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COUNTY OF SANTA BARBARA
AGREEMENT FOR:
General Services Project No. 23018
County of Santa Barbara
Casa Nueva Building HVAC/BAS Upgrade
260 N San Antonio Rd
Santa Barbara, CA, 93110

BC: _____-_____

THIS AGREEMENT ("Agreement") is made by and between the County of Santa Barbara, a political subdivision of the State of California ("**COUNTY**"), and Mesa Energy System, Inc. ("**CONTRACTOR**" and together with COUNTY, collectively, the "Parties" and each individually a "Party"), for the completion of the Work (defined below), on the following terms, conditions, and provisions. All references in the General Terms to the "Agreement" shall have the meaning ascribed to the term "Agreement" in the immediately preceding sentence.

1. **CONTRACT**: This Agreement incorporates by reference all of the General Conditions and Special Conditions, Specifications and Drawings provided by the COUNTY for the Santa Maria Administration Building HVAC Upgrade Project No. 23018 the Invitation for Bids as amended by Addenda Number 1, the Bid Bond, the Performance Bond, the Payment Bond, and the bid documents executed and submitted by the CONTRACTOR for the Project ("Bid"), to the extent the Bid is consistent with the provisions of this Agreement other than the Bid (all of the foregoing documents, together with this Agreement, collectively, the "Contract" or "Contract Documents"). A copy of each of the General and Special Conditions, Specifications and Drawings provided by the COUNTY for the Santa Maria Administration HVAC upgrade Project No. 23018, the Notice to Bidders, the Bid Bond, the Performance Bond, and the Payment Bond are attached hereto as EXHIBIT A, and a copy of the Bid is attached hereto as EXHIBIT B. All capitalized terms used but not defined herein shall have the respective meanings ascribed to such terms in the Notice to Bidders. Copies of all Contract Documents are on file in the Department of General Services Office of the COUNTY, and have been and will be made available to the CONTRACTOR during the term of this Agreement. CONTRACTOR acknowledges receipt of all Contract Documents.

2. **WORK**: CONTRACTOR, at CONTRACTOR's own cost and expense, shall perform all the work described in the Contract Documents ("Work"), and shall furnish all equipment and materials necessary to perform and complete the Work, in a good and workmanlike manner and to the satisfaction of the Director of the COUNTY's General Services Department ("Director"), or the Director's designee, all in strict accordance with the Contract Documents.

3. **EXCAVATIONS**: Before any pavement resurfacing, displacement, or excavation of the ground that may be required in connection with the Work under this Contract, the CONTRACTOR shall obtain an inquiry identification number by calling Underground Service Alert (USA) 1 (800) 422-4133 or by such other means as may be required; shall conform to all requirements of Sections 4215 through 4217 of the Government Code regarding any such pavement resurfacing, displacement or excavation, including the payment of any fees required; and shall facilitate performance by the COUNTY of any obligation required of the COUNTY under the Government Code. There shall be no performance under this Contract by either party hereto unless and until CONTRACTOR complies with all of the foregoing provisions of this Section 3, and notifies the County Representative (defined below) in writing regarding such compliance.

4. **COUNTY REPRESENTATIVE**: The "County Representative" referred to in the Contract Documents is Steve Fernandes.

5. **PAYMENT**: As full compensation for furnishing all labor, supervision, overhead, materials, and equipment and for completing all of the Work contemplated by this Contract, and subject to adjustments and liquidated damages, if any, as provided in the Contract Documents, the base amount to be paid to the CONTRACTOR for satisfactory completion of all requirements of the CONTRACTOR under this Contract is and shall be FOUR HUNDRED TWENTY TWO THOUSAND EIGHT HUNDRED EIGHTY EIGHT DOLLARS AND NO CENTS ($422,888.00) ("Base Contract Amount"), to be paid as provided in the Contract Documents. CONTRACTOR assumes and will provide against any loss or damage arising out of the nature of the Work undertaken, or the action of the elements, or from any unforeseen difficulties or obstructions which may arise or be encountered in the performance of the Work until its acceptance by the COUNTY, and assumes any and all expenses incurred by or in consequence of suspension

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or discontinuance of the Work, for well and faithfully completing the Work and the whole thereof, in the manner and to the requirements of the Contract and directions of the County Representative to the extent not inconsistent with any provisions of the Contract Documents.

6. **RIGHT TO AUDIT**: CONTRACTOR shall maintain and make available all books, papers, records, detail costs, estimates, claims, and accounts, including payment, property, payroll, personnel, subcontractors, and financial records related to or which arise in connection with the Contract (collectively, the "Records"). The form of record keeping with respect to the Records shall be subject to approval by the COUNTY. The Records shall be made available during normal business hours for examination by the COUNTY or the County Representative and shall be retained at CONTRACTOR'S principal place of business in California for audit during normal business hours at such place for four (4) years after the recording of the Notice of Completion for the Project. CONTRACTOR shall provide an office in which COUNTY and the County Representative may conduct such audit(s).

The COUNTY will have the right to audit CONTRACTOR'S Project records. Records must be made available in a form satisfactory to the Santa Barbara County Auditor-Controller.

7. **EXTRA WORK**: Extra work and materials, may only be authorized via written Change Order(s) duly executed by the Director or his designee in accordance with Section 30, below, including Change Order(s) providing for compensation in addition to the Base Contract Amount; *provided, however*, that the aggregate amount of such compensation in addition to the Base Contract Amount that may be authorized by the Director or his designee pursuant to duly executed Change Orders shall not exceed $33,645 ("Contingency Amount"). Compensation in such other equitable amount as is appropriate for the requirements of the COUNTY may be authorized by resolution or minute order of the Santa Barbara County Board of Supervisors.

8. **COMPLIANCE WITH LAW**: CONTRACTOR shall keep fully informed of, and shall at all times during the Term (defined below) ensure the performance of the Work is in compliance with, all laws, statutes, ordinances, decrees, orders, and regulations which do or may affect the Project, performance of the Work, the materials used therein, or persons engaged in connection therewith, and all such orders of bodies and tribunals having any jurisdiction over same (collectively, "Applicable Laws"). If CONTRACTOR has reason to believe that any provision of the Contract Documents conflicts with any Applicable Law(s), the CONTRACTOR shall immediately report same to the County Representative in writing. CONTRACTOR shall at all times observe and comply with, and shall cause all agents, employees, and subcontractors to observe and comply with, all Applicable Laws. CONTRACTOR acknowledges and shall comply with the provisions of Sections 9364 and Sections 9550 and 9566, inclusive, of the Civil Code of California.

9. **PAYMENTS NOT ACCEPTANCE**: No certificate given or payments made under this Contract, except the final payment hereunder, shall be evidence of the performance of this Contract, either wholly or in part, against any claim upon CONTRACTOR. Final payment for the Work performed under this Contract shall not be made until the lapse of thirty (30) days after the Notice of Completion of the Work has been filed for record and no payment shall be construed to be acceptance of any defective Work or improper materials. CONTRACTOR agrees that the payment for final quantities due under this Contract and the payment of amounts due for any Work in accordance with this Contract shall release the COUNTY from any claims or liabilities on account of Work performed under this Contract, as the same may be amended from time to time during the Term. In addition to guarantees required elsewhere, CONTRACTOR shall and does hereby guarantee all workmanship and material to be free of defects and fit for the purposes intended for a period of one year from and after both the date of acceptance of the work and the recordation of the Notice of Completion by the COUNTY and CONTRACTOR shall repair or replace all Work and materials, together with any other portions of the Work which may be displaced in so doing, that, in the opinion of the County Representative, is or becomes defective during the period of said guarantee, without expense whatsoever to the COUNTY.

10. **PREVAILING WAGE RATES**: Rates of wages, including overtime, holiday, and Sunday rates provided for the Work shall comply with and are subject to the California Labor Code, Sections 1770 et. seq., Executive Orders of the President of the United States No. 9240, dated September 9, 1942, and No. 9250, dated October 3, 1942, and to any modifications thereof, and to and any orders of the President or any authorized Federal Officer or agency, insofar as the same may apply to this Contract.

No contractor or subcontractor may be listed on a bid for a public works project unless registered with the Department of Industrial Relations pursuant to Labor Code section 1725.5 [with limited exceptions from this requirement for bid purposes only under Labor Code section 1771.1(a)]. No contractor or subcontractor may be awarded a contract for

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public work on a public works project unless registered with the Department of Industrial Relations pursuant to Labor Code section 1725.5. This Project is subject to compliance monitoring and enforcement by the Department of Industrial Relations.

11. CONTRACT DOCUMENTS ACKNOWLEDGED: CONTRACTOR hereby declares that CONTRACTOR has read the Contract Documents, has carefully examined the plans and detailed drawings of the Work to be performed, and fully understands the intent and meaning of the same.

