITIONS


1.4 ACTION SUBMITTALS

A. Product Data: For cleaning agents.

B. Contractor’s List of Incomplete Items: Initial submittal at Substantial Completion.
C. Certified List of Incomplete Items: Final submittal at Final Completion.

1.5 CLOSEOUT SUBMITTALS

A. Certificates of Release: From authorities having jurisdiction.

B. Certificate of Insurance: For continuing coverage.

C. Field Report: For pest control inspection.

1.6 MAINTENANCE MATERIAL SUBMITTALS

A. Schedule of Maintenance Material Items: For maintenance material submittal items specified in other Sections.

1.7 SUBSTANTIAL COMPLETION PROCEDURES

A. Contractor’s List of Incomplete Items: Prepare and submit a list of items to be completed and corrected (Contractor’s punchlist), indicating the value of each item on the list and reasons why the Work is incomplete.

B. Submittals Prior to Substantial Completion: Complete the following a minimum of 10 working days prior to requesting inspection for determining date of Substantial Completion. List items below that are incomplete at time of request.

1. Certificates of Release: Obtain and submit releases from authorities having jurisdiction permitting Owner unrestricted use of the Work and access to services and utilities. Include occupancy permits, operating certificates, and similar releases.

2. Submit closeout submittals specified in other Division 1 Sections, including project record documents, operation and maintenance manuals, final completion construction photographic documentation, damage or settlement surveys, property surveys, and similar final record documentation.

3. Submit closeout submittals specified in individual Sections, including specific warranties, workmanship bonds, maintenance service agreements, final certifications, and similar documents.

4. Submit maintenance material submittals specified in individual Sections, including tools, spare parts, extra materials, and similar items, and deliver to location designated by Program Management Team. Label with manufacturer’s name and model number where applicable.

   a. Schedule of Maintenance Material Items: Prepare and submit schedule of maintenance material submittal items, including name and quantity of each item and name and number of related Specification Section. Obtain Program Management Team’s signature for receipt of submittals.

5. Submit test/adjust/balance records.

6. Submit sustainable design submittals required in Section 01 81 13 "Sustainable Design Requirements," and in individual Sections.

7. Submit Certificate of Construction Phase Commissioning Completion as
specified in Section 01 91 13 "General Commissioning Requirements."

8. Submit changeover information related to Owner’s occupancy, use, operation, and maintenance.

C. Procedures Prior to Substantial Completion: Complete the following a minimum of 10 working days prior to requesting inspection for determining date of Substantial Completion. List items below that are incomplete at time of request.

1. Advise Owner of pending insurance changeover requirements.
2. Make final changeover of permanent locks and deliver keys to Owner. Advise Owner’s personnel of changeover in security provisions.
3. Complete startup and testing of systems and equipment.
4. Perform preventative maintenance on equipment used prior to Substantial Completion.
5. Instruct Owner’s personnel in operation, adjustment, and maintenance of products, equipment, and systems. Submit demonstration and training video recordings specified in Section 01 79 00 "Demonstration and Training."
6. Advise Owner of changeover in heat and other utilities.
7. Participate with Owner in conducting inspection and walkthrough with local emergency responders.
8. Terminate and remove temporary facilities from Project site, along with mockups, construction tools, and similar elements.
9. Compete final cleaning requirements, including touchup painting.
10. Touch up and otherwise repair and restore marred exposed finishes to eliminate visual defects.

D. Inspection: Submit a written request for inspection to determine Substantial Completion a minimum of 10 working days prior to date the work will be completed and ready for final inspection and tests. On receipt of request, Program Management Team will either proceed with inspection or notify Contractor of unfulfilled requirements. Program Management Team will prepare the Certificate of Substantial Completion after inspection or will notify Contractor of items, either on Contractor’s list or additional items identified by Program Management Team (punchlist), that must be completed or corrected before certificate will be issued.

1. Reinspection: Request reinspection when the Work identified in previous inspections as incomplete is completed or corrected.
   a. Program Management Team will not perform reinspection until assurance can be provided that incomplete items have been completed.
      i) Compensation for Program Management Team’s time in performing more than one reinspection will be deducted from Contract Sum by Change Order.

2. Results of completed inspection will form the basis of requirements for Final Completion.

1.8 FINAL COMPLETION PROCEDURES
A. Submittals Prior to Final Completion: Before requesting final inspection for determining final completion, complete the following:

1. Submit a final Application for Payment according to Section 01 29 00 “Payment Procedures.”
   a. Include all outstanding Change Orders, if applicable.

2. Certified List of Incomplete Items: Submit a certified copy of Program Management Team’s Substantial Completion inspection list of items to be completed or corrected (punchlist), endorsed and dated by Program Management Team. Certified copy of the list shall state that each item has been completed or otherwise resolved for acceptance.

3. Certificate of Insurance: Submit evidence of final, continuing insurance coverage complying with insurance requirements.

4. Submit pest-control final inspection report.

5. Submit DSA Form DSA-6, Final Verified Report, fully executed and signed by Contractor, indicating 100% completion.

6. Submit testing and inspection reports for those tests and inspections designated as responsibility of Contractor.

B. Inspection: Submit a written request for final inspection to determine acceptance a minimum of 10 working days prior to date the work will be completed and ready for final inspection and tests. On receipt of request, Program Management Team will either proceed with inspection or notify Contractor of unfulfilled requirements. Program Management Team will prepare a final Certificate for Payment after inspection or will notify Contractor of construction that must be completed or corrected before certificate will be issued.

1. Reinspection: Request reinspection when the Work identified in previous inspections as incomplete is completed or corrected.
   a. Program Management Team will not perform reinspection until assurance can be provided that incomplete items have been completed.
      i) Compensation for Program Management Team’s time in performing more than one reinspection will be deducted from Contract Sum by Change Order.

1.9 LIST OF INCOMPLETE ITEMS

A. Organization of List: Include name and identification of each space and area affected by construction operations for incomplete items and items needing correction including, if necessary, areas disturbed by Contractor that are outside the limits of construction.

1. Organize list of spaces in sequential order, starting with exterior areas first, and proceeding from lowest floor to highest floor.

2. Organize items applying to each space by major element, including categories for ceiling, individual walls, floors, equipment, and building systems.

3. Include the following information at the top of each page:
   a. Project name.
   b. Date.
c. Name of Program Management Team.
d. Name of Contractor.
e. Page number.

4. Submit a list incomplete items as a PDF via the PMIS.

1.10 SUBMITTAL OF PROJECT WARRANTIES

A. Time of Submittal: Submit written warranties on request of Program Management Team for designated portions of the Work where commencement of warranties other than date of Substantial Completion is indicated, or when delay in submittal of warranties might limit Owner’s rights under warranty.

B. Organize warranty documents into an orderly sequence based on table of contents of Project Manual.
   1. Bind warranties and bonds in heavy-duty, three-ring, vinyl-covered, loose-leaf binders, thickness as necessary to accommodate contents, and sized to receive 8-1/2-inch by 11-inch size paper.
   2. Provide heavy paper dividers with plastic-covered tabs for each separate warranty. Mark tab to identify the product or installation. Provide a typed description of the product or installation, including the name of the product and the name, address, and telephone number of Installer.
   3. Identify each binder on the front and spine with the typed or printed title “WARRANTIES,” Project name, and name of Contractor.
   4. Warranty Electronic File: Scan warranties and bonds and assemble complete warranty and bond submittal package into a single indexed electronic PDF file with links enabling navigation to each item. Provide bookmarked table of contents at beginning of document.

C. Provide additional copies of each warranty to include in operation and maintenance manuals.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Cleaning Agents: Use cleaning materials and agents recommended by manufacturer or fabricator of the surface to be cleaned. Do not use cleaning agents that are potentially hazardous to health or property or that might damage finished surfaces.

PART 3 - EXECUTION

3.1 FINAL CLEANING

A. General: Perform final cleaning. Conduct cleaning and waste-removal operations to comply with local laws and ordinances and Federal and local environmental and antipollution regulations.

B. Cleaning: Employ experienced workers or professional cleaners for final cleaning.
Clean each surface or unit to condition expected in an average commercial building cleaning and maintenance program. Comply with manufacturer’s written instructions.

1. Complete the following cleaning operations before requesting inspection for certification of Substantial Completion for entire Project or for a designated portion of Project.
   a. Clean Project site, yard, and grounds, in areas disturbed by construction activities, including landscape development areas, or rubbish, waste material, litter, and other foreign substances.
   b. Sweep paved areas broom clean. Remove petrochemical spills, stains, and other foreign deposits.
   c. Rake grounds that are neither planted nor paved to a smooth, even-textured surface.
   d. Remove tools, construction equipment, machinery, and surplus material from Project site.
   e. Remove snow and ice to provide safe access to building.
   f. Clean exposed exterior and interior hard-surfaced finishes to a dirt-free condition, free of stains, films, and similar foreign substances. Avoid disturbing natural weathering of exterior surfaces. Restore reflective surfaces to their original condition.
   g. Remove debris and surface dust from limited access spaces, including roofs, plenums, shafts, trenches, equipment vaults, manholes, attics, and similar spaces.
   h. Sweep concrete floors broom clean in unoccupied spaces.
   i. Vacuum carpet and similar soft surfaces, removing debris and excess nap; clean according to manufacturer’s recommendations if visible soil or stains remain.
   j. Clean transparent materials, including mirrors and glass in doors and windows. Remove glazing compounds and other noticeable, vision-obscuring materials. Replace chipped or broken glass and other damaged transparent materials. Polish mirrors and glass, taking care not to scratch surfaces.
   k. Remove labels that are not permanent.
   l. Wipe surfaces of mechanical and electrical equipment, elevator equipment, and similar equipment. Remove excess lubrication, paint and mortar droppings, and other foreign substances.
   m. Replace parts subject to unusual operating conditions.
   n. Clean plumbing fixtures to a sanitary condition, free of stains, including stains resulting from water exposure.
   o. Replace disposable air filters, and clean permanent air filters. Clean exposed surfaces of diffusers, registers, and grills.
   p. Clean ducts, blowers, and coils if units were operated without filters during construction or that display contamination with particulate matter on inspection.
   q. Clean light fixtures, lamps, globes, and reflectors to function with full efficiency.
r. Clean food service equipment to a condition of sanitation ready and acceptable for intended food service use.
s. Leave Project clean and ready for occupancy.

C. Pest Control: Engage an experienced, licensed exterminator in compliance with requirements of Section 01 50 00 "Temporary Facilities and Controls," to make a final inspection and rid Project of rodents, insects, and other pests. Prepare a report.

D. Comply with safety standards for cleaning. Remove waste materials for Project site and dispose of lawfully.

E. Construction Waste Disposal: Comply with waste disposal requirements in Section 01 74 19 "Construction Waste Management and Disposal."

3.2 REPAIR OF THE WORK

A. Complete repair and restoration operations before requesting inspection for determination of Substantial Completion.

B. Repair or remove and replace defective construction. Repairing includes replacing defective parts, refinishing damaged surfaces, touching up with matching materials, and properly adjusting operating equipment. Where damaged or worn items cannot be repaired or restored, provide replacements. Remove and replace operating components that cannot be repaired. Restore damaged construction and permanent facilities used during construction to specified condition.

1. Remove and replace chipped, scratched, and broken glass, reflective surfaces, and other damaged transparent materials.

2. Touch up and otherwise repair and restore marred or exposed finishes and surfaces. Replace finishes and surfaces that already show evidence of repair or restoration.

   a. Do not paint over “UL” or other required labels and identification, including mechanical and electrical nameplates. Remove paint applied to required labels and identification.

3. Replace parts subject to operating conditions during construction that may impede operation or reduce longevity.

4. Replace burned-out lamps/bulbs, lamps/bulbs noticeably dimmed by hours of use, and defective and noisy starters in fluorescent and mercury vapor fixtures to comply with requirements for new fixtures.

END OF SECTION 01 77 00
SECTION 01 78 23
OPERATION AND MAINTENANCE DATA

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes administrative and procedural requirements for preparing operation and maintenance manuals, including the following:
   1. Operation and maintenance documentation directory.
   2. Emergency manuals.
   3. Operation manuals for systems, subsystems, and equipment.
   4. Product maintenance manuals.
   5. Systems and equipment manuals.

B. Related Sections include:
   1. Section 01 33 00 "Submittal Procedures" for submitting copies of submittals for operation and maintenance manuals.
   2. Section 01 91 13 01810"General Commissioning Requirements" for verification and compilation of data into operation and maintenance manuals.
   3. Divisions 2 through 49 Sections for specific operation and maintenance manual requirements for the Work of those Sections.

1.3 REFERENCES

A. American Society of Heating, Refrigeration and Air-Conditioning Engineers (ASHRAE):

1.4 DEFINITIONS


B. System: An organized collection of parts, equipment, or subsystems united by regular interaction.

C. Subsystem: A portion of a system with characteristics similar to a system.
1.5 CLOSEOUT SUBMITTALS

A. Manual Content: Operations and maintenance manual content is specified in individual Specification Sections to be reviewed at the time of Section submittals. Submit reviewed manual content formatted and organized as required by this Section.
   1. Architect will comment on whether content of operations and maintenance submittals are acceptable.
   2. Where applicable, clarify and update reviewed manual content to correspond to revisions and field conditions.

B. Format: Submit operations and maintenance manuals in the following format
   1. PDF electronic file: Assemble each manual into a composite electronically indexed file. Submit on digital media acceptable to PMT and via the PMIS.
      a. Name each indexed document file in composite electronic index with applicable item name. Include a complete electronically linked operation and maintenance directory.
      b. Enable inserted reviewer comments on draft submittals.
   2. Paper Copies: Submit two copies unless otherwise indicated.
      a. Include a complete operation and maintenance directory. Enclose title pages and directories in clear plastic sleeves.

C. Initial Manual Submittal: Submit draft copy of each manual at least 20 working days before commencing demonstration and training. Architect will comment on whether scope and content of manual are acceptable.

D. Final Manual Submittal: Submit each manual in final form with corrections and revisions addressing Architect’s comments prior to requesting inspection for Substantial Completion and at least 10 working days before commencing demonstration and training.

E. Submit Operation and Maintenance Documentation Directory.

1.6 COORDINATION

A. Where operation and maintenance documentation includes information on installations by more than one factory-authorized service representative, assemble and coordinate information furnished by representatives and prepare manuals.

PART 2 - PRODUCTS

2.1 OPERATION AND MAINTENANCE DOCUMENTATION DIRECTORY

A. Directory: Prepare a single, comprehensive directory of emergency, operation, and maintenance data and materials, listing items and their location to facilitate ready access to desired information. Include a section in the directory for each of the following:
1. List of documents.
2. List of systems.
3. List of equipment.
4. Table of contents.

B. List of Systems and Subsystems: List systems alphabetically. Include references to operation and maintenance manuals that contain information about each system.

C. List of Equipment: List equipment for each system, organized alphabetically by system. For pieces of equipment not part of system, list alphabetically in separate list.

D. Tables of Contents: Include a table of contents for each emergency, operation, and maintenance manual.

E. Identification: In the documentation directory and in each operation and maintenance manual, identify each system, subsystem, and piece of equipment with same designation used in the Contract Documents. If no designation exists, assign a designation according to ASHRAE Guideline 4, “Preparation of Operating and Maintenance Documentation for Building Systems.”

2.2 REQUIREMENTS FOR EMERGENCY, OPERATION, AND MAINTENANCE MANUALS

A. Organization: Unless otherwise indicated, organize each manual into a separate section for each system and subsystem, and a separate section for each piece of equipment not part of a system. Each manual shall contain the following materials, in the order listed:
   1. Title page.
   2. Table of contents.

B. Title Page: Include the following information:
   1. Subject matter included in manual.
   2. Name and address of Project.
   3. Name and address of Owner.
   4. Date of submittal.
   5. Name and contact information for Contractor.
   6. Name and contact information for Architect.
   7. Names and contact information for major consultants to the Architect that designed the systems contained in the manuals.
   8. Cross-reference to related systems in other operation and maintenance manuals.

C. Table of Contents: List each product included in manual, identified by product name, indexed to the content of the volume, and cross-referenced to Specification Section number in Project Manual.
   1. If operation or maintenance documentation requires more than one volume to
accommodate data, include comprehensive table of contents for all volumes in each volume of the set.

D. Manual Contents: Organize into sets of manageable size. Arrange contents alphabetically by system, subsystem, and equipment. If possible, assemble instructions for subsystems, equipment, and components of one system into a single binder.