12. TIME FOR COMMENCEMENT, COMPLETION: The term of this Contract shall commence effective as of the first date that this Agreement is duly executed by all of the parties hereto ("Effective Date") and shall terminate on the date that is 285 calendar days after the Effective Date unless earlier terminated in accordance with the provisions of this Agreement ("Term"). As soon as practicable after the Contract has been executed by both the CONTRACTOR and the COUNTY, a Notice to Proceed will be issued by the County Representative stating the starting date of work performance under the Contract ("Work Start Date"). CONTRACTOR shall complete all Work specified in the Contract Documents within 180 calendar days after the Work Start Date ("Contract Time" as that term is used in the General Conditions). The provisions of this Agreement pertaining to Liquidated Damages shall apply in the event of the CONTRACTOR's failure to complete the Work within the Contract Time. In the event that CONTRACTOR does not complete the Work during the Term, CONTRACTOR shall only be paid for the Work actually performed during the Term and accepted by COUNTY in accordance with the provisions of this Agreement.

13. WORKERS' COMPENSATION INSURANCE: CONTRACTOR certifies that CONTRACTOR has knowledge of, is in compliance with, and warrants that CONTRACTOR at all times during the Term shall remain in compliance with, the provisions of Section 3700 of the Labor Code, which requires every employer to be insured against liability for Workers' Compensation or to undertake self-insurance by the provisions of that Code. CONTRACTOR shall comply with such provisions before commencing the performance of the Work.

14. PROGRESS PAYMENT; NO WAIVER FOR DELAY: Any progress payment made after the scheduled completion date for the Work shall not constitute a waiver of any liquidated damages under this Contract.

15. GUARANTEE BONDS: Before any performance under this Contract, the CONTRACTOR shall provide the security required by statute for the payment of all workers and suppliers, and security for the faithful performance of all terms and conditions of this Contract, in an amount and form approved by the COUNTY. Both securities shall contain provisions that automatically increase amounts thereof and/or time of completion or both for all change orders, extensions, and additions to the Work provided under this Contract.

16. DISPUTES: Should any dispute(s) arise respecting the construction or meaning of any of the plans or specifications affecting the Work or respecting the true value of any extra work or work omitted, such dispute(s) shall be resolved by the Director of the COUNTY's General Services Department or his Assistant Director of General Services designee ("Director"), whose decision shall be final and binding upon the parties hereto. If, after the decision of the Director as provided herein, claims (as defined in Public Contracts Code Section 20104) under this Contract are filed by CONTRACTOR against COUNTY, and those claims are in the aggregate amount of $375,000 or less, such claims shall be resolved under Public Contracts Code Sections 20104 through 20104.8, inclusive.

17. SURVIVAL: All provisions of this Contract which by their nature are intended to survive the termination or expiration of this Agreement shall survive such termination or expiration.

18. INDEMNIFICATION AND INSURANCE: CONTRACTOR shall at all times comply with the indemnification and insurance provisions set forth in EXHIBIT C, attached hereto and incorporated herein by reference.

19. TAXES: CONTRACTOR shall pay all taxes, levies, duties, and assessments of every nature due in connection with any Work under this Contract, and shall make any and all payroll deductions required by law. CONTRACTOR is responsible for all CONTRACTOR personnel and for the payment of their compensation, including, if applicable, withholding of income taxes, and the payment and withholding of social security and other payroll taxes, unemployment insurance, workers' compensation insurance payments, and disability benefits. In no event shall COUNTY pay or be responsible for any taxes imposed on, or with respect to, CONTRACTOR's income, revenues, gross receipts, personnel, real or personal property, or other assets. COUNTY shall not be responsible for paying any taxes on CONTRACTOR's behalf, and should COUNTY be required to do so by state, federal, or local taxing agencies, CONTRACTOR agrees to promptly reimburse COUNTY for the full value of such paid taxes plus interest and penalty, if any. These taxes shall include, but not be limited to, the following:

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FICA (Social Security), unemployment insurance contributions, income tax, disability insurance, and workers' compensation insurance.

20. **CONFLICT OF INTEREST**: CONTRACTOR covenants that CONTRACTOR presently has no employment or interest and shall not acquire any employment or interest, direct or indirect, including any interest in any business, property, or source of income, which would conflict in any manner or degree with the performance of Work required to be performed under this Contract. CONTRACTOR further covenants that in the performance of this Contract, no person having any such interest shall be employed by CONTRACTOR. CONTRACTOR must promptly disclose to COUNTY, in writing, any potential conflict of interest. COUNTY retains the right to waive a conflict of interest disclosed by CONTRACTOR if COUNTY determines it to be immaterial, and such waiver is only effective if provided by COUNTY to CONTRACTOR in writing.

21. **NONDISCRIMINATION**: COUNTY hereby notifies CONTRACTOR that COUNTY's Unlawful Discrimination Ordinance (Article XIII of Chapter 2 of the Santa Barbara County Code) applies to this Contract and is incorporated herein by this reference with the same force and effect as if the ordinance were specifically set out herein and CONTRACTOR agrees to comply with said ordinance.

22. **NON-ASSIGNMENT**: CONTRACTOR shall not assign, subcontract, delegate, or otherwise transfer, directly or indirectly, whether by operation of law or otherwise ("Transfer") this Contract, in whole or in part,, or any of CONTRACTOR's rights or obligations under this Contract, without the prior written consent of COUNTY in each instance. Any attempted or purported Transfer in violation of this Section 24, or in violation of Section 2.08 of the General Conditions, attached hereto as part of Exhibit A, shall be null and void and without legal effect and shall constitute grounds for termination by COUNTY. No Transfer shall relieve CONTRACTOR of any of its obligations hereunder.

23. **SEVERABILITY**: If any one or more of the provisions contained in the Contract shall for any reason be held to be invalid, illegal or unenforceable in any respect by a court of competent jurisdiction, then such provision or provisions shall be deemed severable from the remaining provisions hereof, and such invalidity, illegality or unenforceability shall not affect any other provision hereof, and this Contract shall be construed as if such invalid, illegal or unenforceable provision had never been contained herein.

24. **TIME IS OF THE ESSENCE**: Time is of the essence in this Contract, and each covenant and term is a condition herein.

25. **ENTIRE AGREEMENT AND AMENDMENT**: The Contract Documents, as may be modified from time to time during the Term by duly authorized and executed Change Orders in accordance with the provisions of this Agreement and the General Terms, contain the entire understanding and agreement of the Parties with respect to the subject matter hereof and thereof, and there have been no promises, representations, agreements, warranties or undertakings by any of the Parties, either oral or written, of any character or nature hereafter binding except as set forth herein and therein. This Contract may be altered, amended or modified only by an instrument in writing, duly executed by each of the Parties, and by no other means, except as otherwise set forth in Section 30, below, to the extent such delegated authority is expressly authorized by the COUNTY Board of Supervisors in approving this Contract. Each Party waives its future right to claim, contest or assert that this Agreement was modified, canceled, superseded, or changed by any oral agreements, course of conduct, waiver or estoppel.

26. **EXECUTION OF COUNTERPARTS**: This Contract may be executed electronically and in any number of counterparts, and each of such counterparts shall for all purposes be deemed to be an original; and all such counterparts, or as many of them as the Parties shall preserve undestroyed, shall together constitute one and the same instrument.

27. **SUBCONTRACTORS**: CONTRACTOR is authorized to subcontract with only the subcontractor(s) identified in the Bid as attached hereto and as set forth in Exhibit B ("Subcontractors"). Contractor shall be fully responsible for all services and Work performed by its Subcontractors. Contractor shall secure from each of its Subcontractors legally binding written agreements to comply with the provisions of this Agreement pertaining to CONTRACTOR's obligations as if such obligations pertained to such Subcontractor, including, but not limited to, audit obligations.

28. **CHANGE ORDERS**: No Change Order shall be valid or enforceable against the COUNTY unless in the form of the Form of Change Order attached here as Exhibit A and duly executed by both CONTRACTOR and the

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Director, in accordance with this Section 30 and Article 13 of the General Conditions ("Change Order").

29. **FLEET REQUIREMENTS**: Vehicles with a Gross vehicle weight rating ("GVWR") greater than 8,500 lbs. and light-duty package delivery vehicles operated in California may be subject to the California Air Resources Board ("CARB") Advanced Clean Fleets regulations. Such vehicles may therefore be subject to requirements to reduce emissions of air pollutants. For more information, please visit the CARB Advanced Clean Fleets webpage at https://ww2.arb.ca.gov/our-work/programs/advanced-clean-fleets. Contractor shall at all times have a valid Certificate of Reported Compliance, as described in section 2449(n) of Title 13 of the California Code of Regulations ("CARB Certificate of Compliance"), and shall confirm that each subcontractor listed in Contractor's Bid has a valid CARB Certificate of Compliance, for each fleet of vehicles subject to 13 CCR section 2449 that may be used in performance of this Contract. No such vehicle is permitted on the project site unless and until the Contractor provides the County with a valid Certificate of Reported Compliance applicable to such vehicle.

30. **ORDER OF PRECEDENCE**: In the event of conflict between the provisions contained in the numbered sections 1 through 34 of this Agreement ("Numbered Section") and the provisions contained in the Exhibits, the provisions contained in the Numbered Sections of this Agreement shall prevail over those in the Exhibits other than Exhibit C, which Exhibit C shall control and prevail over all other provisions of this Contract. CONTRACTOR agrees that in the event of any discrepancy, inconsistency, gap, ambiguity, or conflicting language between the Bid attached hereto as Exhibit B, on the one hand, and any other provision(s) of this Contract on the other, the provisions of this Contract (including the Numbered Sections of this Agreement, Exhibit A, and Exhibit C) other than Exhibit B shall take precedence and control and prevail over the provisions of the Bid attached hereto as Exhibit B.

31. **TERMINATION.**

A. COUNTY may, by written notice to CONTRACTOR, terminate this Contract in whole or in part at any time, whether for COUNTY's convenience, for nonappropriation of funds, or because of the failure of CONTRACTOR to fulfill its obligations hereunder.

1. **For Convenience.** COUNTY may terminate this Contract in whole or in part upon thirty (30) days' written notice. During such thirty (30) day period, CONTRACTOR shall, as directed by COUNTY, wind down and cease Work as quickly and efficiently as reasonably possible, without performing unnecessary services or activities and by minimizing negative effects on COUNTY from such winding down and cessation of Work.

2. **For Nonappropriation of Funds.** Notwithstanding any other provision of this Contract, in the event that no funds or insufficient funds are appropriated or budgeted by federal, State or COUNTY governments, or sufficient funds are not otherwise available for payments hereunder in the fiscal year(s) covered by the Term of this Agreement, then COUNTY will notify CONTRACTOR of such occurrence, and COUNTY may terminate or suspend this Contract in whole or in part, with or without a prior notice period. Subsequent to termination of this Contract under this provision, COUNTY shall have no obligation to make payments with regard to the remainder of the Term.

3. **For Cause.** Should CONTRACTOR default in the performance of this Contract or materially breach any of the provisions hereof, COUNTY may, at COUNTY's sole option, terminate or suspend this Contract in whole or in part upon written notice ("Termination Notice"). Upon receipt of such Termination Notice, CONTRACTOR shall immediately discontinue all Work (unless otherwise directed in such Termination Notice) and notify COUNTY in writing of the status of CONTRACTOR's performance of Work hereunder. The date of termination shall be the date the Termination Notice is received by CONTRACTOR, unless the Termination Notice directs otherwise.

B. Upon termination, CONTRACTOR shall deliver to COUNTY all data, estimates, graphs, summaries, reports, and all other property, records, documents or papers as may have been accumulated or produced by CONTRACTOR in performing this Contract, whether completed or in process, except such items as COUNTY may, by written permission, permit CONTRACTOR to retain. Notwithstanding any other payment provision of this Contract, COUNTY shall pay CONTRACTOR for satisfactory Work performed as of the date of termination, to include a prorated amount of compensation due hereunder, less payments, if any, previously made. In no event shall

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CONTRACTOR be paid an amount in excess of the Maximum Contract Amount, or for unperformed portions of Work. CONTRACTOR shall furnish to COUNTY such financial information as, in the judgment of COUNTY, is necessary to determine the reasonable value of the Work rendered by CONTRACTOR. The foregoing is cumulative and shall not affect any right or remedy which COUNTY may have in law or equity.

32. **JURISDICTION; VENUE.** This Contract shall be governed by the laws of the State of California. Any litigation arising out of this Contract shall be filed in the County of Santa Barbara, if in state court, or in the federal district court nearest to the County of Santa Barbara, if in federal court.

33. **NO WAIVER.** COUNTY's delay or failure to act with respect to a breach of this Contract by CONTRACTOR shall not constitute or be construed as a waiver of COUNTY's rights with respect to subsequent or similar breaches. Any delay or failure of COUNTY to exercise or enforce any right or provision of this Contract shall not constitute a waiver of such right or provision, and every power and remedy given by this Contract to COUNTY shall be exercised from time to time and as often as may be deemed expedient in the sole discretion of COUNTY. No remedy herein conferred upon or reserved to COUNTY is intended to be exclusive of any other remedy or remedies, and each and every such remedy, to the extent permitted by law, shall be cumulative and in addition to any other remedy given hereunder or now or hereafter existing at law or in equity or otherwise.

34. **SIGNATORY AUTHORITY.** Each of the Parties hereby represents and warrants to the other Party that:

(a) Such Party has the full right, power, and authority to enter into this Contract and to perform its obligations hereunder.
(b) The execution of this Contract by the individual whose signature is set forth at the end of this Agreement on behalf of such Party, and the delivery of this Contract by such Party, have been duly authorized by all necessary corporate or other action on the part of such Party.
(c) This Contract has been executed and delivered by such Party and (assuming due authorization, execution, and delivery by the other Party) constitutes the legal, valid, and binding obligation of such Party, enforceable against such Party in accordance with its provisions.

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IN WITNESS WHEREOF, the parties hereto have executed this Agreement to be effective as of the first date fully executed by all of the parties hereto.

COUNTY
County of Santa Barbara

By: _____
LAURA CAPPS, CHAIR
BOARD OF SUPERVISORS

Dated: 11-18-25

ATTEST:
MONA MIYASATO,

_____
COUNTY EXECUTIVE OFFICER

CLERK OF THE BOARD

By: _____
Deputy Clerk of the Board

CONTRACTOR

MESA ENERGY SYSTEM, INC.,
a California corporation

By: Signed by: Chris Mccall
78C9B669B6434C1...
AUTHORIZED REPRESENTATIVE
Name: CHRIS MCCALL

Title: CO BRANCH MANAGER

APPROVED AS TO FORM:
RACHEL VAN MULLEM,
COUNTY COUNSEL

By: Signed by: Aaron Zambrano
98B45FFED91E4FC...
Deputy County Counsel

APPROVED AS TO ACCOUNTING FORM:
BETSY SCHAFFER, CPA, CPFO
AUDITOR-CONTROLLER

By: DocuSigned by:
6BAAEA15901943F...
Deputy Auditor-Controller

APPROVED AS TO FORM:
GREG MILLIGAN, ARM
RISK MANAGER

By: Signed by: Greg Milligan
05F555F00269466...
Risk Management

RECOMMENDED FOR APPROVAL
KIRK LAGERQUIST, DIRECTOR
GENERAL SERVICES DEPARTMENT

By: DocuSigned by: kirk lagerquist
19AEDA90054E4CE...
Department Head

Dept 063 Fund 0030 Program 1930 Account 8200 Project 23018

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EXHIBIT A

CONTRACT DOCUMENTS

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COUNTY OF SANTA BARBARA
GENERAL SERVICES DEPARTMENT
CAPITAL PROJECTS DIVISION

one COUNTY | one FUTURE

Santa Maria Administration Building HVAC Upgrade
511 East Lakeside Parkway
Santa Maria, CA, 93455

COUNTY PROJECT NO. 23018

MANDATORY JOB WALK:
Tuesday, September 16, 2025
10:30 am

BID DUE DATE:
October 14, 2025
3:00 P.M.

VIRTUAL BID OPENING:

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BIDDING DOCUMENTS

Notice to Bidders
Bid Form – correction of walk pad
Designation of Subcontractors
Noncollusion Affidavit
Certificate of Compliance
Bidder's Statements
Anti-fraud Certification
Bidder's Bond

CONTRACT FORMS

Payment Bond
Performance Bond
Certificate of Insurance Transmittal
Unlawful Discrimination Ordinance
County of Santa Barbara Agreement Form

TERMS & CONDITIONS

Special Conditions
General Conditions
Exhibit "C" Indemnification and Insurance Requirements (For Construction Contracts)

DRAWINGS AND SPECIFICATIONS

Cybersecurity and Operational Environments/Standards
Civil Drawings
Specifications

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BIDDING DOCUMENTS

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NOTICE TO BIDDERS

Notice is hereby given that the General Services Department, County of Santa Barbara, will receive bids for:

COUNTY OF SANTA BARBARA
Santa Maria Administration Building HVAC Upgrade
511 East Lakeside Parkway
Santa Maria, CA, 93455
Project No.23018

MANDATORY JOB WALK:
Tuesday, September 16, 2025, at 10:30 am
BID DUE DATE:
October 14, 2025
3:00 P.M.

VIRTUAL BID OPENING:

CONSTRUCTION COST ESTIMATE: The estimated cost of construction is $ 400,000

PROJECT LOCATION: 511 East Lakeside Parkway, Santa Maria, CA, 93455

MANDATORY JOB WALK: The job walk is **MANDATORY** on **Tuesday, September 16, 2025, at 10:30 am**

Only those prime contractors attending a job walk shall be qualified to bid on the work.

PROJECT DESCRIPTION: Remove and replace existing rooftop gas package units with rooftop heat pump package units, upgrade the existing Trend 963 controls to Honeywell Optimizer Controls, remove and replace existing condensate drains, and address any electrical requirements to updated codes. Controls Programming will be provided separately by the County of Santa Barbara.

CONTRACTOR'S LICENSE: The CONTRACTOR shall possess either a Class A, B, or C-34 license.

QUESTIONS: All questions MUST be submitted electronically through the Public Purchase Portal (www.publicpurchase.com) on or before **October 8, 2025, 3 P.M.** Any changes or additional information needed for bidding will be provided in an Addendum posted on the Public Purchase site. Contractors shall be responsible for addendums.