E. Manuals, Electronic Files: Submit manuals in the form of a multiple file composite electronic PDF file for each manual type required.
   1. Electronic Files: Use electronic files prepared by manufacturer where available. Where scanning of paper documents is required, configure scanned file for minimum readable file size.
   2. File Names and Bookmarks: Enable bookmarking of individual documents based on file names. Name document files to correspond to system, subsystem, and equipment names used in manual directory and table of contents. Group documents for each system and subsystem into individual composite bookmarked files, then create composite manual, so that resulting bookmarks reflect the system, subsystem, and equipment names in a readily navigated file tree. Configure electronic manual to display bookmark panel on opening file.

F. Manuals, Paper Copy: Submit manuals in the form of hard copy, bound and labeled volumes.
   1. Binders: Heavy-duty, three-ring, vinyl-covered, loose-leaf binders, in thickness necessary to accommodate contents, sized to hold 8-1/2-by-11-inch paper; with clear plastic sleeve on spine to hold label describing contents and with pockets inside covers to hold folded oversize sheets.
      a. If two or more binders are necessary to accommodate data of a system, organize data in each binder into groupings by subsystem and related components. Cross-reference other binders if necessary to provide essential information for proper operation or maintenance of equipment or system.
      b. Identify each binder on front and spine, with printed title “OPERATION AND MAINTENANCE MANUAL,” Project title or name, and subject matter of contents. Indicate volume number for multiple-volume sets.
   2. Dividers: Heavy-paper dividers with plastic-covered tabs for each section of the manual. Mark each tab to indicate contents. Include typed list of products and major components of equipment included in the section on each divider, cross-referenced to Specification Section number and title of Project Manual.
   3. Protective Plastic Sleeves: Transparent plastic sleeves designed to enclose diagnostic software diskettes for computerized electronic equipment.
   4. Supplementary Text: Prepared on 8-1/2-inch by 11-inch white bond paper.
   5. Drawings: Attach reinforced, punched binder tabs on drawings and bind with text.
      a. If oversize drawings are necessary, fold drawings to same size as text pages and use as foldouts.
      b. If drawings are too large to be used as foldouts, fold and place drawings
in labeled envelopes and bind envelopes in rear of manual. At appropriate locations in manual, insert typewritten pages indicating drawing titles, descriptions of contents, and drawing locations.

2.3 EMERGENCY MANUALS

A. Content: Organize manual into a separate section for each of the following:
   1. Type of emergency.
   2. Emergency instructions.
   3. Emergency procedures.

B. Type of Emergency: Where applicable for each type of emergency indicated below, include instructions and procedures for each system, subsystem, piece of equipment, and component:
   1. Fire.
   2. Flood.
   5. Power failure.
   7. System, subsystem, or equipment failure.
   8. Chemical release or spill.

C. Emergency Instructions: Describe and explain warnings, trouble indications, error messages, and similar codes and signals. Include responsibilities of Owner's operating personnel for notification of Installer, supplier, and manufacturer to maintain warranties.

D. Emergency Procedures: Include the following, as applicable:
   1. Instructions on stopping.
   2. Shutdown instructions for each type of emergency.
   3. Operating instructions for conditions outside normal operating limits.
   4. Required sequences for electric or electronic systems.
   5. Special operating instructions and procedures.

2.4 OPERATION MANUALS

A. Content: In addition to requirements in this Section, include operation data required in individual Specification Sections and the following information:
   2. Performance and design criteria if Contractor is delegated design responsibility.
   3. Operating standards.
4. Operating procedures.
5. Operating logs.
6. Wiring diagrams.
7. Control diagrams.
8. Piped system diagrams.
9. Precautions against improper use.
10. License requirements including inspection and renewal dates.

B. Descriptions: Include the following:
1. Product name and model number. Use designations for systems and equipment indicated on Contract Documents.
2. Manufacturer’s name.
3. Equipment identification with serial number of each component.
4. Equipment function.
5. Operating characteristics.
6. Limiting conditions.
7. Performance curves.
8. Engineering data and tests.
9. Complete nomenclature and number of replacement parts.

C. Operating Procedures: Include the following, as applicable:
1. Startup procedures.
2. Equipment or system break-in procedures.
3. Routine and normal operating instructions.
4. Regulation and control procedures.
5. Instructions on stopping.
7. Seasonal and weekend operating instructions.
8. Required sequences for electric or electronic systems.
9. Special operating instructions and procedures.

D. Systems and Equipment Controls: Describe the sequence of operation, and diagram controls as installed.

E. Piped Systems: Diagram piping as installed, and identify color-coding where required for identification.

2.5 PRODUCT MAINTENANCE MANUAL

A. Content: Organize manual into a separate section for each product, material, and finish. Include source information, product information, maintenance procedures, repair materials and sources, and warranties and bonds, as described below.
B. Source Information: List each product included in manual, identified by product name and arranged to match manual’s table of contents. For each product, list name, address, and telephone number of Installer or supplier and maintenance service agent, and cross-reference Specification Section number and title in Project Manual and drawing or schedule designation or identifier where applicable.

C. Product Information: Include the following, as applicable:
   1. Product name and model number.
   2. Manufacturer’s name.
   3. Color, pattern, and texture.
   5. Reordering information for specially manufactured products.

D. Maintenance Procedures: Include manufacturer’s written recommendations and the following:
   1. Inspection procedures.
   2. Types of cleaning agents to be used and methods of cleaning.
   3. List of cleaning agents and methods of cleaning detrimental to product.
   4. Schedule for routine cleaning and maintenance.
   5. Repair instructions.

E. Repair Material and Sources: Include lists of materials and local sources of materials and related services.

F. Warranties and Bonds: Include copies of warranties and bonds and lists of circumstances and conditions that would affect validity of warranties or bonds.
   1. Include procedures to follow and required notifications for warranty claims.

2.6 SYSTEMS AND EQUIPMENT MAINTENANCE MANUAL

A. Content: For each system, subsystem, and piece of equipment not part of a system, include source information, manufacturers’ maintenance documentation, maintenance procedures, maintenance and service schedules, spare parts list and source information, maintenance service contracts, and warranty and bond information, as described below.

B. Source Information: List each system, subsystem, and piece of equipment included in manual, identified by product name and arranged to match manual’s table of contents. For each product, list name, address, and telephone number of Installer or supplier and maintenance service agent, and cross-reference Specification Section number and title in Project Manual and drawings or schedule designation or identifier where applicable.

C. Manufacturer’s Maintenance Documentation: Manufacturer’s maintenance documentation including the following information for each component part or piece of equipment:
1. Standard maintenance instructions and bulletins.
2. Drawings, diagrams, and instructions required for maintenance, including disassembly and component removal, replacement, and assembly.
3. Identification and nomenclature of parts and components.
4. List of items recommended to be stocked as spare parts.

D. Maintenance Procedures: Include the following information and items that detail essential maintenance procedures.
1. Test and inspection instructions.
2. Troubleshooting guide.
3. Precautions against improper maintenance.
4. Disassembly; component removal, repair, and replacement; and reassembly instructions.
5. Aligning, adjusting, and checking instructions.
6. Demonstration and training video recording, if available.

E. Maintenance and Service Schedules: Include service and lubrication requirements, list of required lubricants for equipment, and separate schedules for preventive and routine maintenance and service with standard time allotment.
1. Scheduled Maintenance and Service: Tabulate actions for daily, weekly, monthly, quarterly, semiannual, and annual frequencies.
2. Maintenance and Service Record: Include manufacturer’s forms for recording maintenance.

F. Spare Parts and Source Information: Include lists of replacement and repair parts, with parts identified and cross-referenced to manufacturer’s maintenance documentation and local sources of maintenance materials and related services.

G. Maintenance Service Contracts: Include copies of maintenance agreements with name and telephone number of service agent.

H. Warranties and Bonds: Include copies of warranties and bonds and lists of circumstances and conditions that would affect validity of warranties or bonds.
1. Include procedures to follow and required notifications for warranty claims.

PART 3 - EXECUTION

3.1 MANUAL PREPARATION

A. Operation and Maintenance Documentation Directory: Prepare a separate manual that provides an organized reference to emergency, operation, and maintenance manuals.

B. Emergency Manual: Assemble a complete set of emergency information indicating procedures for use by emergency personnel and by Owner’s operating personnel for types of emergencies indicated.
C. Product Maintenance Manual: Assemble a complete set of maintenance data indicating care and maintenance of each product, material, and finish incorporated into the Work.

D. Operation and Maintenance Manuals: Assemble a complete set of operation and maintenance data indicating operation and maintenance of each system, subsystem, and piece of equipment not part of a system.
   1. Engage a factory-authorized service representative to assemble and prepare information for each system, subsystem, and piece of equipment not part of a system.
   2. Prepare a separate manual for each system and subsystem, in the form of an instructional manual for use by Owner’s operating personnel.

E. Manufacturer’s Data: Where manuals contain manufacturer’s standard printed data, include only sheets pertinent to product or component installed. Mark each sheet to identify each product or component incorporated into the Work. If data include more than one item in a tabular format, identify each item using appropriate references from the Contract Documents. Identify data applicable to the Work and delete references to information not applicable.
   1. Prepare supplementary text if manufacturer’s standard printed data are not available and where the information is necessary for proper operation and maintenance of equipment or systems.

F. Drawings: Prepare drawings supplementing manufacturers’ printed data to illustrate the relationship of component parts of equipment and systems and to illustrate control sequence and flow diagrams. Coordinate these drawings with information contained in record Drawings to ensure correct illustration of completed installation.
   1. Do not use original project record documents as part of operation and maintenance manuals.
   2. Comply with requirements of newly prepared record Drawings in Section 01 78 39 "Project Record Documents."

G. Comply with Section 01 77 00 "Closeout Procedures" for schedule for submitting operation and maintenance documentation.

END OF SECTION 01 78 23
SECTION 01 78 39
PROJECT RECORD DOCUMENTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes administrative and procedural requirements for project record documents, including the following:
   1. Record Drawings.
   2. Record Specifications.
   3. Record Product Data.
   4. Miscellaneous record submittals.

B. Related Sections include:
   1. Section 01 70 00 "Field Engineering and Execution Requirements" for final property survey.
   2. Section 01 77 00 "Closeout Procedures" for general closeout procedures.
   3. Section 01 78 23 "Operation and Maintenance Data" for operation and maintenance manual requirements.
   4. Divisions 2 through 49 Sections for specific requirements for Project Record Documents of the Work in those Sections.

1.3 DEFINITIONS


1.4 CLOSEOUT SUBMITTALS

A. Record Drawings: Comply with the following:
   1. Submit one paper copy set of marked-up record Drawing prints, including addenda and contract modifications.
      a. Print each drawing, whether or not changes and additional information were recorded.
   2. Submit electronic files. The electronic as-builds shall be a comprehensive file combining contract drawings, specifications, as-built markups with links to CO’s RFI’s, etc.
B. Record Specifications: Comply with the following:
   1. Submit one paper copy of marked-up record Specifications, including addenda and contract modifications.
   2. The electronic as-builts shall be a comprehensive file combining contract drawings, specifications, as-built markups with links to CO’s RFI’s, shop drawings, etc.

C. Record Product Data: Comply with the following:
   1. Submit one paper copy of marked-up record Product Data, including addenda and contract modifications.
   2. The electronic as-builts shall be a comprehensive file combining contract drawings, specifications, as-built markups with links to CO’s RFI’s, shop drawings, etc.

D. Miscellaneous Record Submittals: See other Specification Sections for miscellaneous record-keeping requirements and submittals in connection with various construction activities.
   1. Submit one paper copy.
   2. The electronic as-builts shall be a comprehensive file combining contract drawings, specifications, as-built markups with links to CO’s RFI’s, shop drawings, etc.

PART 2 - PRODUCTS

2.1 RECORD DRAWINGS

A. Record Prints: Maintain one set of marked-up copies of the Contract Drawings and Shop Drawings, incorporating new and revised drawings as modifications are issued. The marked-up documents are to be maintained on the PMIS. CONTRACTOR may also maintain a paper copy on site.

   1. Preparation: Mark record prints to show the actual installation where installation varies from that shown originally. Require individual or entity who obtained record data, whether individual or entity is Installer, subcontractor, or similar entity, to provide information for preparation of corresponding marked-up record prints.

      a. Give particular attention to information on concealed elements that would be difficult to identify or measure and record later.
      b. Accurately record information in an acceptable drawing technique.
      c. Record data as soon as possible after obtaining it.
      d. Record and check the markup before enclosing concealed installations.

   2. Content: Types of items requiring marking include, but are not limited to, the following:

      a. Dimensional changes to Drawings.
      b. Revisions to details shown on Drawings.
      c. Revisions to routing of piping and conduits.
d. Revisions to electrical circuitry.
e. Actual equipment locations.
f. Duct size and routing.
g. Locations of concealed internal utilities.
h. Changes made by Architect’s Supplemental Instruction, Change Order, Construction Change Directive, Request for Information, or other written directive from Architect. Note corresponding reference numbers for each item.
i. Details not on the original Contract Drawings.
j. Field records for variable and concealed conditions.
k. Record information on the Work that is shown only schematically.

3. Mark the Contract Drawings or Shop Drawings, whichever is most capable of showing actual physical conditions, completely and accurately. If Shop Drawings are marked, show cross-reference on the Contract Drawings. Use personnel proficient at recording graphic information in production of marked-up record prints.

4. Mark record sets with erasable, red-colored pencil. Use other colors to distinguish between changes for different categories of the Work at same location.

5. Mark important additional information that was either shown schematically or omitted from original Drawings.

6. Identification and Dating: Identify and date each Record Drawing; include the designation “PROJECT RECORD DRAWING” in a prominent location.
   a. Record Prints: Organize Record Prints into manageable sets. Bind each set with durable paper cover sheets. Include identification on cover sheets.
   b. Identification: As follows:
      i) Project name.
      ii) Date.
      iii) Designation “PROJECT RECORD DRAWINGS.”
      iv) Name of Architect.
      v) Name of Contractor.

7. Format: Submit record Drawings in both paper format and scanned PDF electronic format, as specified in Part 1 “Closeout Submittals” Article.

2.2 RECORD SPECIFICATIONS

A. Preparation: Mark Specifications to indicate the actual product installation where installation varies from that indicated in Specifications, addenda, and contract modifications.
   1. Give particular attention to information on concealed products and installations that cannot be readily identified and recorded later.
   2. Mark copy with the proprietary name and model number of products, materials, and equipment furnished, including substitutions and product options selected.
3. Record the name of manufacturer, supplier, Installer, and other information necessary to provide a record of selections made.
4. For each principal product, indicate whether Project Data has been submitted in operation and maintenance manuals instead of submitted as record Product Data.
5. Indicate changes made by Architect’s Supplemental Instruction, Change Order, Construction Change Directive, Request for Information, or other written directive from Architect. Note corresponding reference numbers for each item.
6. Format: Submit record Specifications in both paper format and scanned PDF electronic format, as specified in Part 1 “Closeout Submittals” Article.

2.3 RECORD PRODUCT DATA

A. Preparation: Mark Product Data to indicate the actual product installation where installation varies substantially from that indicated in Product Data submittal.
   1. Give particular attention to information on concealed products and installations that cannot be readily identified and recorded later.
   2. Include significant changes in the product delivered to Project site and changes in manufacturer’s written instructions for installation.
   3. Indicate changes made by Architect’s Supplemental Instruction, Change Order, Construction Change Directive, Request for Information, or other written directive from Architect. Note corresponding reference numbers for each item.

B. Format: Submit record Product Data in both paper format and scanned PDF electronic format, as specified in Part 1 “Closeout Submittals” Article.

2.4 MISCELLANEOUS RECORD SUBMITTALS

A. Assemble miscellaneous records required by other Specification Sections for miscellaneous record keeping and submittal in connection with actual performance of the Work. Bind or file miscellaneous records and identify each, ready for continued use and reference.

B. Format: Submit miscellaneous record submittals in both paper format and scanned PDF electronic format, as specified in Part 1 “Closeout Submittals” Article.

PART 3 - EXECUTION

3.1 RECORDING AND MAINTENANCE

A. Recording: Maintain one copy of each submittal during the construction period for project record document purposes. Post changes and modifications to project record documents as they occur; do not wait until the end of Project.

B. Maintenance of Record Documents and Samples: Store record documents and Samples in the field office apart from the Contract Documents used for construction. Do not use project record documents for construction purposes. Maintain record documents in good order and in a clean, dry, legible condition, protected from...
deterioration and loss. Provide access to project record documents for Architect's reference during normal working hours.

1. Record documents are to be maintained continuously in a state of completion reflecting current progress of completed Work at all times. Applications for Payment as specified in Section 01 29 00 "Payment Procedures," will not be processed until Inspector and Architect has verified record documents are fully updated.