BID SUBMITTAL INSTRUCTIONS: Each bid shall be in accordance with the plans and specifications approved by the General Services Department. The bid MUST be submitted electronically through the Public Purchase website (www.publicpurchase.com) on or before **October 14, 2025, 3 P.M.**

SUBSTITUTION OF SECURITIES: Pursuant to Section 22300 of the Public Contract Code and the project specifications, the CONTRACTOR may substitute securities or request that the County make payment of retentions to an escrow agent for any money held by the COUNTY to ensure contract performance.

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REGISTRATION: No contractor or subcontractor may be listed on a bid proposal for a public works project (submitted on or after March 1, 2015) unless registered with the Department of Industrial Relations pursuant to Labor Code § 1725.5 [with limited exceptions from this requirement for bid purposes only under Labor Code § 1771.1(a)]; no contractor or subcontractor may be awarded a contract for public work on a public works project (awarded on or after April 1, 2015) unless registered with the Department of Industrial Relations pursuant to Labor Code § 1725.5; and this project is subject to compliance monitoring and enforcement by the Department of Industrial Relations.

QUALIFYING CONTRACTOR OR SUBCONTRACTOR: Pursuant to the provisions of Section 4104 of the California Public Contracting Code a contractor or subcontractor shall not be qualified to bid on, be listed in a bid proposal or engage in the performance of any contract for public work, as defined in Section 4104, unless currently registered with the Department of Industrial Relations and qualified to perform public work pursuant to Section 1725.5 California Labor Code.

WITHDRAWAL OF BIDS: The COUNTY reserves the right to reject any and or all bids or waive any informality in a bid. No bidder may withdraw his bid for a period of sixty (60) days after the date set for the opening thereof.

BID SELECTION: The COUNTY reserves the right to select any one or any combination of bids, whichever is in the best interest of the COUNTY.

BID PROTEST: The County of Santa Barbara Bid Protest Procedures are described in Item 10 of the BID FORM, which is included in the bid documents.

CONSTRUCTION TIME: The successful CONTRACTOR (after receiving the Notice to Proceed) shall have **180** calendar days to complete all work called for under the Contract Documents.

LIQUIDATED DAMAGES: The liquidated damages will be **$250 (Two Hundred Fifty Dollars)** per day for project delays that are determined to be attributable to the CONTRACTOR.

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BID FORM

1. Pursuant to and in compliance with your Notice to Bidders and the Contract Documents relating to the construction of:

COUNTY OF SANTA BARBARA
Santa Maria Administration Building HVAC Upgrade
511 East Lakeside Parkway
Santa Maria, CA, 93455

Project No. 23018
Bid Due Date: October 14, 2025, 3 P.M.

including Addendum No(s). ___, ___, ___, ___,___, ___, ___, the undersigned bidder, having become thoroughly familiar with the terms and conditions of the Contract Documents and with local conditions affecting the performance and the costs of the Work at the place where the Work is to be done, hereby proposes and agrees to fully perform the Work within the time stated in and in strict accordance with the Contract Documents (including the furnishing of any and all labor, materials, tools, expendable equipment and utility and transportation services necessary to fully perform the work and complete it in a workmanlike manner) for the total sum of:

2. **BASE BID**:

$ ☐☐ , ☐☐☐ , ☐☐☐ . ☐☐

(Place figures in appropriate boxes.)

Estimated number of work days: _____

3. If the project has additive bid items or additive groups, the lowest responsible bidder will be determined in accordance with Public Contract Code Division II, Part 3, Chapter 1, Section 20103.8, Subdivision (c) and as follows:
   a. The project funding amount will be disclosed before the first bid is opened.
   b. The lowest responsible bidder will be determined based on the Total Base Bid plus Total Additive Items or Total Base Bid plus Total Additive Groups, if any.
   c. In the event that all bids including Total Base Bid plus Total Additive Items or Total Base Bid plus Total Additive Groups exceeds the project funding amount, the lowest bid will be determined on the basis of the Total Base Bid plus those additive items or Total Base Bid plus those additive groups that, when taken in numerical order from the additive list, and added to the Total Base Bid are less than or equal to the funds available.

4. It is understood that Owner reserves the right to reject the proposal and that it shall remain open and not be withdrawn for a period of sixty (60) calendar days from the date prescribed for its opening.

5. Attached hereto and incorporated herein is the complete and entire list of subcontractors to be employed by the undersigned and in the performance of the Work.

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6. It is understood and agreed that if written notice of the acceptance of this proposal is mailed or delivered personally to the undersigned bidder within thirty (30) calendar days after the opening of the proposal, or at any time thereafter before it is withdrawn, the undersigned bidder will execute and deliver the Contract Documents to Owner in accordance with the proposal as accepted, and will also furnish and deliver to Owner any Payment Bond required under the provisions of California Civil Code Section 3247 through 3252 and Performance Bond as required under the provisions of the California Government Code and/or California Public Contract Code all within fourteen (14) calendar days after personal delivery or deposit in the mails, as the case may be, of the notifications of award. The work under the contract shall be commenced by the undersigned bidder on the date stated in the COUNTY'S written Notice to Proceed and shall be completed within **180 calendar** days thereafter.

7. Notice of acceptance or request for additional information may be addressed to the undersigned bidder at the business address set forth below.

8. The bid, contract or other submittal of the CONTRACTOR identified below in connection with the foregoing project is not made in the interest of or on behalf or any undisclosed person, partnership, company, association, organization, or corporation; and that the bid is genuine, and not collusive or sham; that the undersigned bidder has not directly or indirectly induced or solicited any other bidder to put in a false or sham bid and has not directly or indirectly colluded, conspired, connived or agreed with any bidder or anyone else to put in a sham bid, or to refrain from bidding; that the undersigned bidder has not directly or indirectly sought by agreement, communication or conference with anyone to fix his bid price or the bid price of any other bidder or to fix any overhead, profit or cost element of such bid price or of that of any other bidder or to secure any advantage against the COUNTY of Santa Barbara of anyone interested in the proposed contract; or all statements contained in this proposal are true; and that the undersigned bidder has not directly or indirectly, submitted his or her bid price or any breakdown thereof, or the contents thereof, or divulged information or data relative thereto, or paid, and will not pay any fee to any corporation, partnership, company association, organization, Bid Depository or to any member or agent thereof to effectuate a collusive or sham bid. I declare under the penalty of perjury under the laws of the State of California that the foregoing is true and correct.

9. Wherever in this proposal an amount is stated in both words and figures, in case of discrepancy between words and figures the words shall prevail; if all or any portion of the proposal is required to be given in unit prices and totals and a discrepancy existing between any such unit prices and totals so given, the unit prices shall prevail.

10. In accordance with the provisions of Sections 1860 and 1861 of the California Labor Code, every CONTRACTOR will be required to secure the payment of compensation of his or her employees. Each CONTRACTOR to whom a public works contract is awarded shall sign the following certification prior to performing the work of the contract: "I am aware of the provisions of Section 3700 of the Labor Code which requires every employer to be insured against liability for worker's compensation or to undertake self-insurance in accordance with the provisions of that code, and I will comply with such provisions before commencing the performance of the work of this contract."

11. Protests of any bid(s) received must be in writing, must specify all grounds for the protest, and must be filed within ten working days after the opening of bids.

CONTRACTOR

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_____	IRS No.: _____
Company	
_____	License Classification(s): _____
Street Address	
_____	Phone Number: _____
City	
BY: _____	_____
Signature	Printed Name, Title

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DESIGNATION OF SUBCONTRACTORS

The bidder agrees if this proposal is accepted, that he will contract with the County of Santa Barbara to do all work and furnish all labor, materials, machinery, tools and apparatus necessary to completely perform said Contracts in the manner and time prescribed by said Contract.

COUNTY OF SANTA BARBARA
Santa Maria Administration Building HVAC Upgrade
511 East Lakeside Parkway
Santa Maria, CA, 93455

Project No. 23018
Bid Due Date: October 14, 2025, 3 P.M.

In compliance with the provisions of Section 4100-4107 of the Public Contract Code of the State of California, and any amendments, thereof, the undersigned bidder has set forth below the name and location of the place of business of each subcontractor who will perform work or labor or render service to the undersigned in or about the construction of the work to be performed. That portion of the work which will be done by each subcontractor for each subcontract in excess of one-half of one percent of the undersigned's total aggregate bid shall be listed.

DIVISION OF WORK	SUBCONTRACTOR	LIC NO.	LOCATION

COMPANY:_____ BY: _____
Bidder's Signature

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NOTE: This form may be reproduced and attached behind this page to list more Subcontractors.

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NONCOLLUSION AFFIDAVIT

In accordance with Public Contract Code § 7106. _____
(Bidder's full name)

being first duly sworn, deposes and says that he or she is _____
(Bidder's title)

of _____
(Company's name)

the party making the foregoing Bid, that the Bid is not made in the interest of, or on behalf of, any undisclosed person, partnership, company, association, organization, or corporation; that the Bid is genuine and not collusive or sham; that the Bidder has not directly or indirectly induced or solicited any other bidder to put in a false or sham Bid, and has not directly or indirectly colluded, conspired, connived, or agreed with any Bidder or anyone else to put in a sham Bid, or that anyone shall refrain from bidding; that the Bidder has not in any manner, directly or indirectly, sought by agreement, communication, or conference with anyone to fix the Bid price of the Bidder or any other Bidder, or to fix any overhead, profit, or cost element of the Bid price, or of that of any other Bidder, or to secure any advantage against the public body awarding the contract of anyone interested in the proposed Contract; that all statements contained in the Bid are true; and further, that the Bidder has not, directly or indirectly, submitted his or her bid price or any breakdown thereof, or the contents thereof, or divulged information or data relative thereto, 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.

SIGNATURE BLOCK (*Signature Block **must be completed in** ink**& changes must be** initialed.*)

Bidder's Signature:_____ **Date:**_____

Bidder's Name & Title (Print):_____

At CITY: _____ STATE: _____

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CERTIFICATE OF COMPLIANCE

This is to certify that all requirements for insurance of subcontractors as specified for this project will be met.

Dated

Signature of Principal

Printed Name, Title of Principal

Company

Address

City, State & Zip

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BIDDER'S STATEMENTS

REGARDING INSURANCE COVERAGE:
Bidder hereby certifies that he has reviewed the insurance coverage requirements specified in the Contract Forms. Should he be awarded the contract for the work, Bidder further certifies that he can meet all the Contract Specification requirements for insurance including insurance coverage of his subcontractors.

REGARDING TITLE 13 OF THE CA CODE OF REGULATIONS, BIDDER'S FLEET:
Bidder must provide to the County, prior to executing the Contract, a true and correct copy of each valid Certificate of Reported Compliance, as described in section 2449(n) of Title 13 of the California Code of Regulations, for Bidder's fleet, and for each fleet of each subcontractor listed in Bidder's Bid, of vehicles subject to 13 CCR section 2449 that may be used in performance of the Contract.

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

REGARDING PUBLIC CONTRACT CODE SECTION 10162:
In accordance with Public Contract Code Section 10162, the Bidder shall complete, under penalty of perjury, the following questionnaire:

> Has the bidder, any officer of the bidder, or any employee of the bidder who has proprietary interest in the bidder, ever been disqualified, removed, or otherwise prevented from bidding on, or completing, a federal, state, or local government project because of a violation of law or safety regulation?
>
> Yes ____ No ____
>
> (If the answer is yes, explain the circumstances on a separate sheet of paper and attach to proposal)

_____ _____
Date Signature of Principal

_____
Printed Name, Title of Principal

_____
Company

_____
Address

_____
City, State & Zip

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ANTI-FRAUD CERTIFICATION

COUNTY OF SANTA BARBARA
Santa Maria Administration Building HVAC Upgrade
511 East Lakeside Parkway
Santa Maria, CA, 93455

Project No. 23018
Bid Due Date: October 14, 2025, 3 P.M.

In accordance with Public Contract Code Section 10285.1 (Chapter 376, Stats. 1985), the bidder hereby declares under penalty of perjury that the bidder **has ___, has not ___**, been convicted within the preceding three years of any offenses referred to in that section, including any charge of fraud, bribery, collusion, conspiracy, or any other act in violation of any state or federal antitrust law in connection with the bidding upon award of, or performance of, any public works contract, as defined in Public Contract Code Section 1101, with any public entity, as defined in Public Contract Code Section 1100, including the Regents of the University of California or Trustees of the California State University.

The term "bidder" is understood to include any partner, member, officer, director, responsible managing officer, or responsible managing employee thereof, as referred to in Section 10285.1.

NOTE: The bidder must place a check mark after "has" or "has not" in one of the blank spaces provided.

_____
Date

_____
Signature of Principal

_____
Printed Name, Title of Principal

_____
Company

_____
Address

_____
City, State & Zip

Docusign Envelope ID: 17CE9CA1-680B-446D-A24A-6403D2AC0C25

BIDDER'S BOND

KNOW ALL MEN BY THESE PRESENTS:

That we, _____ as Principal, and _____ as Surety (hereinafter referred to as Surety), are held firmly bound unto the County of Santa Barbara, State of California (hereinafter called "Owner") in the penal sum of Ten Percent (10%) of the total aggregate amount of the bid of the Principal above named, submitted by said Principal to Owner for the work described below, for the payment of which sum in lawful money of the United States, well and truly to be made, we bind ourselves, our heirs, executors, administrators, and successors, jointly and severally, firmly by these presents. Surety shall be and hereby warrants that it is listed in the Insurance Organizations Authorized by the Insurance Commissioner to Transact Business of Insurance in the State of California, published by the Department of Insurance, State of California or successor publications. In no case shall the liability of the Surety hereunder exceed the sum of _____ DOLLARS ($_____).

The condition of this obligation is such that a bid to the Owner for certain construction specifically described as follows:

COUNTY OF SANTA BARBARA
Santa Maria Administration Building HVAC Upgrade
511 East Lakeside Parkway
Santa Maria, CA, 93455

Project No.23018

For which bids are due on **October 14, 2025,** have been submitted by the Principal to the Owner.

NOW, THEREFORE, if the aforesaid Principal shall not withdraw said bid within the period therein after the opening of the same, or, if no period be specified within sixty (60) days after said opening and shall within the period specified therefore, or, if no period be specified, within eight (8) days after the prescribed forms are presented to him for signature, enter into a written Contract with Owner, in the prescribed form, in accordance with the bid as accepted, and file the two Bonds with Owner, one to guarantee faithful performance and the other to guarantee payment for labor and materials, as required by law, then this obligation shall be null and void; otherwise, it shall remain in full force, virtue and affect.

Said Surety, for value received, hereby stipulates and agrees that no change, extension of time, alteration or addition to the terms of said Contract or to the work to be performed thereunder or the Specifications accompanying the same shall in any manner affects its obligations on this bond, and it does hereby waive notice of any change, extension, alteration, or addition.

It is hereby agreed that any progress payment made after the scheduled completion date will not constitute a waiver of any liquidated damages heretofore agreed upon.

In the event suit is brought upon said Bond by Owner and judgment is recovered, the Surety shall pay all costs incurred by Owner in such suit, including a reasonable attorney's fee to be fixed by the Court.

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Death, Bankruptcy, Receivership, Going Out of Business for any reason, or incompetence of the Principal shall not relieve the Surety of its obligations hereunder.

_____
Name of Principal

Dated _____ _____ (Seal)
Signature of Principal

_____
Name of Surety

_____
Address

_____
City, State & Zip

Dated _____ _____ (Seal)
Signature of Surety's Attorney-in-fact

Surety's Agent for Service of Process (located within the State of California):

_____
Name of Agent

_____
Address

_____
City, State & Zip

_____
Telephone Number

_____
FAX Number

NOTE: Signatures of those executing for Surety MUST be properly acknowledged. This form may be reproduced for transmittal to the Surety for execution and attached to the front of the original Bid Bond Form.

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CONTRACT FORMS

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PAYMENT BOND

KNOW ALL MEN BY THESE PRESENTS:

That the County of Santa Barbara of the State of California (hereinafter referred to as the County) and _____ (hereinafter referred to as Principal) have by written agreement dated _____, entered into a contract identified as:

Project Title: County of Santa Barbara

Santa Maria Administration Building HVAC Upgrade
511 East Lakeside Parkway
Santa Maria, CA, 93455

Project No. 23018

(Hereinafter referred to as the Contract) and

That, pursuant to law and to said Contract, and before entering upon the performance of said Contract, the principal is required to file with the County a good and sufficient bond to secure the payment of labor and materials claims.

NOW, THEREFORE, said Principal and _____

_____

as corporate surety (hereinafter referred to as Surety), are held firmly bound unto the County in the amount of $_____, for the payment of which Principal and Surety bind themselves, their heirs, executors, administrators, successors and assigns both jointly and severally. Surety shall be and hereby warrants that it is listed in the Insurance Organizations Authorized by the Insurance Commissioner to Transact Business of Insurance in the State of California, published by the Department of Insurance, State of California or successor publications.

THE CONDITION OF THIS OBLIGATION IS SUCH that if said principal, his or its subcontractors, heirs, executors, administrators, successors, or assigns, shall fail to pay any of the persons named or referred to in Section 9100 of the California Civil Code, or amounts due under Unemployment Insurance Code with respect to work or labor performed by any such claimant, or for any amounts required to be deducted, withheld and paid over to the Employment Development Department from the wages of employees of the Contractor and his subcontractors pursuant to Section 13020 of the Unemployment Insurance Code with respect to such work and labor as required by the California Civil Code, or this bond, then said Surety will pay for the same, in an amount not to exceed the amount hereinafter set forth.

This bond shall insure to the benefit of any and all persons, entities, companies and corporations named or referred to in Section 9100 of the California Civil Code, so as to give a right of action to them or their assign in any suit brought upon this bond.

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

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In the event suit is brought upon this Bond by County and judgment is recovered, Surety shall pay all costs incurred by the County in such suit, including a reasonable attorney's fee to be fixed by the court.

Death, illness, disability or disqualification of the Principal shall not relieve Surety of its obligations hereunder.

_____	_____
Principal	Surety
By: _____	_____
	Signature of Attorney-in-fact
DATED: _____	_____
	_____
	Address
	_____
	City, State & Zip Code

Surety's Agent for Service of Process (located within the State of California):

_____
Name of Agent

_____
Address

_____
City, State & Zip Code

_____
Telephone Number

_____
FAX Number

NOTE: Signature of those executing for Surety must be properly acknowledged.