END OF SECTION 01 78 39
SECTION 01 79 00
DEMONSTRATION AND TRAINING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes administrative and procedural requirements for instructing Owner’s personnel, including the following:
   1. Demonstration of operation of systems, subsystems, and equipment.
   2. Training in operation and maintenance of systems, subsystems, and equipment.
   3. Demonstration and training video recordings.

B. Related Sections include:
   1. Section 01 31 00 “Project Management and Coordination” for requirements for preinstruction conferences.
   2. Divisions 2 through 49 Sections for specific requirements for demonstration and training for products in those Sections.

1.3 INFORMATIONAL SUBMITTALS

A. Instruction Program: Submit outline of instructional program for demonstration and training, including a list of training modules and a schedule of proposed dates, times, length of instruction time, and instructors’ names for each training module. Include learning objective and outline for each training module.
   1. Indicate proposed training modules using manufacturer-produced demonstration and training video recordings for systems, equipment, and products in lieu of video recording of live instructional module.

B. Qualification Data: For instructor/facilitator.

C. Attendance Record: For each training module, submit list of participants and length of instruction time.

D. Evaluations: For each participant and for each training module, submit results and documentation of performance-based test.

1.4 CLOSEOUT SUBMITTALS

A. Demonstration and Training Video Recordings: Submit one copy within 5 working days of end of each training module.
1. Identification: On each copy, provide an applied label with the following information:
   a. Name of Project.
   b. Name of Architect.
   c. Name of Contractor.

2. Transcript: Submit transcript as a PDF with the related video recording and training manuals via the PMIS and on a memory stick. Each area of training is to be submitted on a single memory stick. At completion of training, submit complete training manual(s) for Owner’s use, prepared and bound in format matching operation and maintenance manuals.
   a. Submit a complete set of video recording and PDF of the training materials via the PMIS.
   b. Submit a PDF of the training materials with the video recordings on a flash drive.

1.5 QUALITY ASSURANCE

A. Facilitator Qualifications: A firm or individual experienced in training or educating maintenance personnel in a training program similar in content and extent to that indicated for this Project, and whose work has resulted in training or education with a record of successful learning performance.

B. Instructor Qualifications: A factory-authorized service representative, complying with requirements in Section 01 43 00 "Quality Assurance," experienced in operation and maintenance procedures and training.

C. Preinstruction Conference: Conduct conference at Project site to comply with requirements in Section 01 31 00 "Project Management and Coordination." Review methods and procedures related to demonstration and training including, but not limited to, the following:
   1. Inspect and discuss locations and other facilities required for instruction.
   2. Review and finalize instruction schedule and verify availability of educational materials, instructor’s personnel, audiovisual equipment, and facilities needed to avoid delays.
   3. Review required content of instruction.
   4. For instruction that must occur outside, review weather and forecasted weather conditions and procedures to follow if conditions are unfavorable.

1.6 COORDINATION

A. Coordinate instruction schedule with Owner’s operations. Adjust schedule as required to minimize disrupting Owner’s operations and to ensure availability of Owner’s personnel.

B. Coordinate instructors, including providing notification of dates, times, length of instruction time, and course content.
C. Coordinate content of training modules with content of approved emergency, operation, and maintenance manuals. Do not submit instruction program until operation and maintenance data has been reviewed and approved by Architect.

PART 2 - PRODUCT

2.1 INSTRUCTION PROGRAM

A. Program Structure: Develop an instruction program that includes individual training modules for each system and for equipment not part of a system, as required by individual Specification Sections, and including the following:

1. Equipment, including stage equipment, projection screens, loading dock equipment, waste compactors, food-service equipment, residential appliances, and laboratory fume hoods.
2. Fire-protection systems, including fire alarm, fire pumps, and fire-extinguishing systems.
3. Intrusion detection systems.
4. Access-control systems.
5. HVAC systems, including air-handling equipment, air distribution systems, and terminal equipment and devices.
6. HVAC instrumentation and controls.
7. Electrical service and distribution, including transformers, switchboards, panelboards, uninterruptible power supplies, and motor controls.
8. Lighting equipment and controls.
9. Communication systems, including intercommunication, surveillance, clocks and programming, voice and data, and audiovisual equipment.

B. Training Modules: Develop a learning objective and teaching outline for each module. Include a description of specific skills and knowledge that participant is expected to master. For each module, include instruction for the following, as applicable to the system, equipment, or component:

1. Basis of System Design, Operational Requirements, and Criteria: Include the following:
   a. System, subsystem, and equipment descriptions.
   b. Performance and design criteria if Contractor is delegated design responsibility.
   c. Operating standards.
   d. Regulatory requirements.
   e. Equipment function.
   f. Operating characteristics.
   g. Limiting conditions.
   h. Performance curves.

2. Documentation: Review the following items in detail:
   a. Emergency manuals.
b. Operations manuals.
c. Maintenance manuals.
d. Project Record Documents.
e. Identification systems.
f. Warranties and bonds.
g. Maintenance service agreements and similar continuing commitments.

3. Emergencies: Include the following, as applicable:
   a. Instructions on meaning of warnings, trouble indications, and error messages.
   b. Instructions on stopping.
   c. Shutdown instructions for each type of emergency.
   d. Operating instructions for conditions outside of normal operating limits.
   e. Sequences for electric or electronic systems.
   f. Special operating instructions and procedures.

4. Operations: Include the following, as applicable:
   a. Startup procedures.
   b. Equipment or system break-in procedures.
   c. Routine and normal operating instructions.
   d. Regulation and control procedures.
   e. Control sequences.
   f. Safety procedures.
   g. Instructions on stopping.
   h. Normal shutdown instructions.
   i. Operating procedures for emergencies.
   j. Operating procedures for system, subsystem, or equipment failure.
   k. Seasonal and weekend operating instructions.
   l. Required sequences for electric or electronic systems.
   m. Special operating instructions and procedures.

5. Adjustments: Include the following:
   a. Alignments.
   b. Checking adjustments.
   c. Noise and vibration adjustments.
   d. Economy and efficiency adjustments.

6. Troubleshooting: Include the following:
   a. Diagnostic instructions.
   b. Test and inspection procedures.

7. Maintenance: Include the following:
   a. Inspection procedures.
   b. Types of cleaning agents to be used and methods of cleaning.
c. List of cleaning agents and methods of cleaning detrimental to product.
d. Procedures for routine cleaning.
e. Procedures for preventive maintenance.
f. Procedures for routine maintenance.
g. Instruction on use of special tools.

8. Repairs: Include the following:
   a. Diagnosis instructions.
   b. Repair instructions.
   c. Disassembly; component removal, repair, and replacement; and reassembly instructions.
   d. Instructions for identifying parts and components.
   e. Review of spare parts needed for operation and maintenance.

PART 3 - EXECUTION

3.1 PREPARATION

A. Assemble educational materials necessary for instruction, including documentation and training module. Assemble training modules into a combined training manual organized in coordination with requirements in Section 01 78 23 “Operation and Maintenance Data.”

B. Set up instructional equipment at instruction location.

3.2 INSTRUCTION

A. Facilitator: Engage a qualified facilitator to prepare instruction program and training modules, to coordinate instructors, and to coordinate between Contractor and Owner for number of participants, instruction times, and location.

B. Engage qualified instructors to instruct Owner’s personnel to adjust, operate, and maintain systems, subsystems, and equipment not part of a system.
   1. Owner will furnish Contractor with names and positions of participants.
      a. Owner’s participants will describe Owner’s operational philosophy.

C. Scheduling: Provide instruction at mutually agreed on times. For equipment that requires seasonal operation, provide similar instruction at start of each season.
   1. Schedule training with Owner, through Architect, with at least 10 working days advance notice

D. Training Location and Reference Material: Conduct training on-site in the completed and fully operational facility using the actual equipment in-place. Conduct training using final operation and maintenance data submittals.

E. Evaluation: At conclusion of each training module, assess and document each participant’s mastery of module by use of a demonstration or oral performance-based test.
F. Cleanup: Collect used and leftover educational materials and give to Owner. Remove instructional equipment. Restore systems and equipment to condition existing before initial training use.

3.3 DEMONSTRATION AND TRAINING VIDEO RECORDINGS

A. General: Engage a qualified commercial videographer to record demonstration and training video recordings. Record each training module separately. Include classroom instructions and demonstrations, board diagrams, and other visual aids, but not student practice.
   1. At beginning of each training module, record each chart containing learning objective and lesson outline.

B. Video: Provide minimum 640 x 480 video resolution converted to format file type acceptable to Owner, on electronic media.
   1. Electronic Media: Read-only format flash drive acceptable to Owner, with commercial-grade graphic label.
   2. Contractor and Installer Contact File: Using appropriate software, create a file for inclusion on the Equipment Demonstration and Training DVD that describes the following:
      a. Name of Contractor/Installer.
      b. Business address.
      c. Business phone number.
      d. Point of contact.
      e. Email address.

C. Recording: Mount camera on tripod before starting recording, unless otherwise necessary to adequately cover area of demonstration and training. Display continuous running time.
   1. Film training session(s) in segments not to exceed 15 minutes.
      a. Produce segments to present a single significant piece of equipment per segment.
      b. Organize segments with multiple pieces of equipment to follow order of Project Manual table of contents.
      c. Where a training session on a particular piece of equipment exceeds 15 minutes, stop filming and pause training session. Begin training session again upon commencement of new filming segment.

D. Light Levels: Verify light levels are adequate to properly light equipment. Verify equipment markings are clearly visible prior to recording.
   1. Furnish additional portable lighting as required.

E. Narration: Describe scenes on video recording by audio narration by microphone while video recording is recorded. Include description of items being viewed.

F. Transcript: Provide a transcript of the narration. Display images and running time
captured from video recording opposite the corresponding narration segment.

G. Preproduced Video Recordings: Provide video recordings used as a component of training modules in same format as recordings of live training.

END OF SECTION 01 79 00
SECTION 01 91 13
GENERAL COMMISSIONING REQUIREMENTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

B. Owner’s Project Requirements and Basis-of-Design documentation are included by reference for information only.

1.2 SUMMARY

A. Section includes general requirements that apply to implementation of commissioning without regard to specific systems, assemblies, or components.
   1. General requirements for coordinating and scheduling commissioning.
   2. Commissioning meetings.
   3. Commissioning reports.
   4. Use of test equipment, instrumentation, and tools for commissioning.
   5. Construction checklists, including, but not limited to, installation checks, startup, performance tests, and performance test demonstration.
   6. Commissioning tests and commissioning test demonstration.
   7. Adjusting, verifying, and documenting identified systems and assemblies.

B. Related Sections:
   1. Section 01 33 00 "Submittal Procedures" for submittal procedures requirements for commissioning.
   2. Section 01 78 23 01785 "Operation and Maintenance Data" for operation and maintenance data submittal.
   3. Division 23 Section for commissioning requirements for HVAC systems.

1.3 NOT USED

1.4 REFERENCES

A. American Society for Quality (ASQ):
   1. ASQ Z1.4: Sampling Procedures and Tables for Inspection by Attributes.

1.5 DEFINITIONS

A. Acceptance Criteria: Threshold of acceptable work quality or performance specified for a commissioning activity, including, but not limited to, construction checklists,
performance tests, performance test demonstrations, commissioning tests and commissioning test demonstrations.

B. Basis-of-Design (BoD) Document: A document prepared by Owner, Architect, or Commissioning Authority that records concepts, calculations, decisions, and product selections used to comply with Owner’s Project Requirements and to suit applicable regulatory requirements, standards, and guidelines.

C. Commissioning Authority (CxA): An entity engaged by Contractor to evaluate Commissioning-Process Work.

D. Commissioning Plan: A document, prepared by Commissioning Authority, that outlines the organization, schedule, allocation of resources, and documentation requirements of commissioning.

E. Commissioning: A quality-focused process for verifying and documenting that the facility and all of its systems and assemblies are planned, designed, installed, and tested to comply with Owner’s Project Requirements. The requirements specified here are limited to the construction phase commissioning activities.

F. Construction Phase Commissioning Completion: The stage of completion and acceptance of commissioning when resolution of deficient conditions and issues discovered during commissioning and retesting until acceptable results are obtained has been accomplished. Owner will establish in writing the date Construction Phase Commissioning Completion is achieved.

1. Commissioning is complete when the work specified in this Section and related Sections has been completed and accepted, including, but not limited to, the following:
   a. Completion of tests and acceptance of test results.
   b. Resolution of issues, as verified by retests performed and documented with acceptance of retest results.
   c. Comply with requirements in Section 01 79 00 "Demonstration and Training."
   d. Completion and acceptance of submittals and reports.

G. Owner’s Project Requirements (OPR): A document written by Commissioning Authority that details the functional requirements of a project and the expectations of how it will be used and operated, including Project goals, measurable performance criteria, cost considerations, benchmarks, success criteria, and supporting information.

H. Owner’s Witness: Owner’s Project Manager, designated witness authorized to authenticate test demonstration data and to sign completed test data forms.

I. “Systems,” “Assemblies,” “Subsystems,” “Equipment,” and “Components”: Where these terms are used together or separately, they shall mean “as-built” systems, assemblies, subsystems, equipment, and components.

J. Test: Performance tests, performance test demonstrations, commissioning tests, and
commissioning test demonstrations.

K. Sampling Procedures and Tables for Inspection by Attributes: As defined in ASQ Z1.4.

1.6 COMMISSIONING TEAM

A. Members Appointed by Contractor and Owner:
   1. Commissioning Authority, plus consultants that Commissioning Authority may deem appropriate for a particular portion of the commissioning.
   2. Owner representative(s), facility operations and maintenance personnel, plus other employees, separate contractors, and consultants that Owner may deem appropriate for a particular portion of the commissioning.

1.7 INFORMATIONAL SUBMITTALS

A. Comply with requirements in Section 01 33 00 "Submittal Procedures" for submittal procedures general requirements for commissioning.

B. Commissioning Plan Information:
   1. List of Contractor-appointed commissioning team members to include specific personnel and subcontractors to the performance of the various commissioning requirements.
   2. Schedule of commissioning activities, integrated with the construction schedule. Comply with requirements in Section 01 32 00 “Construction Progress Documentation” for construction schedule general requirements for commissioning.
   3. Contractor personnel and subcontractors to participate in each test.
   4. List of instrumentation required for each test to include identification of parties that will provide instrumentation for each test.

C. Commissioning schedule.

D. Two-week look-ahead schedules.

E. Commissioning Coordinator Letter of Authority:
   1. Within 10 days after approval of Commissioning Coordinator qualifications, submit a letter of authority for Commissioning Coordinator, signed by a principal of Contractor’s firm. Letter shall authorize Commissioning Coordinator to do the following:
      a. Make inspections required for commissioning.
      b. Coordinate, schedule, and manage commissioning of Contractor, subcontractors, and suppliers.
      c. Report issues, delayed resolution of issues, schedule conflicts, and lack of cooperation or expertise on the part of members of the commissioning team.
F. Commissioning Coordinator Qualification Data: For entity coordinating Contractor’s commissioning activities to demonstrate their capabilities and experience.
   1. Experienced: When used with an entity or individual, “experienced” means having successfully completed a minimum of five previous projects similar in nature, size, and extent to this Project; being familiar with special requirements indicated; and having complied with requirements of authorities having jurisdiction.

G. List test instrumentation, equipment, and monitoring devices. Include the following information:
   1. Make, model, serial number, and application for each instrument, equipment, and monitoring device.
   2. Brief description of intended use.
   3. Calibration record showing the following:
      a. Calibration agency, including name and contact information.
      b. Last date of calibration.
      c. Range of values for which calibration is valid.
      d. Certification of accuracy.
      e. N.I.S.T. traceability certification for calibration equipment.
      f. Due date of the next calibration.

H. Test Reports:
   1. Pre-Startup Report: Prior to start up of equipment or a system, submit signed, completed construction checklists.
   2. Test Data Reports: At the end of each day in which tests are conducted, submit test data for tests performed.
   3. Commissioning Issues Reports: Daily, at the end of each day in which tests are conducted, submit commissioning issue reports for tests for which acceptable results were not achieved.
   4. Weekly Progress Report: Weekly, at the end of each week in which tests are conducted, submit a progress report.
   5. Data Trend Logs: Submit data trend logs at the end of the trend log period.
   6. System Alarm Logs: Daily, at the start of days following a day in which tests were performed, submit print-out of log of alarms that occurred since the last log was printed.