Docusign Envelope ID: 17CE9CA1-680B-446D-A24A-6403D2AC0C25

PERFORMANCE BOND

KNOW ALL MEN BY THESE PRESENTS:

That the County of Santa Barbara of the State of California (hereinafter referred to as the County) and _____ (hereinafter referred to as Principal) have by written agreement dated _____, entered into a contract identified as:

Project Title: County of Santa Barbara

Santa Maria Administration Building HVAC Upgrade
511 East Lakeside Parkway
Santa Maria, CA, 93455

Project No. 23018
(Hereinafter referred to as the Contract) and

That, pursuant to law and to said Contract, and before entering upon the performance of said Contract, the Principal is required under the terms and conditions of said Contract to furnish a bond for the faithful performance of said Contract.

NOW, THEREFORE, said Principal and _____

_____

as corporate surety (hereinafter referred to as Surety), are held firmly bound unto the County in the amount of $_____, for the payment of which Principal and Surety bind themselves, their heirs, executors, administrators, successors and assigns both jointly and severally. Surety shall be and hereby warrants that it is listed in the Insurance Organizations Authorized by the Insurance Commissioner to Transact Business of Insurance in the State of California, published by the Department of Insurance, State of California or successor publications.

THE CONDITION OF THIS OBLIGATION IS SUCH that if the Principal, his heirs, executors, administrators, successors, or assigns, shall perform all of the covenants, conditions and agreements in said Contract and any alteration thereof made as herein provided, in his or their part, to be kept and performed at the time, and in the manner therein specified, and shall indemnify and save harmless County, its officers, agents, and employees, as therein stipulated, then this obligation shall become null and void; otherwise it shall be and remain in full force, virtue and effect.

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

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In the event suit is brought upon this Bond by County and judgment is recovered, Surety shall pay all costs incurred by the County in such suit, including a reasonable attorney's fee to be fixed by the court.

Death, illness, disability or disqualification of the Principal shall not relieve Surety of its obligations hereunder.

_____	_____
Principal	Surety
By: _____	_____
	Signature of Attorney-in-fact
DATED: _____	_____
	_____
	Address
	_____
	City, State & Zip Code

Surety's Agent for Service of Process (located within the State of California):

_____
Name of Agent

_____
Address

_____
City, State & Zip Code

_____
Telephone Number

_____
FAX Number

NOTE: Signature of those executing for Surety must be properly acknowledged.

Docusign Envelope ID: 17CE9CA1-680B-446D-A24A-6403D2AC0C25

one COUNTY one FUTURE

CERTIFICATE OF INSURANCE TRANSMITTAL FORM

FOR THE FOLLOWING DESCRIBED PROJECT:

County of Santa Barbara
Santa Maria Administration Building HVAC Upgrade
511 East Lakeside Parkway
Santa Maria, CA, 93455
Project No.23018

CONTRACTOR:

_____
Name

_____
Address

_____
City, State & Zip Code

The successful bidder shall furnish satisfactory proof of the maintenance of adequate Worker's Compensation Insurance, and the maintenance of Comprehensive General and Automobile Liability Insurance in the amount of not less than $1,000,000 per occurrence and $2,000,000 in the aggregate. The County of Santa Barbara (COUNTY), its officers, employees, and agents shall be named as additional insured on all certificates. A copy of the endorsement evidencing that the County has been added to the policy must be attached to the certificate of insurance. Said policy or policies shall provide that the COUNTY shall be given thirty (30) days written notice prior to cancellation or expiration of the policy or reduction in coverage. Refer to section 5.18 of the General Conditions.

In addition to the above, the following information must appear on the certificates:

County of Santa Barbara
Santa Maria Administration Building HVAC Upgrade
511 East Lakeside Parkway
Santa Maria, CA, 93455
Project No. 23018

This form must be attached to all insurance forms sent to the County of Santa Barbara, General Services Department:

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_____

Authorized Insurance Company Representative's Signature

This form may be reproduced as required.

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COUNTY OF SANTA BARBARA UNLAWFUL DISCRIMINATION ORDINANCE

Section 2-95. Prohibition of unlawful discrimination in employment practices. The COUNTY reserves the right to terminate forthwith each and every written contract and agreement (except purchase orders) respecting real property for goods and/or services entered into by the COUNTY or by its joint powers, agencies, or agents with the consent of the other parties (hereinafter called "CONTRACTOR") including but not limited to concessions, franchises, construction agreements, leases, whether now in effect or hereinafter made if the COUNTY finds that the CONTRACTOR is discriminating or has discriminated against any employee or applicant for employment in violation of any applicable state or federal laws, rules, or regulations which may now or hereafter specifically prohibit such discrimination on such grounds as race, religion, sex, color, national origin, physical or mental handicap when otherwise qualified, Vietnam war veteran/disabled, age, medical condition, marital status, ancestry, sexual orientation, or other legally protected status.

Such finding may only be made after CONTRACTOR has had a full and fair hearing on notice of thirty (30) days before an impartial hearing officer at which hearing CONTRACTOR may introduce evidence, produce witness, and have the opportunity to cross-examine witnesses produced by the COUNTY. Further, any finding of discrimination must be fully supported by the facts developed at such hearing and set forth in a written opinion; and in addition, CONTRACTOR may move in the appropriate court of law for damages and/or to compel specific performance of a CONTRACTOR or agreement if any of the above procedures are not afforded to the CONTRACTOR. If CONTRACTOR is not found to have engaged in unlawful discriminatory practices, COUNTY shall pay all costs and expense of such hearing, including reasonable attorney's fees to CONTRACTOR in accordance with current Santa Barbara County Superior Court schedule of attorney's fees for civil trials. If CONTRACTOR is found to have engaged in such unlawful discriminatory employment practices, CONTRACTOR shall pay all such costs, expenses, and attorney's fees.

Whether or not a contract or agreement is still in existence at the time of final determination of such unlawful discrimination, the CONTRACTOR shall forthwith reimburse COUNTY for all damages directly stemming from such discrimination; however, those damages shall not exceed and are not reimbursable in an amount which exceeds amounts paid CONTRACTOR under the terms of the contract or agreement.

Nothing in this Section 2-95 shall directly or by interpretation give a private cause of action to any third party (not a signatory to the contract or agreement) including employees past or present, or applicants for employment to CONTRACTOR, it being the sole purpose of this clause to administratively assure compliance with the nondiscrimination clauses contained herein.

Employment practices shall include, but are not limited to employment, promotion, demotion, transfer, recruitment and advertising for recruitment, layoff or other termination, rate of pay, employee benefits, and all other forms of compensation selection for training and apprenticeship and probationary periods.

CONTRACTOR shall permit access at all reasonable time and places to all of its records of employment, advertising, application forms, tests, and all other pertinent employment data and records, to the COUNTY, its officers, employees, and agents for the purpose of investigation to ascertain if any unlawful discrimination as described herein has occurred or is being practiced, provided that such records are relevant to a complaint of an unlawful discriminatory practice which has been forwarded to CONTRACTOR reasonably prior to the time CONTRACTOR is asked to make such records available. In addition, all such records shall be deemed "Confidential" by the officers, employees, and agents of the COUNTY. No records or copies of such records may be removed from the premises of CONTRACTOR and no disclosure, oral, or written of such record, may be made to third parties except as provided within the agreement.

Provided, however, that in the event of a hearing to determine whether or not CONTRACTOR is engaging in unlawful discrimination in employment practices as defined herein, the Board of Supervisor of Santa Barbara County may issue subpoenas to require that certified copies of such records be made available to the hearing.

Failure to fully comply with any of the foregoing provisions relating to unlawful discrimination in employment practices shall be deemed to be a material breach of any contract or agreement with the COUNTY. All persons contracting with or who have contracts for goods or services with the COUNTY shall be notified that this chapter applied to their contract or agreement with the COUNTY (Ordinance No. 2946, SS1; Ordinance No. 2993, SS1; and Ordinance No. 3018, SS1).

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Section 2-95.5. Exceptions. Notwithstanding any other provisions in this article, any party contracting with the COUNTY having an affirmative action program which has been approved within twelve (12) months from the date of the contract by an agency of the federal government shall be deemed to be in compliance with the provisions of this article upon furnishing documentary evidence of such approval satisfactory to the COUNTY affirmative action officer. Loss of such approval shall be immediately reported by such party to the COUNTY affirmative action officer.

Section 2-96. Purchase orders. Purchase orders shall contain the following clause as grounds for termination of such purchase orders:

"If complaint is made that seller is engaging in discriminatory employment practices made unlawful by applicable state and federal laws, rules, or regulations, and the State Fair Employment Practice Commission or the Federal Equal Employment Opportunities Commission determines that such unlawful discrimination exists, then the COUNTY may forthwith terminate this order." (Ordinance No. 2946, SS 1)

Section 2-97. Affirmative action officer. At the discretion of the COUNTY affirmative action officer, he or she shall promptly and thoroughly investigate, or cause to be investigated reports and complaints from whatever source, that any party contracting with the COUNTY is engaging, or during the term of a contract or agreement with the COUNTY has engaged, in any unlawful discriminatory employment practices as described in Section 2-95 of this Code. If the investigation discloses reason to believe such unlawful discrimination does exist or has existed and the conditions giving rise thereto have not been changed so as to prevent further such unlawful discrimination, and the said party shall forthwith terminate such unlawful discrimination, take all appropriate steps to prevent a recurrence of such or other unlawful practices, and compensate the person or persons unlawfully discriminated against for any and all loss incurred by reason of such unlawful discrimination, all to the satisfaction of the affirmative action officer, then the affirmative action officer shall cause the matter to be presented for action to the State Fair Employment Practices Commission or the Federal Equal Employment Opportunities Commission, or both, and to any other concerned state or federal agencies or officers.