I. Construction Checklists:
   1. Material checks.
   2. Installation checks.
   3. Startup procedures, where required.

1.8 CLOSEOUT SUBMITTALS

A. Commissioning Report:
1. At Construction Phase Commissioning Completion, include the following:
   a. Pre-startup reports.
   b. Approved test procedures.
   c. Test data forms, completed and signed.
   d. Progress reports.
   e. Commissioning issues report log.
   f. Commissioning issues reports showing resolution of issues.
   g. Correspondence or other documents related to resolution of issues.
   h. Other reports required by commissioning.
   i. List unresolved issues and reasons they remain unresolved and should be exempted from the requirements for Construction Phase Commissioning Completion.
   j. Report shall include commissioning work of Contractor.

B. Request for Certificate of Construction Phase Commissioning Completion.

C. Operation and Maintenance Data: For proprietary test equipment, instrumentation, and tools to include in operation and maintenance manuals.

1.9 QUALITY ASSURANCE

A. Commissioning Coordinator Qualifications:
   1. Documented experience commissioning systems of similar complexity to those contained in these documents on at least three projects of similar scope and complexity.
   2. Certification of commissioning process expertise. The following certifications are acceptable. Owner reserves the right to accept or reject certifications as evidence of qualification.

B. Calibration Agency Qualifications: Certified by the American Association of Laboratory Accreditation that the calibration agency complies with minimum requirements of ISO/IEC 17025.

1.10 COMMISSIONING AUTHORITY’S RESPONSIBILITIES

A. Commissioning Authority’s Responsibilities: As follows:
   1. Organize and lead the commissioning team.
   2. Provide the commissioning plan.
   3. Convene commissioning team meetings.
   4. Provide Project-specific construction checklists and commissioning process
test procedures.
5. Witness systems, assemblies, equipment, and component startup.

1.11 OWNER’S RESPONSIBILITIES

A. Provide the Owner’s Project Requirements documentation to the Commissioning Authority and Contractor for information and use.

B. Assign operation and maintenance personnel and schedule them to participate in commissioning team activities.

C. Provide the Basis of Design documentation to the Commissioning Authority and Contractor for use in developing the commissioning plan, systems manual, and operation and maintenance training plan.

PART 2 - PRODUCTS

2.1 TEST EQUIPMENT, INSTRUMENTATION, AND TOOLS

A. Test equipment and instrumentation required to perform the commissioning shall remain the property of Contractor unless otherwise indicated.

B. Test equipment and instrumentation required to perform commissioning shall comply with the following criteria:
   1. Be manufactured for the purpose of testing and measuring tests for which they are being used and have an accuracy to test and measure system performance within the tolerances required to determine acceptable performance.
   2. Calibrated and certified.
      a. Calibration performed and documented by a qualified calibration agency according to national standards applicable to the tools and instrumentation being calibrated. Calibration shall be current according to national standards or within test equipment and instrumentation manufacturer’s recommended intervals, whichever is more frequent, but not less than within 6 months of initial use on Project. Calibration tags permanently affixed.
      b. Repair and recalibrate test equipment and instrumentation if dismantled, dropped, or damaged since last calibrated.
   3. Maintain test equipment and instrumentation.
   4. Use test equipment and instrumentation only for testing or monitoring Work for which they are designed.

2.2 PROPRIETARY TEST EQUIPMENT, INSTRUMENTATION, AND TOOLS

A. Proprietary test equipment, instrumentation, and tools are those manufactured or prescribed by tested equipment manufacturer and required for work on its equipment as a condition of equipment warranty, or as otherwise required to service, repair, adjust, calibrate, or perform work on its equipment.
   1. Identify proprietary test equipment, instrumentation, and tools required in the
test equipment identification list submittal.

2. Proprietary test equipment, instrumentation, and tools shall become the property of Owner at Substantial Completion.

2.3 REPORT FORMAT AND ORGANIZATION

A. General Format and Organization:
   1. Submit report electronically via the PMIS.
   2. .
   3. .
   4. Electronic Data: Portable document format (PDF); a single file with outline-organized bookmarks for major and minor tabs and tab contents itemized for specific reports.

B. Commissioning Report:
   1. Include a table of contents and in index to each test.
   2. Include major tabs for each Specification Section.
   3. Include minor tabs for each test.
   4. Within each minor tab, include the following:
      a. Test specification.
      b. Pre-startup reports.
      c. Approved test procedures.
      d. Test data forms, completed and signed.
      e. Commissioning issue reports, showing resolution of issues, and documentation related to resolution of issues pertaining to a single test. Group data forms, commissioning issue reports showing resolution of issues, and documentation related to resolution of issues for each test repetition together within the minor tab, in reverse chronological order (most recent on top).

PART 3 - EXECUTION

3.1 PREPARATION

A. Review preliminary construction checklists and preliminary test procedures and data forms.

3.2 CONSTRUCTION CHECKLISTS

A. Construction checklists cannot modify or conflict with the Contract Documents.

B. Create construction checklists based on actual systems and equipment to be included in Project.

C. Material Checks: Compare specified characteristics and approved submittals with materials as received. Include factory tests and other evaluations, adjustments, and
tests performed prior to shipment, if applicable.

1. Services connection requirements, including configuration, size, location, and other pertinent characteristics.
2. Included optional features.
3. Delivery Receipt Check: Inspect and record physical condition of materials and equipment on delivery to Project site, including agreement with approved submittals, cleanliness, and lack of damage.
4. Installation Checks:
   a. Location according to Drawings and approved Shop Drawings.
   b. Configuration.
   c. Compliance with manufacturers’ written instructions.
   d. Attachment to structure.
   e. Access clearance to allow for maintenance, service, repair, removal, and replacement without the need to disassemble or remove other equipment or building elements. Access coordinated with other building elements and equipment, including, but not limited to, ceiling and wall access panels, in a manner consistent with OSHA fall-protection regulation and safe work practices.
   f. Utility connections are of the correct characteristics, as applicable.
   g. Correct labeling and identification.
   h. Startup Checks: Verify readiness of equipment to be energized. Include manufacturer’s standard startup procedures and forms.

D. Startup: Perform and document initial operation of equipment to prove that it is installed properly and operates as intended according to manufacturer’s standard startup procedures, minimum.

E. Performance Tests:
   1. Static Tests: As specified elsewhere, including, but not limited to, duct and pipe leakage tests, insulation-resistance tests, and water-penetration tests.
   2. Component Performance Tests: Tests evaluate the performance of an input or output of components under a full range of operating conditions.
   3. Equipment and Assembly Performance Tests: Test and evaluate performance of equipment and assemblies under a full range of operating conditions and loads.
   4. System Performance Tests: Test and evaluate performance of systems under a full range of operating conditions and loads.
   5. Intersystem Performance Tests: Test and evaluate the interface of different systems under a full range of operating conditions and loads.

3.3 GENERAL EXECUTION REQUIREMENTS

A. Schedule and coordinate commissioning with the construction schedule.

B. Perform activities identified in construction checklists, including tests, and document
C. Perform test demonstrations for Owner’s witness. Unless otherwise indicated, demonstrate tests for 100 percent of work to which the test applies. In some instances, demonstration of a random sample of other than 100 percent of the results of a test is specified.

1. Where sampling is specified, the sampling plan and procedure for the test demonstration shall be determined using ASQ Z1.4.
   a. General Inspection: Level II.
   b. Acceptance Quality Limit of 1.5.

2. The “lot size” in ASQ Z1.4 is the sum of the number of items to which the test demonstration applies, as described in the scope subparagraph of each test.

3. On determination of the sample size, the samples shall be selected randomly by Owner’s witness at the time of the test demonstration.

4. Include in the Commissioning Plan a detailed list of the test demonstrations with lot and sample quantities for each test.

D. Report test data and commissioning issue resolutions.

E. Schedule personnel to participate in and perform Commissioning-Process Work.

F. Installing contractors’ commissioning responsibilities include, but are not limited to, the following:

1. Operating the equipment and systems they install during tests.

2. In addition, installing contractors may be required to assist in tests of equipment and systems with which their work interfaces.

3.4 COMMISSIONING COORDINATOR RESPONSIBILITIES

A. Management and Coordination: Manage, schedule, and coordinate commissioning, including, but not limited to, the following:

1. Coordinate with subcontractors on their commissioning responsibilities and activities.

2. Obtain, assemble, and submit commissioning documentation.

3. Attend periodic on-site commissioning meetings. Comply with requirements in Section 01 31 00 "Project Management and Coordination.”

4. Develop and maintain the commissioning schedule. Integrate commissioning schedule into the construction schedule. Update schedule at specified intervals.

5. Review and comment on preliminary test procedures and data forms.

6. Report inconsistencies and issues in system operations.

7. Verify that tests have been completed and results comply with acceptance criteria, and that equipment and systems are ready before scheduling test demonstrations.

8. Direct and coordinate test demonstrations.

9. Coordinate witnessing of test demonstrations by Owner’s witness.
10. Coordinate and manage training. Be present during training sessions to direct video recording, present training and direct the training presentations of others. Comply with requirements in Section 01 79 00 "Demonstration and Training."

11. Prepare and submit specified commissioning reports.

12. Track commissioning issues until resolution and retesting is successfully completed.

13. Retain original records of Commissioning-Process Work, organized as required for the commissioning report. Provide Owner’s representative access to these records on request.


3.5 COMMISSIONING TESTING

A. Quality Control: Construction checklists, including tests, are quality-control tools designed to improve the functional quality of Project. Test demonstrations evaluate the effectiveness of Contractor’s quality-control process.

B. Owner’s witness will be present to witness commissioning work requiring the signature of an Owner’s witness, including, but not limited to, test demonstrations. Owner’s project manager will coordinate attendance by Owner’s witness with Contractor’s published commissioning schedule. Owner’s witness will provide no labor or materials in the commissioning work. The only function of Owner’s witness will be to observe and comment on the progress and results of commissioning.

C. Construction Checklists:
   1. Complete construction checklists as Work is completed.
   2. Distribute construction checklists to installing contractors before they start work.
   3. Installers:
      a. Verify installation using approved construction checklists as Work proceeds.
      b. Complete and sign construction checklists weekly for work performed during the preceding week.
   4. Provide Commissioning Authority access to construction checklists.

D. Installation Compliance Issues: Record as an installation compliance issue Work found to be incomplete, inaccessible, at variance with the Contract Documents, nonfunctional, or that does not comply with construction checklists. Record installation compliance issues on the construction checklist at the time they are identified. Record corrective action and how future Work should be modified before signing off the construction checklist.

E. Pre-Startup Audit: Prior to executing startup procedures, review completed installation checks to determine readiness for startup and operation. Report conditions, which, if left uncorrected, adversely impact the ability of systems or equipment to operate satisfactorily or to comply with acceptance criteria. Prepare pre-startup report for each system.
F. Test Procedures and Test Data Forms:
1. Test procedures shall define the step-by-step procedures to be used to execute tests and test demonstrations.
2. Test procedures shall be specific to the make, model, and application of the equipment and systems being tested.
3. Completed test data forms are the official records of the results of tests.
4. Commissioning Authority will provide to Contractor preliminary test procedures and test data forms for performance tests and commissioning tests after approval of Product Data, Shop Drawings, and preliminary operation and maintenance manuals.
5. Review preliminary test procedures and test data forms and provide comments within 10 working days of receipt from Commissioning Authority. Review shall address the following:
   a. Equipment protection and warranty issues, including, but not limited to, manufacturer’s installation and startup recommendations, and operation and maintenance instructions.
   b. Applicability of the procedure to the specific software, equipment, and systems approved for installation.
6. After Contractor has reviewed and commented on the preliminary test procedures and test data forms, Commissioning Authority will revise and reissue the approved revised test procedures and test data forms marked “Approved for Testing.”
7. Use only approved test procedures and test data forms marked “Approved for Testing” to perform and document tests and test demonstrations.

G. Performance of Tests:
1. The sampling rate for tests is 100 percent. The sampling rate for test demonstrations is 100 percent unless otherwise indicated.
2. Perform and complete each step of the approved test procedures in the order listed.
3. Record data observed during performance of tests on approved data forms at the time of test performance and when the results are observed.
4. Record test results that are not within the range of acceptable results on commissioning issue report forms in addition to recording the results on approved test procedures and data forms according to the “Commissioning Compliance Issues” paragraph in this Article.
5. On completion of a test, sign the completed test procedure and data form. Tests for which test procedures and data forms are incomplete, not signed, or which indicate performance that does not comply with acceptance criteria will be rejected. Tests for which test procedures and data forms are rejected shall be repeated and results resubmitted.

H. Performance of Test Demonstration:
1. Perform test demonstrations on a sample of tests after test data submittals are approved. The sampling rate for test demonstrations shall be 100 percent unless otherwise indicated in the individual test specification.
2. Notify Owner’s witness at least 3 working days in advance of each test demonstration.

3. Perform and complete each step of the approved test procedures in the order listed.

4. Record data observed during performance of test demonstrations on approved data forms at the time of demonstration and when the results are observed.

5. Provide full access to Owner’s witness to directly observe the performance of all aspects of system response during the test demonstration. On completion of a test demonstration, sign the completed data form and obtain signature of Owner’s witness at the time of the test to authenticate the reported results.

6. Test demonstration data forms not signed by Contractor and Owner’s witness at the time of the completion of the procedure will be rejected. Test demonstrations for which data forms are rejected shall be repeated and results shall be resubmitted.
   a. Exception for Failure of Owner’s Witness to Attend: Failure of Owner’s witness to be present for agreed-on schedule of test demonstration shall not delay Contractor. If Owner’s witness fails to attend a scheduled test, Contractor shall proceed with the scheduled test. On completion, Contractor shall sign the data form for Contractor and for Owner’s witness, and shall note the absence of Owner’s witness at the scheduled time and place.

7. False load test requirements are specified in related Sections.
   a. Where false load testing is specified, provide temporary equipment, power, controls, wiring, piping, valves, and other necessary equipment and connections required to apply the specified load to the system. False load system shall be capable of steady-state operation and modulation at the level of load specified. Equipment and systems permanently installed in this work shall not be used to create the false load without Architect’s written approval.

I. Commissioning Compliance Issues:
   1. Test results that are not within the range of acceptable results are commissioning compliance issues.
   2. Track and report commissioning compliance issues until resolution and retesting are successfully completed.
   3. If a test demonstration fails, determine the cause of failure. Direct timely resolution of issue and then repeat the demonstration. If a test demonstration must be repeated due to failure caused by Contractor work or materials, reimburse Owner for billed costs for the participation in the repeated demonstration.
   4. Test Results: If a test demonstration fails to meet the acceptance criteria, perform the following:
      a. Complete a commissioning compliance issue report form promptly on discovery of test results that do not comply with acceptance criteria.
      b. Submit commissioning compliance issue report form within 2 working days of the test.
c. Determine the cause of the failure.

d. Establish responsibility for corrective action if the failure is due to conditions found to be Contractor’s responsibility.


   a. Exception: If an entire class of devices is determined to exhibit the identical issue, they may be reported on a single commissioning compliance issue report (for example, if all return-air damper actuators that are specified to fail to the open position are found to fail to the closed position, they may be reported on a single commissioning issue report. If a single commissioning issue report is used for multiple commissioning compliance issues, each device shall be identified in the report, and the total number of devices at issue shall be identified.

   b. Complete and submit Part 1 of the commissioning compliance issue report immediately when the condition is observed.

   c. Record the commissioning compliance issue report number and describe the deficient condition on the data form.

   d. Resolve commissioning compliance issues promptly. Complete and submit Part 2 of the commissioning compliance issue report when issues are resolved.

6. Diagnose and correct failed test demonstrations as follows:

   a. Perform diagnostic tests and activities required to determine the fundamental cause of issues observed.

   b. Record each step of the diagnostic procedure prior to performing the procedure. Update written procedure as changes become necessary.

   c. Record the results of each step of the diagnostic procedure.

   d. Record the conclusion of the diagnostic procedure on the fundamental cause of the issue.

   e. Determine and record corrective measures.

   f. Include diagnosis of fundamental cause of issues in commissioning compliance issue report.

7. Retest:

   a. Schedule and repeat the complete test procedure for each test demonstration for which acceptable results are not achieved. Obtain signature of Owner’s witness on retest data forms. Repeat test demonstration until acceptable results are achieved. Except for issues that are determined to result from design errors or omissions, or other conditions beyond Contractor’s responsibility, compensate Owner for direct costs incurred as the result of repeated test demonstrations to achieve acceptable results.

   b. For each repeated test demonstration, submit a new test data form, marked “Retest.”

8. Do not correct commissioning compliance issues during test demonstrations.

   a. Exceptions will be allowed if the cause of the issue is obvious and
resolution can be completed in less than 5 minutes. If corrections are made under this exception, note the deficient conditions on the test data form and issue a commissioning compliance issue report. A new test data form, marked “Retest,” shall be initialed after the resolution has been completed.

3.6 COMMISSIONING MEETINGS

A. Commissioning Authority will schedule and conduct commissioning meetings. Comply with requirements in Section 01 31 00 "Project Management and Coordination."

3.7 SEQUENCING

A. Sequencing of Commissioning Verification Activities: For a particular material, item of equipment, assembly, or system, perform the following in the order listed unless otherwise indicated:

1. Construction Checklists:
   a. Material checks.
   b. Installation checks.
   c. Startup, as appropriate. Some startup may depend on component performance. Such startup may follow component performance tests on which the startup depends.
   d. Performance Tests:
      i) Static tests, as appropriate.
      ii) Component performance tests. Some component performance tests may depend on completion of startup. Such component performance tests may follow startup.
      iii) Equipment and assembly performance tests.
      iv) System performance tests.
      v) Intersystem performance tests.

2. Commissioning tests.

B. Before performing commissioning tests, verify that materials, equipment, assemblies, and systems are delivered, installed, started, and adjusted to perform according to construction checklists.

C. Verify readiness of materials, equipment, assemblies, and systems by performing tests prior to performing test demonstrations. Notify Architect if acceptable results cannot be achieved due to conditions beyond Contractor’s control or responsibility.

D. Commence tests as soon as installation checks for materials, equipment, assemblies, or systems are satisfactorily completed. Tests of a particular system may proceed prior to completion of other systems, provided the incomplete work does not interfere with successful execution of test.

3.8 SCHEDULING
Commence commissioning as early in the construction period as possible.

B. Commissioning Schedule: Integrate commissioning into Contractor’s Construction Schedule. Refer to Section 01 23 00 "Construction Progress Documentation" for requirements.
   1. Include detailed commissioning activities in monthly updated Contractor’s Construction Schedule and short interval schedule submittals.
   2. Schedule the start date and duration for the following commissioning activities:
      a. Submittals.
      b. Preliminary operation and maintenance manual submittals.
      c. Installation checks.
      d. Startup, where required.
      e. Performance tests.
      f. Performance test demonstrations.
      g. Commissioning tests.
      h. Commissioning test demonstrations.
   3. Schedule shall include a line item for each installation check, startup, and test activity specific to the equipment or systems involved.
   4. Determine milestones and prerequisites for commissioning. Show commissioning milestones, prerequisites, and dependencies in monthly updated critical-path-method construction schedule and short interval schedule submittals.

C. Two-Week Look-Ahead Commissioning Schedule:
   1. Two weeks prior to the beginning of tests, submit a detailed two-week look-ahead schedule. Thereafter, submit updated two-week look-ahead schedules weekly for the duration of commissioning.
   2. Two-week look-ahead schedules shall identify the date, time, beginning location, Contractor personnel required, and anticipated duration for each startup or test activity.
   3. Use two-week look-ahead schedules to notify and coordinate participation of Owner’s witnesses.

D. Owner’s Witness Coordination:
   1. Coordinate Owner’s witness participation via Architect.
   2. Notify Architect of commissioning schedule changes at least 2 working days in advance for activities requiring the participation of Owner’s witness.

3.9 COMMISSIONING REPORTS

A. Test Reports:
   1. Pre-startup reports include observations of the conditions of installation, organized into the following sections:
a. Equipment Model Verification: Compare contract requirements, approved submittals, and provided equipment. Note inconsistencies.

b. Preinstallation Physical Condition Checks: Observe physical condition of equipment prior to installation. Note conditions including, but not limited to, physical damage, corrosion, water damage, or other contamination or dirt.

c. Preinstallation Component Verification Checks: Verify components supplied with the equipment, preinstalled or field installed, are correctly installed and functional. Verify external components required for proper operation of equipment correctly installed and functional. Note missing, improperly configured, improperly installed, or nonfunctional components.

d. Summary of Installation Compliance Issues and Corrective Actions: Identify installation compliance issues and the corrective actions for each. Verify that issues noted have been corrected.

e. Evaluation of Systems Readiness for Startup: For each item of equipment for each system for which startup is anticipated, document in summary form acceptable to Owner, completion of equipment model verification, preinstallation physical condition checks, preinstallation component verification checks, and completion of corrective actions for installation compliance issues.

2. Test data reports include the following:

a. “As-tested” system configuration. Complete record of conditions under which the test was performed, including, but not limited to, the status of equipment, systems, and assemblies; temporary adjustments and settings; and ambient conditions.

b. Data and observations, including, but not limited to, data trend logs, recorded during the tests.

c. Signatures of individuals performing and witnessing tests.

d. Data trend logs accumulated overnight from the previous day of testing.

3. Commissioning Compliance Issues Reports: Report as commissioning compliance issues results of tests and test demonstrations that do not comply with acceptance criteria. Report only one issue per commissioning compliance issue report. Use sequentially numbered facsimiles of commissioning compliance issue report form approved by Owner. Distribute commissioning compliance issue reports to parties responsible for taking corrective action. Identify the following:

a. Commissioning compliance issue report number. Assign unique, sequential numbers to individual commissioning compliance issue reports when they are created, to be used for tracking.

b. Action distribution list.

c. Report date.

d. Test number and description.

e. Equipment identification and location.

f. Briefly describe observations about the performance associated with failure to achieve acceptable results. Identify the cause of failure if
apparent.
g. Diagnostic procedure plan to determine the cause (include in initial submittal).
h. Diagnosis of fundamental cause of issues as specified below (include in resubmittal).
i. Fundamental cause of unacceptable performance as determined by diagnostic tests and activities.
j. When issues have been resolved, update, and resubmit the commissioning issue report forms by completing Part 2. Identify resolution taken and the dates and initials of the persons making the entries.
k. Schedule for retesting.

4. Weekly progress reports include information for tests conducted since the preceding report and the following:
   a. Completed data forms.
   b. Equipment or system tested, including test number, system or equipment tag number and location, and notation about the apparent acceptability of results.
   c. Activities scheduled but not conducted per schedule.
   d. Commissioning compliance issue report log.
   e. Schedule changes for remaining Commissioning-Process Work, if any.

5. Data trend logs shall be initiated and running prior to the time scheduled for the test demonstration.
   a. Trend log data format shall be multiple data series graphs. Where multiple data series are trend logged concurrently, present the data on a common horizontal time axis. Individual data series may be presented on a segmented vertical axis to avoid interference of one data series with another, and to accommodate different axis scale values. Graphs shall be sufficiently clear to interpret data within the accuracy required by the acceptance criteria.
   b. Attach to the data form printed trend log data collected during the test or test demonstration.
   c. Record, print out, and attach to the data form operator activity during the time the trend log is running. During the time the trend log is running, operator intervention not directed by the test procedure invalidates the test results.

6. System Alarm Logs: Record and print out a log of alarms that occurred since the last log was printed. Evaluate alarms to determine if the previous day’s work resulted in any conditions that are not considered “normal operation.”
   a. Conditions that are not considered “normal operation” shall be reported on a commissioning issue report attached to the alarm log. Resolve as necessary. The intent of this requirement is to discover control system points or sequences left in manual or disabled conditions, equipment left disconnected, set points left with abnormal values, or similar conditions that may have resulted from failure to fully restore systems to normal, automatic control after test completion.
3.10 CERTIFICATE OF CONSTRUCTION PHASE COMMISSIONING COMPLETION

A. When Contractor considers that construction phase commissioning, or a portion thereof which Owner agrees to accept separately, is complete, Contractor shall prepare and submit to Owner and Commissioning Authority through Architect a comprehensive list of items to be completed or corrected. Failure to include an item on such list does not alter Contractor’s responsibility to complete commissioning.

B. On receipt of Contractor’s list, Commissioning Authority will make an inspection to determine whether the construction phase commissioning or designated portion thereof is complete. If Commissioning Authority’s inspection discloses items, whether included on Contractor’s list, which is not sufficiently complete as defined in “Construction Phase Commissioning Completion” paragraph in “Definitions” Article, Contractor shall, before issuance of the Certificate of Construction Phase Completion, complete or correct such items on notification by Commissioning Authority. In such case, Contractor shall then submit a request for another inspection by Commissioning Authority to determine construction phase commissioning completion.

C. Contractor shall promptly correct deficient conditions and issues discovered during commissioning. Costs of correcting such deficient conditions and issues, including additional testing and inspections, the cost of uncovering and replacement, and compensation for Architect’s and Commissioning Authority’s services and expenses made necessary thereby, shall be at Contractor’s expense.

D. When construction phase commissioning or designated portion is complete, Commissioning Authority will prepare a Certificate of Construction Phase Commissioning that shall establish the date of completion of construction phase commissioning. Certificate of Construction Phase Commissioning Completion shall be submitted prior to requesting inspection for determining date of Substantial Completion.
SECTION 23 05 49

VARIABLE FREQUENCY DRIVES

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

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

1.02 SUMMARY

A. Section includes separately enclosed, pre-assembled, combination variable frequency drives (VFD), rated 600 V and less, solid-state, PWM, for speed control of poly-phase, squirrel-cage induction motors.

1.03 DEFINITIONS

A. Factory-Installed VFD: A VFD installed by motorized-equipment manufacturer as a component of equipment.

B. Field-Installed VFD: A VFD installed at project site. VFDs shipped with motorized-equipment but installed at project site shall be considered Field-Installed VFDs.

C. Legend:
   1. BAS: Building Automation System.
   2. EMI: Electromagnetic Interface.
   3. IBC: International Building Code
   4. ICC-ES: ICC-Evaluation Service
   5. IGBT: Insulated-Gate Bipolar Transistor.
   6. LAN: Local Area Network.
   7. LED: Light-Emitting Diode.
   8. MCP: Motor-Circuit Protector.
   9. NC: Normally Closed.
  10. NO: Normally Open.
  11. OCPD: Overcurrent Protective Device.
  14. PWM: Pulse-Width Modulation.
  15. TDD: Total Demand (harmonic current) Distortion.
  16. THD(V): Total Harmonic Voltage Demand.
  17. VFD: Variable Frequency Drive.

1.04 ACTION SUBMITTALS

A. Submittals shall be formatted per Section 230000 “General Mechanical Requirements”.

February 18, 2020

VARIABLE FREQUENCY DRIVES

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B. Product Data for each type of VFD
1. For each type and rating of VFD indicated, include features, performance, electrical ratings, operating characteristics, location of wiring terminations, conduit entry and ground lug locations, shipping and operating weights, and furnished specialties and accessories.

C. Shop Drawings
1. For each VFD indicated, include dimensioned plans, elevations, and sections; and conduit entry locations and sizes, mounting arrangements, and details, including required clearances and service space around equipment.
2. Show tabulations of installed devices, equipment features, and ratings. Include the following:
   a. Each installed VFD’s type and details.
   b. Factory-installed devices.
   c. Enclosure types and details.
   d. Nameplate legends.
   e. Short-circuit current (withstand) rating of enclosure unit.
   f. Features, characteristics, ratings, and factory settings of each VFD and installed devices.
   g. Specified Modifications.
3. Schematic and Connection Wiring Diagrams for power, signal, and control wiring.

D. Manufacturer Seismic Qualification Certification: Submit certification that VFDs, accessories, and components will withstand seismic forces defined in Section 230548 "Vibration and Supports for HVAC." Include the following:
1. Basis for Certification: Indicate whether withstand certification is based on actual test of assembled components or on calculation.
   a. The term "withstand" means "the unit will remain in place without separation of any parts from the device when subjected to the seismic forces specified."
   b. The term "withstand" means "the unit will remain in place without separation of any parts from the device when subjected to the seismic forces specified and the unit will be fully operational after the seismic event."
2. Dimensioned Outline Drawings of Equipment Unit: Identify center of gravity and locate and describe mounting and anchorage provisions.
3. Detailed description of equipment anchorage devices on which the certification is based and their installation requirements.

E. Qualification Data: For manufacturer and testing agency.

F. Test Report: Field quality-control test reports.

1.05 CLOSEOUT SUBMITTALS

A. Operation and Maintenance data: For VFDs to include in emergency, operation, and maintenance manuals.
1. Manufacturer’s written instructions for testing and adjusting thermal-magnetic circuit breaker and MCP trip settings.
2. Manufacturer’s written instructions for setting field-adjustable overload relays.
3. Manufacturer’s written instructions for testing, adjusting, and reprogramming microprocessor control modules.
4. Manufacturer’s written instructions for setting field-adjustable timers, controls, and status and alarm points.

1.06 MAINTENANCE MATERIAL SUBMITTALS

A. Furnish extra materials described below that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.
   1. Power Fuses: equal to 10 percent of quantity installed for each size and type, but no fewer than three of each size and type.
   2. Control Power Fuses: equal to 10 percent of quantity installed for each size and type, but no fewer than two of each size and type.
   3. Indicating Lights: Two of each type and color installed.
   4. Auxiliary Contacts: Furnish one spare(s) for each size and type of magnetic controller installed.
   5. Power Contacts: Furnish three spares for each size and type of magnetic contactor installed.

1.07 QUALITY ASSURANCE

A. Manufacturer Qualification: A qualified manufacturer. Maintain, within 100 miles of Project site, a service center capable of providing training, parts, and emergency maintenance and repairs.

B. Testing Agency Qualifications: An independent testing agency, acceptable to authorities having jurisdiction, and is a member company of NETA or an NRTL.
   1. Testing Agency’s Field Supervisor: Person currently certified by NETA to supervise on-site testing.

C. Electrical Components, Devices, and Accessories: listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

D. Source Limitations: Obtain factory and field-installed VFD’s of a single type through one source from a single manufacturer.

E. VFD’s and options shall be UL listed as a complete assembly. The base VFD shall be UL listed for 100 KAIC without the need for input fuses.

1.08 DELIVERY, STORAGE, AND HANDLING

A. Deliver VFD’s in shipping splits of lengths that can be moved past obstructions in delivery path.
B. Store VFDs indoors in clean, dry space with uniform temperature to prevent condensation. Protect VFDs from exposure to dirt, fumes, water, corrosive substances, and physical damage.

C. If stored in space that is not permanently enclosed and air conditioned
   1. Cover VFDs to protect them from weather, dirt, dust, corrosive substances, and physical damage.
   2. Remove loose packing and flammable materials from inside controllers.
   3. Install electric heating of sufficient wattage to prevent condensation.

1.09 PROJECT CONDITIONS

A. Environmental/Service Limitations: Rate equipment for continuous operation, capable of driving full load without derating, under the following conditions unless otherwise indicated:
   1. Ambient temperature, 32 to 105°F.
   2. Ambient Storage Temperature: Not less than minus 4°F and not exceeding 140°F.
   3. 0% to 95% relative humidity, non-condensing.
   4. Elevation: Not exceeding 3,300 feet without derating.
   5. AC line voltage variation, -35% to +30% of nominal.

B. Interruption of Existing Electrical Systems: Do not interrupt electrical systems in facilities occupied by the Owner or others unless permitted under the following conditions, and then only after arranging to provide temporary electrical service according to requirements indicated:
   1. Notify the Owner’s Representative no fewer than three weeks in advance of proposed interruption of electrical systems.
   2. Indicate method of providing temporary electrical service.
   3. Do not proceed with interruption of electrical systems with the Owner’s Representative’s written permission.
   4. Comply with NFPA-70E.

C. Product Selection for Restricted Space: Drawings indicate maximum dimensions for VFDs, including clearances between VFDs, and adjacent surfaces and other items.

1.10 COORDINATION

A. Coordinate the features of motors, load characteristics, installed units, and accessory devices of each VFD to be compatible with the following:
   1. Torque, speed, and horsepower requirements of the load.
   2. Designed and labeled for use with each motor throughout speed range without overheating
   3. Ratings and characteristics of supply circuit and required control sequence.
   4. Ambient and environmental conditions of installation location.

B. Coordinate layout and installation of VFDs with other construction including conduit, piping, equipment, and adjacent surfaces. Maintain required workspace clearances and required clearances for equipment access doors and panels.
1.11 WARRANTY

A. Special Warranty: Manufacturer’s standard form in which manufacturer agrees to repair or replace VFDs that fail in materials or workmanship within specified warranty period.
   1. Warranty Period: Five years from date of start-up.

PART 2 - PRODUCTS

2.01 MANUFACTURER

A. Yaskawa
B. ABB
C. Danfoss

2.02 GENERAL

A. VFD’s serving mechanical equipment shall be provided from one manufacturer.

B. Furnish complete variable frequency drives as specified herein for the equipment designated as variable speed.
   1. All standard and optional features shall be included within the VFD enclosure, unless otherwise specified.
   2. Include inlet air filters.
   3. Interior VFD enclosure shall be ventilated and have NEMA 1 rating, unless otherwise specified

C. The VFD shall convert three-phase, 60 Hz utility power to adjustable voltage and frequency, three-phase power for stepless motor speed control from 10% to 100% of the motor’s 60 Hz speed. Input voltage shall be as specified on the drawing schedules.