If and when it has been finally determined by the affirmative action officer, COUNTY counsel, or state or federal regulatory agencies that such unlawful discriminatory employment practice has in fact so occurred or are being carried on, then the affirmative action officer shall forthwith present the entire matter to the Board of Supervisors of the COUNTY, together with all damages, costs, and expense related thereto and incurred by COUNTY, for appropriate action by the Board of Supervisors in accord with the intent and purposes of this article and of the affirmative action program of the COUNTY (Ordinance No. 2946, SS 1)

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COUNTY OF SANTA BARBARA
AGREEMENT FOR:
General Services Project No. 23018
County of Santa Barbara
Santa Maria Administration Building HVAC Upgrade
511 East Lakeside Parkway
Santa Maria, CA, 93455
BC: _____-_____

THIS AGREEMENT ("Agreement") is made by and between the County of Santa Barbara, a political subdivision of the State of California ("**COUNTY**"), and {FULL LEGAL NAME OF CONTRACTOR} ("**CONTRACTOR**" and together with COUNTY, collectively, the "Parties" and each individually a "Party"), for the completion of the Work (defined below), on the following terms, conditions, and provisions. All references in the General Terms to the "Agreement" shall have the meaning ascribed to the term "Agreement" in the immediately preceding sentence.

1. **CONTRACT**: This Agreement incorporates by reference all of the General Conditions and Special Conditions, Specifications and Drawings provided by the COUNTY for the Santa Maria Administration Building HVAC Upgrade Project No. 23018, the Notice to Bidders as amended by Addenda Number {xx-xx}, the Bid Bond, the Performance Bond, the Payment Bond, and the bid documents executed and submitted by the CONTRACTOR for the Project ("Bid"), to the extent the Bid is consistent with the provisions of this Agreement other than the Bid (all of the foregoing documents, together with this Agreement, collectively, the "Contract" or "Contract Documents"). A copy of each of the General and Special Conditions, Specifications and Drawings provided by the COUNTY for the Santa Maria Administration HVAC upgrade. Project 23018, the Notice to Contractors, the Bid Bond, the Performance Bond, and the Payment Bond are attached hereto as EXHIBIT A, and a copy of the Bid is attached hereto as EXHIBIT B. All capitalized terms used but not defined herein shall have the respective meanings ascribed to such terms in the Notice to Bidders. Copies of all Contract Documents are on file in the Department of General Services Office of the COUNTY, and have been and will be made available to the CONTRACTOR during the term of this Agreement. CONTRACTOR acknowledges receipt of all Contract Documents.

2. **WORK**: CONTRACTOR, at CONTRACTOR's own cost and expense, shall perform all the work described in the Contract Documents ("Work"), and shall furnish all equipment and materials necessary to perform and complete the Work, in a good and workmanlike manner and to the satisfaction of the Director of the COUNTY's General Services Department ("Director"), or the Director's designee, all in strict accordance with the Contract Documents.

3. **EXCAVATIONS**: Before any pavement resurfacing, displacement, or excavation of the ground that may be required in connection with the Work under this Contract, the CONTRACTOR shall obtain an inquiry identification number by calling Underground Service Alert (USA) 1 (800) 422-4133 or by such other means as may be required; shall conform to all requirements of Sections 4215 through 4217 of the Government Code regarding any such pavement resurfacing, displacement or excavation, including the payment of any fees required; and shall facilitate performance by the COUNTY of any obligation required of the COUNTY under the Government Code. There shall be no performance under this Contract by either party hereto unless and until CONTRACTOR complies with all of the foregoing provisions of this Sections 3, and notifies the County Representative (defined below) in writing regarding such compliance.

4. **COUNTY REPRESENTATIVE**: The "County Representative" referred to in the Contract Documents is Steve Fernandes.

5. **PAYMENT**: As full compensation for furnishing all labor, supervision, overhead, materials, and equipment and for completing all of the Work contemplated by this Contract, and subject to adjustments and liquidated damages, if any, as provided in the Contract Documents, the base amount to be paid to the CONTRACTOR for satisfactory completion of all requirements of the CONTRACTOR under this Contract is and shall be {WRITTEN AMOUNT IN DOLLARS AND CENTS} ($NUMERICAL) ("Base Contract Amount"), to be paid as provided in the Contract Documents. The CONTRACTOR assumes and will provide against any loss or damage arising out of the nature of the Work undertaken, or the action of the elements, or from any unforeseen difficulties or obstructions which may arise or be encountered in the performance of the Work until its acceptance by the COUNTY, and assumes any and all expenses incurred by or in consequence of suspension or discontinuance of the Work, for well and faithfully completing the Work and the whole

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thereof, in the manner and to the requirements of the Contract and directions of the County Representative to the extent not inconsistent with any provisions of the Contract Documents.

6. **RIGHT TO AUDIT**: CONTRACTOR shall maintain and make available all books, papers, records, detail costs, estimates, claims, and accounts, including payment, property, payroll, personnel, subcontractors, and financial records related to or which arise in connection with the Contract (collectively, the "Records"). The form of record keeping with respect to the Records shall be subject to approval by COUNTY. The Records shall be made available during normal business hours for examination by COUNTY or the County Representative and shall be retained at CONTRACTOR'S principal place of business in California for audit during normal business hours at such place for four (4) years after the recording of the Notice of Completion for the Project. CONTRACTOR shall provide an office in which COUNTY and the County Representative may conduct such audit(s).

The COUNTY will have the right to audit CONTRACTOR'S Project records. Records must be made available in a form satisfactory to the Santa Barbara County Auditor-Controller.

7. EXTRA WORK: Extra work and materials, may be authorized via written Change Order(s) duly executed by the Director, including agreement(s) providing for compensation in addition to the Base Contract Amount at the same rates per unit provided for in the Contract Documents; *provided, however*, that the aggregate amount of such compensation in addition to the Base Contract Amount that may be authorized by the Director shall not exceed [__] (i.e., ten percent (10%) of the original Base Contract Amount, if the original Base Contract Amount is less than $250,000, or (ii) $25,000 + 5% of the amount of the original Base Contract Amount in excess of $250,000). Compensation in such other equitable amount as is appropriate for the requirements of the COUNTY may be authorized by resolution or minute order of the Santa Barbara County Board of Supervisors.

8. COMPLIANCE WITH LAW: CONTRACTOR shall keep fully informed of, and shall at all times during the Term (defined below) ensure the performance of the Work is in compliance with, all laws, statutes, ordinances, decrees, orders, and regulations which do or may affect the Project, performance of the Work, the materials used therein, or persons engaged in connection therewith, and all such orders of bodies and tribunals having any jurisdiction over same (collectively, "Applicable Laws"). If CONTRACTOR has reason to believe that any provision of the Contract Documents conflict with any Applicable Law(s), the CONTRACTOR shall immediately report same to the County Representative in writing. CONTRACTOR shall at all times observe and comply with, and shall cause all agents, employees, and subcontractors to observe and comply with, all Applicable Laws. CONTRACTOR acknowledges and shall comply with the provisions of Sections 9364 and Sections 9550 and 9566, inclusive, of the Civil Code of California.

9. PAYMENTS NOT ACCEPTANCE: No certificate given or payments made under this Contract, except the final payment hereunder, shall be evidence of the performance of this Contract, either wholly or in part, against any claim upon CONTRACTOR. Final payment for the Work performed under this Contract shall not be made until the lapse of thirty (30) days after the Notice of Completion of the Work has been filed for record and no payment shall be construed to be acceptance of any defective Work or improper materials. CONTRACTOR agrees that the payment for final quantities due under this Contract and the payment of amounts due for any Work in accordance with this Contract shall release the COUNTY from any claims or liabilities on account of Work performed under this Contract, as the same may be amended from time to time during the Term. In addition to guarantees required elsewhere, CONTRACTOR shall and does hereby guarantee all workmanship and material to be free of defects and fit for the purposes intended for a period of one year from and after both the date of acceptance of the work and the recordation of the Notice of Completion by the COUNTY and CONTRACTOR shall repair or replace all Work and materials, together with any other portions of the Work which may be displaced in so doing, that, in the opinion of the County Representative, is or becomes defective during the period of said guarantee, without expense whatsoever to the COUNTY.

10. PREVAILING WAGE RATES: Rates of wages, including overtime, holiday, and Sunday rates provided for the Work shall comply with and are subject to the California Labor Code, Sections 1770 et. seq., Executive Orders of the President of the United States No. 9240, dated September 9, 1942, and No. 9250, dated October 3, 1942, and to any modifications thereof, and to and any orders of the President or any authorized Federal Officer or agency, insofar as the same may apply to this Contract.