D. The VFD shall include a converter and an inverter section. The converter section shall convert fixed frequency and voltage AC utility power to DC voltage. The inverter section of the VFD shall invert the DC voltage into a quality output waveform, with adjustable voltage and frequency for stepless motor speed control. The VFD shall maintain a constant V/Hz ratio

E. The VFD and options shall be tested to ANSI/UL Standard 508. The complete drive, including all specified options, shall be UL or ETL listed.

F. Power line noise shall be limited to a voltage distortion factor and line notch depth as defined in IEEE Standard 519-2014, IEEE Recommended Practice and Requirements for Harmonic Control in Electrical Power Systems. The total voltage distortion shall not exceed 5%.

1.
G. PWM type drives shall include EMI/RFI filters that meet EN61800-3 for First Environment restricted level.

H. Motor noise as a result of the VFD shall be limited to three dB across the line operation, measured at three feet from the motor’s center line.

I. The VFD’s full load amp rating shall meet or exceed NEC Table 430-150.

J. Protective Features:
1. Individual motor overload protection for each motor controlled.
2. Protection against input power undervoltage, overvoltage, and phase loss.
3. Protection against output current overload and instantaneous over current.
4. Protection against exceeding temperature limits within VFD enclosure.
5. Protection against overvoltage on the DC bus.
6. Protect VFD from sustained power or phase loss. Undervoltage trip activates automatically when line voltage drops more than 10% below rated input voltage.
7. Automatically reset faults due to undervoltage, overvoltage, phase loss, or exceeding temperature limits.
8. Protection against output short circuit and motor winding shorting to case faults, as defined by UL 508.
9. Status lights or digital display for indication of individual fault conditions.
10. Controller capable of operating without a motor or any other equipment connected to the drive output to facilitate start-up and troubleshooting.
11. The VFD shall have a dual 5% impedance DC link reactor on the positive and negative rails of the DC buss to minimize power line harmonics and protect the VFD from power line transients.
   a. The chokes shall be non-saturating. Swinging chokes that do not provide full harmonic filtering throughout the entire range are not acceptable.
   b. VFDs with saturating (non-linear) DC link reactors shall require an additional 3% AC line reactor to provide acceptable harmonic performance at full load, where harmonic performance is most critical.

K. Interface Features
1. Door mounted Hand/Off/Auto selector switch to start and stop the VFD. In the AUTO position, the VFD will start/stop from a remote contact closure. In the HAND position, the VFD will run regardless of the remote contact position.
3. Local selector switch: Motor speed is determined by the manual speed control.
4. Power/On light to indicate that the VFD is receiving utility power.
5. Fault light to indicate that the VFD has tripped on a fault condition.
6. Digital meter with selector switch to indicate percent speed and percent load.
7. A set of form-C, dry contacts to indicate when the VFD is in the run mode.
8. A set of form-C, dry contacts to indicate when the VFD is in the fault mode.
9. A 0-10VDC or 4020 mA output signal to vary in direct proportion to the controller’s speed.
10. VFD to have terminal strip to accept N.C. safety contacts. VFD to safety shut down in drive or by-pass mode when contacts open.
11. VFD to accept an additional N.C. contact to interface with the Hand/Off/Auto switch for remote Stop/Start control.
VARIABLE FREQUENCY DRIVES

12. VFD shall accept an external 0-10 VDC or 4-20 mA speed control signal.
13. VFD shall have Proportional Integral Derivative (PID) loop control for VFD operation and independent PID loop control for Owner use.

L. Adjustments
1. Maximum speed, adjustable 50-100% base speed.
2. Minimum speed, adjustable 0-50% base speed.
3. Acceleration time, adjustable 3-60 seconds.
4. Deceleration times, adjustable 3-60 seconds with override circuit to prevent nuisance trips if deceleration time is set too short.
5. Current limit, adjustable 0-105%.
6. Overload trip set point.
7. Offset and gain to condition the input speed signal.

M. Special Features
1. The following special features shall be included in the VFD enclosure:
   a. VFD shall include a communication port with standard protocols (LON/BACnet/Modbus) to match Owner DDC system. Coordinate with DDC manufacturer to provide a seamless interface between the VFD and DDC system.
   b. All panels shall be marked for 100,000 AMP short circuit current rating in compliance with UL.
   c. Provide a manual door interlocked main fused disconnect switch, pad lockable in the off position.
2. All power and low voltage terminations into and out of VFD shall be through the bottom of drive cabinet through factory provided knock-outs.
3. The VFD shall be able to provide full rated output current continuously, 110% of rated current for 60 seconds and 120% of rated torque for up to 0.5 seconds while starting. The VFD shall provide full motor torque at any selected frequency from 20 Hz to based speed while providing a variable torque V/Hz output at reduced speed. Breakaway torque of 160% shall be available.
4. The VFD shall include current sensors on all output phases.
5. The VFD shall continue to operate with reduced output without faulting with input voltage as low as 70% of the nominal voltage and shall provide full rated output for input voltages of 90% of nominal.
6. The VFD shall have a minimum of Class 20 I2t motor overload protection, which shall automatically compensate for changes in motor speed.
7. All VFDs shall have the same interchangeable customer interface keypad to allow a single programmable keypad to download information to multiple VFDs during startup procedures.
8. The VFD shall accept up to 3 feedback signals, each with independent scaling.
9. None of the above features shall affect the UL or ETL listing of the unit.
PART 3 - EXECUTION

3.01 INSTALLATION

A. Provide factory mounting brackets and attachments for VFDs. Field modification or drilling of enclosures is not permitted. Mounting brackets and supports shall not block required access and clearances for VFD.

3.02 START-UP AND COMMISSIONING SERVICE

A. The manufacturer shall provide start-up commissioning of the variable frequency drive and its optional circuits by a factory certified service technician who is experienced in start-up and repair services. The commissioning personnel shall be the same personnel that will provide the factory service and warranty repairs at the customer's site. Sales personnel and other agents who are not factory certified technicians for drive field repairs shall not be acceptable as commissioning agents. Coordinate commissioning requirements with the Commissioning Authority as specified under Section 230800 "Commissioning of HVAC."

B. Start-up services shall include checking for verification of proper operation and installation for the VFD, its options and its interface wiring to the building automation system. Included in this service shall be (as a minimum):
   1. Verification of contractor wire terminations to the VFD and its optional circuitry.
   2. Installation verification for proper operation and reliability of the VFD, the motor being drive, and the building automation system.
   3. Conform to training requirements specified elsewhere. In addition, the VFD manufacturer’s certified trainer shall provide up to one-hour of customer operator training on operation and service diagnostics at the time of the equipment commissioning.
   4. Measurements for verification of proper operation on each of the following items:
      a. Motor voltage and frequency. Verification of proper motor operation.
      b. Control input for proper building automation system interface and control calibration.
      c. Calibration check for the following setpoints (and adjustments as necessary):
         1) minimum speed
         2) maximum speed
         3) acceleration rate
         4) deceleration rate
      d. VFD manufacturer technician shall document all default and custom drive settings.
   5. Submit Start-Up and Commissioning Reports.

3.03 EXAMINATION

A. Contractor shall coordinate with Manufacturer/Supplier to verify that jobsite meets factory recommended and code required conditions for proper VFD installation prior to the installation. Additionally, contractor shall address Manufacturer/Supplier’s
recommendations to assure proper installation prior to the installation. Manufacturer/Supplier shall visit jobsite subsequent to the installation to verify VFD’s are installed properly. Items considered shall include (at a minimum):

1. Clearance spacing
2. Temperature, contamination, dust, and moisture of the environment.
3. Separate conduit installation of the motor wiring, power wiring, and control wiring.
4. Installation per the manufacturer’s recommendation.
5. Measure voltage rise, time, and magnitude.
6. Cover and protect the VFD from installation dust and contamination until the environment is cleaned and ready for operation. The VFD shall not be operated while the unit is covered.
7. VFD input and output power shall be installed in separate conduits.

END OF SECTION
SECTION 23 21 23

HYDRONIC PUMPS

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

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

1.02 SUMMARY

A. Section includes:
2. Close-coupled, end-suction centrifugal pumps.

1.03 DEFINITIONS

A. Buna-N: Nitrile rubber.

B. EPT: Ethylene propylene terpolymer.

1.04 ACTION SUBMITTALS

A. Submittals shall be formatted per Section 230000 “General Mechanical Requirements”.

B. Product Data: For each type of pump. Include certified performance curves and rated capacities, operating characteristics, furnished specialties, final impeller dimensions, and accessories for each type of product indicated. Indicate pump's operating point on curves.

C. Shop Drawings: For each pump.
1. Show pump layout and connections.
2. Include setting drawings with templates for installing foundation, anchor bolts and other anchorages.
3. Include diagrams for power, signal, and control wiring.

1.05 CLOSEOUT SUBMITTALS

A. Operation and Maintenance Data: For pumps to include in emergency, operation, and maintenance manuals.

1.06 MAINTENANCE MATERIAL SUBMITTALS

A. Furnish extra materials described below that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.
1. Mechanical Seals: One mechanical seal for each pump.
PART 2 - PRODUCTS

2.01 CLOSE-COUPLED, END-SUCTION CENTRIFUGAL PUMPS

A. Manufacturers:
   1. Taco Pumps (Basis of Design)
   2. ITT Corporation; Bell & Gossett.
   3. Armstrong Pumps

B. Description: Factory-assembled and tested, centrifugal, overhung-impeller, close-coupled, end-suction pump as defined in HI 1.1-1.2 and HI 1.3; designed for installation with pump and motor shafts mounted horizontally.

C. Pump Construction:
   1. Casing: Radially split, cast iron, with replaceable bronze wear rings, drain plug at bottom and air vent at top of volute, threaded gage tappings at inlet and outlet, and flanged connections.
   2. Impeller: ASTM B 584, cast bronze; statically and dynamically balanced, keyed to shaft, and secured with a locking cap screw.
   3. Pump Shaft: Steel, with copper-alloy shaft sleeve.
   4. Mechanical Seal: Carbon rotating ring against a ceramic seat held by a stainless-steel spring, and Buna-N bellows and gasket. Include water slinger on shaft between motor and seal.
   5. Pump Bearings: Permanently lubricated ball bearings.

D. Motor: Single speed and rigidly mounted to pump casing.
   1. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.
   2. Comply with NEMA designation, temperature rating, service factor, and efficiency requirements for motors specified in Section 230513 "Common Motor Requirements for HVAC Equipment."

E. Capacities and Characteristics: Shown in Pump Schedule on Drawings.

2.02 SEPARATELY COUPLED, VERTICALLY MOUNTED, IN-LINE CENTRIFUGAL PUMPS

A. Manufacturers:
   1. Taco Pumps
   2. ITT Corporation; Bell & Gossett.
   3. Armstrong Pumps

B. Description: Factory assembled and tested, centrifugal, overhung-impeller, separately coupled, fully epoxy painted, in-line pump as defined in HI 1.1-1.2 and HI 1.3; designed for installation with pump and motor shafts mounted vertically.

C. Pump Construction:
   1. Casing: Radially split, cast iron, with replaceable bronze wear rings, and threaded companion-flange connections.
2. Impeller: ASTM B 584, cast bronze; statically and dynamically balanced, keyed to shaft, and secured with a locking cap screw.

3. Coupling: Rigid spacer type of high tensile aluminum alloy. Coupling to be designed to be easily removed on site to reveal a space between the pump and motor shafts sufficient to remove all mechanical seal components for servicing and to be replaced without disturbing the pump or motor.


5. Seal: Mechanical seal consisting of carbon rotating ring against a ceramic seat held by a stainless-steel spring, and Buna-N or EPT bellows and gasket. Include water slinger on shaft between motor and seal.


7. Pump Bearings: [Permanently lubricated ball bearings] [Oil lubricated; bronze-journal or thrust type].

8. Condenser Water: Pump shall be fitted with a factory installed flush line.
   a. Provide in the flush line to the mechanical seal a 50-micron cartridge filter and sight flow indicator, to suit the working pressure encountered.
   b. For pumps with differential pressures exceeding 30 psig, provide the flush line to the mechanical seal cyclone type separator, with sight flow indicator.

9. Pump Stanchion: Stanchion bracket support with height based on field conditions.

D. Motor: Single speed and rigidly mounted to pump casing.
   1. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.
   2. Comply with NEMA designation, temperature rating, service factor, and efficiency requirements for motors specified in Section 230513 "Common Motor Requirements for HVAC Equipment."

E. Capacities and Characteristics: Shown in Pump Schedule on Drawings.

2.03 SEPARATELY COUPLED, BASE-MOUNTED, END-SUCTION CENTRIFUGAL PUMPS

A. Manufacturers:
   1. Armstrong Pumps, Inc.
   2. Aurora Pumps.
   3. ITT Corporation; Bell & Gossett.
   4. Paco Pumps.

B. Description: Factory-assembled and tested, centrifugal, overhung-impeller, separately coupled, end-suction pump as defined in HI 1.1-1.2 and HI 1.3; designed for base mounting, with pump and motor shafts horizontal.

C. Pump Construction:
   1. Casing: Radially split, cast iron, with replaceable bronze wear rings, threaded gage tappings at inlet and outlet, drain plug at bottom and air vent at top of
volute, and flanged connections. Provide integral mount on volute to support the
casing, and provide attached piping to allow removal and replacement of impeller
without disconnecting piping or requiring the realignment of pump and motor
shaft.
2. Impeller: ASTM B 584, cast bronze; statically and dynamically balanced, keyed
to shaft, and secured with a locking cap screw. For pumps not frequency-drive
controlled, trim impeller to match specified performance.
3. Pump Shaft: Steel, with copper-alloy shaft sleeve.
4. Seal: Mechanical seal consisting of carbon rotating ring against a ceramic seat
held by a stainless-steel spring, and Buna-N or EPT bellows and gasket.
5. Seal: Packing seal consisting of stuffing box with a minimum of four rings of
graphite-impregnated braided yarn with bronze lantern ring between center two
graphite rings, and bronze packing gland.
6. Pump Bearings: Grease-lubricated ball bearings in cast-iron housing with grease
fittings.

D. Shaft Coupling: Molded-rubber insert and interlocking spider capable of absorbing
vibration. [Couplings shall be drop-out type to allow disassembly and removal without
removing pump shaft or motor.] [EPDM coupling sleeve for variable-speed applications.]

E. Coupling Guard: Dual rated; ANSI B15.1, Section 8; OSHA 1910.219 approved; steel;
removable; attached to mounting frame.

F. Mounting Frame: Welded-steel frame and cross members, factory fabricated from
ASTM A 36/A 36M channels and angles. Fabricate to mount pump casing, coupling
guard, and motor.

G. Motor: Single speed and rigidly mounted to pump casing.
1. Electrical Components, Devices, and Accessories: Listed and labeled as defined
in NFPA 70, by a qualified testing agency, and marked for intended location and
application.
2. Comply with NEMA designation, temperature rating, service factor, and
efficiency requirements for motors specified in Section 230513 "Common Motor
Requirements for HVAC Equipment."


PART 3 - EXECUTION

3.01 EXAMINATION

A. Examine all pumps before installation. Reject pumps that are damaged.

B. Examine equipment foundations and anchor-bolt locations for compliance with
requirements for installation tolerances and other conditions affecting performance of the
Work.

C. Examine roughing-in for piping systems to verify actual locations of piping connections
before pump installation.
D. Examine foundations and inertia bases for suitable conditions where pumps are to be installed.

E. Proceed with installation only after unsatisfactory conditions have been corrected.

3.02 PUMP INSTALLATION

A. Comply with HI 1.4.

B. Install pumps to provide access for periodic maintenance including removing motors, impellers, couplings, and accessories.

C. Independently support pumps and piping so weight of piping is not supported by pumps and weight of pumps is not supported by piping.

D. Equipment Mounting:
   1. Install base-mounted pumps on cast-in-place concrete equipment bases.

3.03 ALIGNMENT

A. Engage a factory-authorized service representative to perform alignment service.

B. Comply with requirements in Hydronics Institute standards for alignment of pump and motor shaft. Add shims to the motor feet and bolt motor to base frame. Do not use grout between motor feet and base frame.

C. Comply with pump and coupling manufacturers' written instructions.

D. Adjust pump and motor shafts for angular and offset alignment by methods specified in HI 1.1-1.5, "Centrifugal Pumps for Nomenclature, Definitions, Application and Operation."
   1. Alignment shall be reverse dial indicator or laser method.
   2. Indicated run-out shall not exceed 0.001 inches.
   3. Angular and offset misalignment shall be as follows:
### Maximum Angularity and Maximum Offset

<table>
<thead>
<tr>
<th>RPM</th>
<th>Maximum Angularity</th>
<th>Maximum Offset</th>
</tr>
</thead>
<tbody>
<tr>
<td>1200</td>
<td>0.0015&quot;</td>
<td>0.001&quot;</td>
</tr>
<tr>
<td>1800</td>
<td>0.0010&quot;</td>
<td>0.001&quot;</td>
</tr>
<tr>
<td>3600</td>
<td>0.0005&quot;</td>
<td>0.001&quot;</td>
</tr>
</tbody>
</table>

E. After alignment is correct, tighten foundation bolts evenly but not too firmly. Completely fill baseplate with nonshrink, nonmetallic grout while metal blocks and shims or wedges are in place. After grout has cured, fully tighten foundation bolts.

### 3.04 CONNECTIONS

A. Comply with requirements for piping specified in Section 232113 "Hydronic Piping." Drawings indicate general arrangement of piping, fittings, and specialties.

B. Where installing piping adjacent to pump, allow space for service and maintenance.

C. Connect piping to pumps. Install valves that are same size as piping connected to pumps.

D. Install suction and discharge pipe sizes equal to or greater than diameter of pump nozzles.

E. Install check and shutoff valves on discharge side of pumps. A check valve is not required in a single pump configuration.

F. Install strainer or suction diffuser and shutoff valve on suction side of pumps.

G. Install flexible connectors with vane straighteners on suction and discharge sides of base-mounded pumps between pump casing and valves.

H. Install pressure gages on pump suction and discharge or at integral pressure-gage tapping.

I. Ground equipment according to Section 260526 "Grounding and Bonding for Electrical Systems."

J. Connect wiring according to Section 260519 "Low-Voltage Electrical Power Conductors and Cables."

### 3.05 STARTUP SERVICE

A. Engage a factory-authorized service representative to perform startup service.

1. Complete installation and startup checks according to manufacturer's written instructions.

2. Check piping connections for tightness.

3. Clean strainers on suction piping.

4. Perform the following startup checks for each pump before starting:
   a. Verify bearing lubrication.
   b. Verify that pump is free to rotate by hand and that pump for handling hot liquid is free to rotate with pump hot and cold. If pump is bound or drags, do not operate until cause of trouble is determined and corrected.
   c. Verify that pump is rotating in the correct direction.
5. Prime pump by opening suction valves and closing drains, and prepare pump for operation.
7. Open discharge valve slowly.

3.06 DEMONSTRATION

A. Engage a factory-authorized service representative to train Owner's maintenance personnel to adjust, operate, and maintain hydronic pumps as specified below:
   1. Train University's maintenance personnel on procedures and schedules for starting and stopping, troubleshooting, servicing, and maintaining pumps.
   2. Review data in maintenance manuals. Refer to Division 01.
   3. Schedule training with Owner’s Representative.

END OF SECTION
SECTION 23 74 13
CUSTOM AIR HANDLING UNITS

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

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

1.02 SUMMARY

A. Section includes central station air handling units.

B. Related Sections:
   1. Section 230000 “General Mechanical Requirements”
   2. Section 230549 “Variable Frequency Drives”
   3. Section 233113 "Metal Ducts"
   4. Section 233300 "Air Duct Accessories."

1.03 ACTION SUBMITTALS

A. The manufacturer, contractor or supplier shall include a written statement that the submitted equipment, hardware, or accessory complies with the requirement of this particular specification section.

1. The manufacturer shall resubmit this specification section showing compliance with each respective paragraphs and specified items and features.

2. All exceptions shall be clearly identified by referencing respective paragraph and other requirements along with proposed alternative.

3. Individual or partial submittals are not acceptable and will be returned without review.

B. Submittals:

1. Manufacturer shall provide the following information with each shop drawing/product data submission:

   a. All electrical, piping, and ductwork requirements, including sizes, connection locations, and connection method recommendations.

   b. Each component of the unit shall be identified. Mechanical specifications describing construction, components, and options shall be provided for the unit and all accessories. All performance data, including capacities and airside and waterside pressure drops, for components.

   c. Fan curves shall be provided for fans with the design operating points indicated. Data shall be corrected to actual operating conditions, temperatures, and altitudes.

   d. A filter schedule must be provided for each air handling unit supplied by the air handling unit manufacturer. Schedule shall detail unit tag, unit size, corresponding filter section location within the AHU, filter arrangement...
(e.g. angled/flat), filter depth, filter type (e.g. pleated media), MERV rating, and filter quantity and size.

e. A schedule detailing necessary trap height shall be provided for each air handling unit. Schedule shall detail unit tag, unit size, appropriate trap schematic with recommended trap dimensions, and unit supplied base rail height. Contractor shall be responsible for additional trap height required for trapping and insulation beyond the unit supplied base rail height by adequate housekeeping pad.

f. An electrical MCA - MOP schedule shall be provided for each electrical circuit to which field-power must be supplied. Schedule to detail unit tag, circuit description, voltage/phase/hertz, Minimum Circuit Ampacity (MCA), and calculated Maximum Overcurrent Protection (MOP).

g. Variable frequency drive (VFD) and motor data.

h. Sound Test for the AHU in accordance with AMCA Standard 300-96, Reverberant Room Method for sound testing of fans, and where relevant, AHRI Standard 260-01, Sound Ratings of Ducted Air Moving and Conditioning Equipment.

i. Airflow measuring device performance ratings in accordance with AMCA 611.

j. Static pressure profiles by component section.

k. Casing leakage rate at +/- 10”/12” w.g., specified in terms of percentage of design airflow.

l. Panel deflection data.

m. Fan balance test data showing calculations for deflection and critical speed of the shaft.

C. Shop Drawings: Include plans, elevations, sections, details, and attachments to other work.
   1. Detail equipment assemblies and indicate dimensions, weights, load distribution, required clearances, method of field assembly, components, and location and size of each field connection.
   2. Wiring Diagrams: For power, signal, and control wiring.

1.04 INFORMATIONAL SUBMITTALS

A. Coordination Drawings: Floor plans, drawn to scale, on which the following items are shown and coordinated with each other, using input from installers of the items involved:
   1. Structural supports.
   2. Piping roughing-in requirements.
   3. Wiring roughing-in requirements, including spaces reserved for electrical equipment.
   4. Access requirements including working clearances for mechanical controls and electrical equipment, tube pull clearances, and service clearances.

B. Certificates: For certification required in "Quality Assurance" Article.

1.05 CLOSEOUT SUBMITTALS

A. Operation and Maintenance Data: For each air handling unit, provide emergency, operation, and maintenance manuals.
B. Warranty

1.06 QUALITY ASSURANCE AND REGULATORY REQUIREMENTS

A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

B. NFPA Compliance: Comply with NFPA 90A for design, fabrication, and installation of air-handling units and components.

C. Comply with NFPA 70.

D. Unit shall bear an ETL label, conforming to UL Standard 1995. Units shall be provided with listing agency label affixed to the unit. In the event the unit is not ETL approved, the contractor shall, at his/her expense, provide for a field inspection by a ETL representative to verify conformance.


F. AMCA 301 – Method of Publishing Sound Ratings for Air Moving Devices.

G. AMCA 500 – Test Methods for Louver, Dampers, and Shutters

H. Certify air handling coils in accordance with AHRI Standard 410. Units shall be provided with certification label affixed to the unit. If air handling coils are not certified in accordance with AHRI Standard 410, contractor shall be responsible for expenses associated with testing of coils after installation to verify performance of coil(s). Any costs incurred to adjust coils to meet scheduled capacities shall be the sole responsibility of the contractor.

1.07 DELIVERY, STORAGE, AND HANDLING

A. Comply with manufacturer's installation instructions for rigging, unloading, and transporting units.

B. Units shall ship fully assembled up to practical shipping and rigging limitations. Units not shipped fully assembled shall have tags and airflow arrows on each section to indicate location and orientation in direction of airflow. Shipping splits shall be clearly defined on submittal drawings. Cost associated with non-conformance to shop drawings shall be the responsibility of the manufacturer. Each section shall have lifting lugs for field rigging, lifting and final placement of AHU section(s).

C. Deliver units to jobsite with fan motor(s), sheave(s), and belt(s) completely assembled and mounted in units.

D. Unit shall be shipped in a shrink-wrap or stretch-wrap to protect unit from in-transit rain and debris per ASHRAE 62.1 recommendations.
E. Installing contractor shall be responsible for storing AHU in a clean, dry place and. Contractor shall protect units from weather, construction traffic, dust, and debris.

F. Handle unit and components carefully to avoid damage to components, enclosures, and finish. Protect, pack, and secure control devices, electronic equipment, loose-shipped devices, electronic or pneumatic devices, and variable frequency devices.

1.08 WARRANTY

A. Manufacturer shall provide, at no additional cost, a standard parts warranty that covers a period of one year from unit start-up or 18 months from shipment, whichever occurs first. This warrants that all products are free from defects in material and workmanship and shall meet the capacities and ratings set forth in the equipment manufacturer's catalog and bulletins.

B. Warranty shall cover air handling unit and accessories, excluding routine maintenance parts such as filters and belts.

C. Contractor shall provide a Labor Warranty that covers a period of one year from unit start-up or 18 months from shipment, whichever occurs first.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
   1. Energy Labs (Basis of Design)
   2. Scott Springfield Manufacturing, Inc.
   3. Haakon Industries, Inc

2.02 MANUFACTURED UNIT

A. Manufacturer shall provide custom, integral base frame unit to support and raise all sections of the unit for proper trapping. Unit base frames not constructed of galvanized steel shall be chemically cleaned and coated with both a rust-inhibiting primer and finished coat of rust-inhibiting enamel.

B. Unit shall be constructed to connect to the existing multizone ductwork and to fit in to the mechanical room.

C. The unit will be partially disassembled to rig in to the mechanical room through an existing 95” x 95” opening through the south side of the mechanical room.
2.03 UNIT BASE

A. Unit base shall be fabricated from ASTM A36 welded structural steel channel or tubular steel. Formed bases are not acceptable. Bases shall be sized as a function of air handling length as follows:

Channel Construction shall be C6 x 8.2

B. Frame members shall be sized to limit deflection to L/200, minimizing deflection during rigging and installation. Intermediate tubular steel or C-Channel cross members are fully welded and located at lifting points and as needed to support internal components such as coils, fans, etc. Removable or welded lifting lugs shall be added to the perimeter channel along the longest length of the unit.

C. Structural floor panels shall be 14-gauge or thicker bright galvanized steel with deep flanges and a maximum panel width of 24” for exceptional rigidity. Flooring shall be welded or screwed to unit frame. All panels shall be fully caulked with a high performance polymer sealant. Sealant shall be low VOC and be free of silicone and isocyanates. Section splits shall be supplied with an upturned bolted flange and u-clip for field connections.

D. All access section floors shall be covered with 0.125” thick, #3003 aluminum tread plate sheets.

E. The entire floor and frame shall be foamed with a 2-part polyurethane foam. Minimum foam thickness shall be 2” underneath the base surface and ½” on flanges and angles. Provide 20 gauge galvanized steel liner.

2.04 UNIT CASING

A. Housing: The unit housing side and roof panels shall be constructed of 16-gauge galvanized steel, and shall utilize a standing seam modular panel type construction. All floors shall be constructed of 14-gauge or thicker galvanized steel. The panels shall be caulked and attached to each other, to the roof, and to the floor. All panels shall be removable. All seams shall be sealed with an acrylic latex sealant prior to assembling the panels and after completion of the assembly. All floor openings shall have 12 gauge galvanized steel-framed flange around the entire perimeter of opening for duct connection. The casing structure shall incorporate insulating thermal breaks as required so that, when fully assembled, there exists no path of continuous unbroken metal to metal conduction from inner to outer surfaces.

B. Minimum sound transmission loss (STL) through unit panels shall be as follows:

<table>
<thead>
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<th>OCTAVE BAND CENTER FREQUENCY</th>
<th>125</th>
<th>250</th>
<th>500</th>
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<td>29</td>
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<td>48</td>
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</table>

C. Insulation and Interior Liner: Insulation shall be 2” thick, 3 lbs per cubic foot density, neoprene coated fiberglass to cover all walls and ceilings. This insulation shall meet NFPA-90A smoke and flame spread requirements. All floors shall be insulated from below.
using minimum 1” thick foam to insure that the entire under surface of the floor is insulated. There shall be no raw edges of insulation exposed to the air stream. The entire interior of all units shall be lined with minimum 20 gauge bright galvanized steel liner. The interior liner of the fan sections, inlet plenum sections, and discharge plenum sections shall be perforated and the remaining shall be steel.

D. Paint Finish: After final assembly the unit exterior shall be coated with an industrial grade high solids polyurethane paint. In addition, all fan bases, springs and structural steel supports shall be coated with the same finish. The paint system shall meet AISTM B Salt spray test for 2000 hours in a 5% solution. Paint shall be applied in an environmentally sealed paint chamber specifically designed for paint application. Manufacturers without paint booth facilities shall use pre-painted 16 gage steel that meets ASTM B117 2000 hr salt spray testing.

2.05 ACCESS DOORS

A. All access doors shall be hinged, double wall, and insulated with the same material as the unit casing. Person-size access doors shall be provided in all sections requiring access for maintenance or service. The frame shall be constructed of extruded aluminum, fully welded at the corners with an anodized finish. The doors shall utilize a dual gasket seal system. All hardware provided shall be non-corrosive and all hinges and latches shall be adjustable with nuts and bolts. Access door must not leak more than 25 CFM @ 6” static pressure.

B. Door hinges and latches shall be easily adjustable, without the use of shims or special tools, to allow for a tight seal between the door and the doorframe as the gasketing material compresses over time.

C. The door hinge design shall allow for field reversing of door swing and doors shall be easily removable. Provide door detail drawing with submittal package.

D. Doors entering into any section of the air handler that contains rotating fans or fan inlet cones shall be provided with a door interlock safety switch to de-energize the fan motor upon opening.

E. All access doors shall include an 8” x 12” wire reinforced UV protected glass view window.

F. All access doors shall include instrument test holes to enable measurement of pressure drop across unit components. Test ports shall have a removable cover that completely seals the door penetration when testing and balancing is not being conducted.

G. Door latches and handles shall be constructed of corrosion-resistant material. Corrosion-resistant and UV-resistant material shall be used for outdoor applications.

2.06 FANS

A. Supply and return fans shall be direct drive Arrangement #4 plenum fans. Fan wheels shall be aluminum with aluminum extruded airfoil blades. The fan inlet shall be isolated from the cabinet by means of a neoprene-coated flexible connection. Plenum fans shall be provided with spring-style thrust restraints.
B. Each fan shall be sized to perform as indicated on the equipment schedule. The wheel diameter shall not be less than that shown on the equipment schedule. The fan shall be constructed to AMCA Standards for the Class Rating as indicated on the Equipment Schedule.

C. Fan Base, Spring Isolation, and Support Framing: Mount fan and motor on an internal, fully welded, rigid steel base. Base shall be free-floating at all four corners on spring type isolators with earthquake restraints. The fan assembly shall be isolated from the cabinet by steel springs with minimum deflection of 2.0” or as indicated on schedules. The spring isolators shall be mounted to structural steel members. All isolators shall be rated for Seismic Zone 4 requirements. The spring isolators shall be mounted on a waffle pad for vibration isolation.

D. Balancing: The fan shaft shall be sized not to exceed 75% of the first critical speed for maximum RPM of Class specified. The critical speed will refer to the top of the speed range of the fans’ AMCA class. The lateral static deflection shall not exceed 0.003” per foot of the length of the shaft. Fans shall be balanced to ISO standard G6.3. A copy of the balance test data for this project showing calculations for deflection and critical speed of the shaft and wheel assembly shall be submitted to the engineer and a copy forwarded to the Owner.

E. Fan Airflow Measurement:
   1. Manufacturer shall be Ebtron, Fan Inlet Hybrid Series or approved equal.
   2. Each fan shall have a sensor face mounted at the inlet cone without affecting fan performance or sound. Each sensor node shall be shall contain two individually wired, hermetically sealed bead-in-glass thermistors. Airflow accuracy shall be ± 2% of reading over the entire operating airflow range of not less than 0 to 5,000 fpm.
   3. A single transmitter shall be provided for each bank of fans with an integral, minimum 16-character LCD display capable of simultaneously displaying total airflow and temperature. The LCD display shall also be capable of displaying individual fan airflow and temperature readings of each independent sensor node.
   4. Output signal 4-20 mA. DC or 0-5 VDC standard.
   5. The transmitter shall be housed in a NEMA 1 enclosure with external signal tubing, power and output signal connections.

2.07 MOTORS AND DRIVES

A. All motors and drives shall be factory-installed and run tested.

B. Refer to Specification Section 230513 COMMON MOTOR REQUIREMENTS for additional requirements.

C. All motors and drives shall be factory-installed and run tested. Motors shall be premium efficiency, TEFC, NEMA frame, ball bearing type motors.

D. Fan motors shall be factory wired to an external VFD with flexible conduit of adequate length so that it will not have any effect on the vibration isolation.
E. Provide motor shaft grounding for all motors connected to VFDs.

2.08 COILS

A. All coils shall be of the plate fin extended surface type. Tubes shall be 5/8” outside diameter seamless copper with a 0.020” minimum wall thickness. Each coil shall have individually replaceable return bends of 0.025” wall thickness on both sides of the coil. Coils incorporating a “hairpin” type design are not acceptable. Tubes shall be expanded into the fin collars to provide a permanent mechanical bond.

B. The secondary surface shall be formed of 0.075” aluminum fins and shall be spaced not closer than 10 fins per inch with integral spacing collars that cover the tube surface. Headers shall be non-ferrous seamless copper, outside the air stream and provided with brazed copper male pipe connections. Drain and vent tubes shall be extended to the exterior of the air handling unit.

C. All coils shall have counter flow construction. Provide left or right hand coil connections as shown and coordinated with the bid documents and submitted for review. The use of internal restrictive devices to obtain turbulent flow will not be accepted.

D. Coil casings shall be of minimum 16-gauge, 316 stainless steel with double-formed 1-1/4” stacking flanges and 3/4” flanges on the side plates. All other coil casing shall be of 16-gauge galvanized steel. Flanged tube sheets shall have extruded tube holes to prevent raw edges of tube sheets cut into copper tubes because of thermal expansion of tubes in tube holes. Tube holes with raw sheet metal edges are not acceptable. Reinforcing shall be furnished so that the unsupported length is not over 60”. All coil assemblies shall be tested under water at 300 psi and rated for 150-psi working pressure. Headers are to be located inside the cabinet casing with only the pipe connections extending through the casing. All sides of coils shall be carefully blanked off with the same materials used for the coil casings, to ensure all air passes through the coil.

E. Intermediate condensate pans are to be furnished on multiple coil units and single coils greater than 48” high. The pans shall be 16Ga. 316 stainless steel and drain to the main drain pan through copper downspouts.

F. All water coils shall be rated in accordance with ARI Standard 410. The air handling unit manufacturer, for the purpose of sole source responsibility, shall manufacture all coils supplied for the air handlers.

2.09 PRIMARY DRAIN PANS

A. The drain pan shall be designed in accordance with ASHRAE 62.1 being of sufficient size to collect all condensation produced from the coil and sloped in three planes, pitched toward drain connections, promoting positive drainage to eliminate stagnant water conditions when unit is installed level and trapped per manufacturer's requirements.

B. Cooling coil section shall be provided with a 16 gauge, 316 stainless steel drain pan. The drain pan shall be insulated beneath the surface with 2.0”, 2-part polyurethane insulation to prevent condensation under the drain pan.

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C. Coil support members inside the drain pan shall be 10 gauge, #316 stainless steel.
D. The outlet shall be located at the lowest point of the pan and shall be sufficient diameter to preclude drain pan overflow under any normally expected operating condition.
E. All drain pan threaded connections shall be visible external to the unit and shall discharge at the side of the unit.
F. Drain connections shall be of the same material as the primary drain pan and shall extend a minimum 2-1/2-inch beyond the base to ensure adequate room for field piping of condensate traps.
G. Provide left or right hand coil connections as shown and coordinated with the bid documents and submitted for review.

2.10 FILTERS

A. Filter sections shall be fabricated as part of the air-handling unit. Filters shall be arranged for upstream loading as shown on the drawings. Provide filter-holding frames to accommodate scheduled filters. Filter frames shall be 16 Ga. galvanized steel and shall be fully welded to reduce leakage of air through corners. Internal blank-offs shall be provided by the air handling unit manufacturer as required to prevent air bypass around the filters.
B. All air filters shall be State Fire Marshal approved and listed type. Preformed filters having combustible framing shall be tested as a complete assembly. Air filters in all occupancies shall be Class 2 or better, as shown in the State Fire Marshal listing. Air filters shall be accessible for cleaning or replacement.
C. Filters shall be of the quantities and sizes as indicated on the drawings.
D. Provide one set of additional startup pre-filters.
E. Provide factory installed Setra 267 digital filter gauge with LCD display or Engineer approved equal at each filter bank.
   1. Gauge shall be complete with static pressure tips, hardware and fittings.
   2. Enclose the gauge in a protective sheet metal box with a hinged inspection door. Paint to match unit.
   3. Provide IP65/NEMA 4 rated enclosure. All transmitters shall be mounted outside the unit for access.

2.11 ECONOMIZER, OSA, RETURN HOT DECK, AND COLD DECK AIR DAMPER SECTION

A. Economizer section shall include dampers for return air and fresh air. Hot and cold deck section shall include individual zone dampers. Dampers shall be opposed blade type. Dampers shall be sized for not greater than 1200 fpm face velocity based upon gross damper area. Furnish full height 24” wide access doors for damper and linkage service.
B. Dampers shall be supplied with low leak extruded aluminum airfoil blades. Blades shall be supplied with rubber edge seals and stainless steel arc end seals. Rubber edge seals shall be backed by the damper blade to assure a positive seal in the closed position. Dampers
shall be provided with nylon bearings within extruded openings. Damper leakage shall not exceed 6 CFM/ft² at 5.0” of static pressure. Leakage testing shall be in accordance with AMCA standard 500 figure 5.5. Test results must be from independent testing laboratory.

C. Damper shall be heavy duty type.

2.12 MINIMUM OUTSIDE AIR DAMPER AND AIR FLOW MONITORING SECTION

A. The minimum OSA dampers shall have individual EBTRON, Inc “Gold Series” Model GTC116-PC airflow measuring devices or equal.

B. Each airflow-temperature measuring device shall consist of one or more sensor probes and a single, remotely mounted, 32 bit microprocessor-based transmitter capable of independently processing up to 16 independently wired sensor nodes contained in one or more probe assemblies per measurement location.

C. Probes shall be constructed of extruded, gold anodized, 6063 aluminum tubes. All internal wires within the tube shall be Kynar coated. PVC insulated conductors are not acceptable.

D. Each sensor node shall contain two individually wired, hermetically sealed bead-in-glass thermistors.

E. Thermistors shall be mounted in the sensor node using a marine-grade, waterproof epoxy. Thermistor leads shall be protected and not exposed to the environment. Thermistors leads shall not be fastened to the thermistor semiconductor substrate by weld or solder connections. Manufacturer shall provide UL listed, FEP jacketed, plenum rated cable(s) between sensor probes and the remote transmitter.

F. The airflow rate at each sensor node shall be equally weighted and arithmetically averaged by the transmitter prior to output. All integrated circuitry shall be temperature rated as ‘industrial-grade’. Submissions containing ‘commercial-grade’ integrated circuitry are not acceptable.

G. Each sensing node shall be individually wind tunnel calibrated at 16 points to NIST traceable airflow standards. Airflow accuracy shall be +/-2% of Reading over the entire operating airflow range of not less than 0 to 5,000 fpm (25.4 m/s).

H. The transmitter shall have an integral LCD display capable of simultaneously displaying airflow and temperature. Individual airflow and temperature readings of each independent sensor node shall be accessible. The transmitter shall be capable of field configuration and diagnostics using an on-board pushbutton interface and LCD display.

I. The transmitter shall have two isolated and fused analog output signals and one RS-485 network connection. One analog output shall be for velocity and the other for a temperature output or LEED alarm function. All transmitters shall have integral self-diagnostics.

J. Other than the thermistor sensors, no other electronic components shall be located at the sensing node. Signal processing circuitry on or in the sensor probe shall not acceptable.
K. Devices using chip-in-glass, epoxy-coated or diode-case chip thermistors are not acceptable.

L. Devices with RJ-45 connections exposed to the environment or having electronic circuitry mounted in or at the sensor node are not acceptable.

M. Pitot tubes and arrays are not acceptable.

N. Vortex shedding devices are not acceptable.

O. The transmitter shall be mounted outside the unit for access.

2.13 VARIABLE FREQUENCY DRIVES (VFDS)

A. Refer to Specification Section 230549 VARIABLE FREQUENCY DRIVES for additional requirements.

B. VFDs shall be provided by the AHU manufacturer for remote mounting by the contractor. VFDs shall be NEMA 12 with integral disconnect. The VFDs shall be UL listed. The listing shall allow mounting in plenum or other air handling compartments.

2.14 UNIT MOUNTED CONTROLS

A. All controls shall be field installed by the installing temperature controls contractor and coordinated with the new building automation system. These controls shall include all damper actuators, temperature sensors, pressure sensors, air flow measuring sensors, filter switches, smoke and fire detectors as indicated on the control drawings.

B. Electric and electronic controls shall be wired to a terminal block in a sheet metal enclosure located at a common location mounted on the air handling unit. All pressure sensing controls shall be piped to a common point on the unit with 1/4” compression fittings.

C. Wiring for chilled water and hot water control valves shall be field supplied by the installing contractor. Control valve wiring shall be extended to an external junction box located near the coil connections with the final wiring connection done by the temperature controls contractor. All control valves and piping specialties shall be provided by the temperature controls contractor and/or piping contractor.

D. Unit shall include factory installed conduit between sections and split for controls ready construction. If the unit requires splitting; junction boxes shall be furnished on each section to allow the control contractor to make final connections in the field. Wiring shall be clearly labeled to allow ease in final interconnections.

E. All controls shall be supplied and installed by the Division 230900 temperature controls contractor. All wiring shall be performed in a U.L. 508 listed shop.

F. Electrical contractor shall bring separate 120/1/60 power for controls.
2.15 ELECTRICAL REQUIREMENTS

A. All wiring shall be performed in a UL 508 listed shop. Motors shall be wired to j-box on the exterior of the AHU for field mounted VFDs.

B. The air handling unit manufacturer, for the purpose of sole source responsibility, shall manufacture all electrical panel assemblies supplied for the air handlers. The air handling unit manufacturer shall be a U.L. 508 listed panel shop.

C. All wiring shall be run in EMT conduit (or flexible when connecting to a motor). Raceways are not acceptable.

D. Provide LEDmarine style lights in each access section wired to a common weatherproof switch with 60 minute timer mounted adjacent to the supply fan access door. 120V GFI duplex service receptacles shall be installed and wired with the lighting circuit and located at each fan compartment. The electrical contractor shall bring separate 120/1/60 power to this circuit connected at the supply fan GFI outlet.

2.16 UNIT SOUND POWER LEVELS

A. Provide sound power level data for the unit that will be supplied.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Examine areas and conditions for compliance with requirements for installation tolerances, and other conditions affecting performance of equipment.

B. Verify that roof is ready to receive Work and opening dimensions are as illustrated by the manufacturer.

C. Verify that proper power supply is available.

D. Verify that the required mechanical services are in place.

3.02 INSTALLATION

A. Install air handling units and accessories plumb and level in accordance with manufacturer's instructions.

B. Contractor shall install final filters after construction is complete.

C. Contractor shall replace pre-filter after construction is complete.

D. Mechanical contractor shall coordinate with Electrical contractor for:
   1. Separate 460v/3ph/60Hz power to the single source power panel.
   2. Separate 120v/1ph/60Hz power to the externally mounted light switch and convenience outlet.
3. Separate 120v/1ph/60Hz power to the control panel.

3.03 UNIT SHUTDOWN

A. Installing Contractor shall provide duct smoke detector in main supply air duct from air handling unit or air moving equipment with supply air in excess of 2,000 CFM. Smoke detector shall shut down the air handling unit or air moving equipment when smoke is detected. Connect smoke detector to the building fire alarm system.

3.04 CONNECTIONS

A. Comply with requirements for piping specified in other Sections. Drawings indicate general arrangement of piping, fittings, and specialties.

B. Install piping adjacent to air-handling unit to allow service and maintenance.

C. Connect condensate drain pans using pipe sizes indicated on drawings, Type L copper tubing. Extend to nearest equipment or floor drain. Construct deep trap at connection to drain pan and install cleanouts at changes in direction.

D. Hot and Chilled-Water Piping: Comply with applicable requirements in Section 232113 "Hydronic Piping." Install shutoff valve and union or flange at each coil supply connection. Connect piping to air-handling units with flexible connectors.

E. Coordinate duct installations and specialty arrangements with schematics on Drawings and with requirements specified in Section 233113 "Metal Ducts" and Section 233300 "Air Duct Accessories."

F. Connect duct to air-handling units with flexible connections. Comply with requirements of Division 23 Section “Air Duct Accessories.”

3.05 FIELD QUALITY CONTROL

A. Manufacturer's Field Service: Engage a factory-authorized service representative to inspect, test, and adjust components, assemblies, and equipment installations, including connections.

B. Tests and Inspections:

C. Leak Test: After installation, fill water coils with water, and test coils and connections for leaks.

D. Fan Operational Test: After electrical circuitry has been energized, start units to confirm proper motor rotation and unit operation.

E. Air-handling unit or components will be considered defective if unit or components do not pass tests and inspections.

F. Prepare test and inspection reports.
3.06 STARTUP SERVICE

A. Provide a factory-authorized service representative to perform startup service. Do not operate unit until all manufacturer-recommended pre-startup checks have been completed and fan has been test run under observation.

B. Complete installation and startup checks according to manufacturer's written instructions.

C. Verify that shipping, blocking, and bracing are removed.

D. Verify that unit is secure on mountings and supporting devices and that connections to piping, ducts, and electrical systems are complete. Verify that proper thermal-overload protection is installed in motors, controllers, and switches.

E. Verify that safeties and interlocks, including high and low pressure switches and freeze protection sensors, have been installed and are operational.

F. Verify proper motor rotation direction, free fan wheel rotation, and smooth bearing operations. Reconnect fan drive system, align belts, and install belt guards when belts are used.

G. Verify that bearings, pulleys, belts, and other moving parts are lubricated with factory-recommended lubricants.

H. Verify that zone dampers fully open and close for each zone.

I. Verify that outdoor and return-air mixing dampers open and close, and maintain minimum outdoor-air setting.

J. Verify that ducts are clean.

K. Comb coil fins for parallel orientation.

L. Install new, clean filters.

M. Verify that manual and automatic volume control and fire and smoke dampers in connected duct systems are in fully open position.

N. Engage a factory-authorized manufacturer’s service representative to performance factory certified VFD start-up. Starting procedures for air-handling units include the following:

O. Energize motor; verify proper operation and rotation of motor, drive system, and fan wheel. Adjust fan to indicated rpm.

P. Measure and record motor electrical values for voltage and amperage.

Q. Manually operate dampers from fully closed to fully open position and record fan performance.
3.07 ADJUSTING

A. Adjust damper linkages for proper damper operation.

B. Comply with requirements in Section 230593 "Testing, Adjusting, and Balancing for HVAC" for air-handling system testing, adjusting, and balancing.

3.08 CLEANING

A. After completing system installation and testing, adjusting, and balancing air-handling unit and air-distribution systems and after completing startup service, clean air-handling units internally to remove foreign material and construction dirt and dust.

B. Clean fan wheels, cabinets, dampers, coils, and filter housings, and install new, clean filters.

3.09 DEMONSTRATION

A. Engage a factory-authorized service representative to train the Owner’s maintenance personnel to adjust, operate, and maintain air-handling units.

END OF SECTION
**VARIABLE FREQUENCY DRIVES**

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**PUMPS**

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**AIR HANDLING UNITS**

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**End-Suction Room CI-1207D**

- **Model:** TEFC
- **Horsepower:** 0.86
- **Voltage:** 208 / 3
- **Flow:** 1,760
- **Speed:** 1,760

**End-Suction Room FI 2007D**

- **Model:** TEFC
- **Horsepower:** 1.67
- **Voltage:** 208 / 3
- **Flow:** 1,760
- **Speed:** 1,760

**AHU-1**

- **Model:** YASKAWA
- **Voltage:** 208 / 3
- **Flow:** 1,760
- **Speed:** 1,760

**AHU-2**

- **Model:** YASKAWA
- **Voltage:** 208 / 3
- **Flow:** 1,760
- **Speed:** 1,760