No contractor or subcontractor may be listed on a bid for a public works project unless registered with the Department of Industrial Relations pursuant to Labor Code section 1725.5 [with limited exceptions from this requirement for bid purposes

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only under Labor Code section 1771.1(a)]. No contractor or subcontractor may be awarded a contract for public work on a public works project unless registered with the Department of Industrial Relations pursuant to Labor Code section 1725.5. This Project is subject to compliance monitoring and enforcement by the Department of Industrial Relations.

11. CONTRACT DOCUMENTS ACKNOWLEDGED: CONTRACTOR hereby declares that CONTRACTOR has read the Contract Documents, has carefully examined the plans and detailed drawings of the Work to be performed, and fully understands the intent and meaning of the same.

12. TIME FOR COMMENCEMENT, COMPLETION: The term of this Contract shall commence effective as of the first date that this Agreement is duly executed by all of the parties hereto ("Effective Date") and shall terminate on the date that is 180 calendar days after the Effective Date unless earlier terminated in accordance with the provisions of this Agreement ("Term"). As soon as practicable after the Contract has been executed by both the CONTRACTOR and the COUNTY, a Notice to Proceed will be issued by the County Representative stating the starting date of work performance under the Contract. The CONTRACTOR shall begin work within fifteen (15) calendar days after receiving the Notice to Proceed unless otherwise provided therein. The provisions of this Agreement pertaining to Liquidated Damages shall apply in the event of the CONTRACTOR's failure to complete the Work within the Term. In the event that CONTRACTOR does not complete the Work during the Term, CONTRACTOR shall only be paid for the Work actually performed during the Term and accepted by COUNTY in accordance with the provisions of this Agreement.

13. WORKERS' COMPENSATION INSURANCE: CONTRACTOR certifies that CONTRACTOR has knowledge of, is in compliance with, and warrants that CONTRACTOR at all times during the Term shall remain in compliance with, the provisions of Section 3700 of the Labor Code, which requires every employer to be insured against liability for Workers' Compensation or to undertake self-insurance by the provisions of that Code. CONTRACTOR shall comply with such provisions before commencing the performance of the Work.

14. PROGRESS PAYMENT; NO WAIVER FOR DELAY: Any progress payment made after the scheduled completion date for the Work shall not constitute a waiver of any liquidated damages under this Contract.

15. GUARANTEE BONDS: Before any performance under this Contract, the CONTRACTOR shall provide the security required by statute for the payment of all workers and suppliers, and security for the faithful performance of all terms and conditions of this Contract, in an amount and form approved by the COUNTY. Both securities shall contain provisions that automatically increase amounts thereof and/or time of completion or both for all change orders, extensions, and additions to the Work provided under this Contract.

16. DISPUTES: Should any dispute(s) arise respecting the construction or meaning of any of the plans or specifications affecting the Work or respecting the true value of any extra work or work omitted, such dispute(s) shall be resolved by the Director of the COUNTY's General Services Department or his Assistant Director of General Services designee ("Director"), whose decision shall be final and binding upon the parties hereto. If, after the decision of the Director as provided herein, claims (as defined in Public Contracts Code Section 20104) under this Contract are filed by CONTRACTOR against COUNTY, and those claims are in the aggregate amount of $375,000 or less, such claims shall be resolved under Public Contracts Code Sections 20104 through 20104.8, inclusive.

17. SUBSTITUTION OF MATERIALS, SUBSTITUTION OF CONTRACTORS: The County Representative is authorized to act on behalf of the COUNTY in any matters requiring consent to substitutions of materials or equipment; provided, however, that the County Representative is not authorized to [_____].

18. SURVIVAL: All provisions of this Contract which by their nature are intended to survive the termination or expiration of this Agreement shall survive such termination or expiration.

19. INDEMNIFICATION AND INSURANCE: CONTRACTOR shall at all times comply with the indemnification and insurance provisions set forth in EXHIBIT C, attached hereto and incorporated herein by reference.

20. TAXES: CONTRACTOR shall pay all taxes, levies, duties, and assessments of every nature due in connection with any Work under this Contract, and shall make any and all payroll deductions required by law. CONTRACTOR is responsible for all CONTRACTOR personnel and for the payment of their compensation, including, if applicable, withholding of income

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taxes, and the payment and withholding of social security and other payroll taxes, unemployment insurance, workers' compensation insurance payments, and disability benefits. In no event shall COUNTY pay or be responsible for any taxes imposed on, or with respect to, CONTRACTOR's income, revenues, gross receipts, personnel, real or personal property, or other assets. COUNTY shall not be responsible for paying any taxes on CONTRACTOR's behalf, and should COUNTY be required to do so by state, federal, or local taxing agencies, CONTRACTOR agrees to promptly reimburse COUNTY for the full value of such paid taxes plus interest and penalty, if any. These taxes shall include, but not be limited to, the following: FICA (Social Security), unemployment insurance contributions, income tax, disability insurance, and workers' compensation insurance.

21. CONFLICT OF INTEREST: CONTRACTOR covenants that CONTRACTOR presently has no employment or interest and shall not acquire any employment or interest, direct or indirect, including any interest in any business, property, or source of income, which would conflict in any manner or degree with the performance of Word required to be performed under this Contract. CONTRACTOR further covenants that in the performance of this Contract, no person having any such interest shall be employed by CONTRACTOR. CONTRACTOR must promptly disclose to COUNTY, in writing, any potential conflict of interest. COUNTY retains the right to waive a conflict of interest disclosed by CONTRACTOR if COUNTY determines it to be immaterial, and such waiver is only effective if provided by COUNTY to CONTRACTOR in writing.

22. NONDISCRIMINATION: COUNTY hereby notifies CONTRACTOR that COUNTY's Unlawful Discrimination Ordinance (Article XIII of Chapter 2 of the Santa Barbara County Code) applies to this Contract and is incorporated herein by this reference with the same force and effect as if the ordinance were specifically set out herein and CONTRACTOR agrees to comply with said ordinance.

23. NON-ASSIGNMENT: CONTRACTOR shall not assign, subcontract, delegate, or otherwise transfer, directly or indirectly, whether by operation of law or otherwise ("Transfer") this Contract, in whole or in part,, or any of CONTRACTOR's rights or obligations under this Contract, without the prior written consent of COUNTY in each instance. Any attempted or purported Transfer in violation of this Section 24, or in violation of Section 2.08 of the General Conditions, attached hereto as part of Exhibit A, shall be null and void and without legal effect and shall constitute grounds for termination by COUNTY. No Transfer shall relieve CONTRACTOR of any of its obligations hereunder.

24. SEVERABILITY: If any one or more of the provisions contained in the Contract shall for any reason be held to be invalid, illegal or unenforceable in any respect by a court of competent jurisdiction, then such provision or provisions shall be deemed severable from the remaining provisions hereof, and such invalidity, illegality or unenforceability shall not affect any other provision hereof, and this Contract shall be construed as if such invalid, illegal or unenforceable provision had never been contained herein.

25. TIME IS OF THE ESSENCE: Time is of the essence in this Contract, and each covenant and term is a condition herein.

26. ENTIRE AGREEMENT AND AMENDMENT: The Contract Documents, as may be modified from time to time during the Term by duly authorized and executed Change Orders in accordance with the provisions of this Agreement and the General Terms, contain the entire understanding and agreement of the Parties with respect to the subject matter hereof and thereof, and there have been no promises, representations, agreements, warranties or undertakings by any of the Parties, either oral or written, of any character or nature hereafter binding except as set forth herein and therein. This Contract may be altered, amended or modified only by an instrument in writing, duly executed by each of the Parties, and by no other means, except as otherwise set forth in Section 30, below, to the extent such delegated authority is expressly authorized by the COUNTY Board of Supervisors in approving this Contract. Each Party waives its future right to claim, contest or assert that this Agreement was modified, canceled, superseded, or changed by any oral agreements, course of conduct, waiver or estoppel.

27. EXECUTION OF COUNTERPARTS: This Contract may be executed electronically and in any number of counterparts, and each of such counterparts shall for all purposes be deemed to be an original; and all such counterparts, or as many of them as the Parties shall preserve undestroyed, shall together constitute one and the same instrument.

28. SUBCONTRACTORS: CONTRACTOR is authorized to subcontract with only the subcontractor(s) identified in the Bid as attached hereto and as set forth in Exhibit B ("Subcontractors"). Contractor shall be fully responsible for all services and Work performed by its Subcontractors. Contractor shall secure from each of its Subcontractors legally binding written agreements to comply with the provisions of this Agreement pertaining to CONTRACTOR's obligations as if such

obligations pertained to such Subcontractor, including, but not limited to, audit obligations.

29. CHANGE ORDERS: No Change Order shall be valid or enforceable against the COUNTY unless in the form of the Form of Change Order attached here as Exhibit [_] and duly executed by both CONTRACTOR and the Director. in accordance with this Section 30 and Article 6 of the General Conditions ("Change Order"). No Change Order may (i) extend the Term, (ii) authorize Work to be performed hereunder after the Term or after the expiration or termination of this Agreement, (iii) increase the Maximum Contract Amount, or (iv) change the plans or specifications.

30. FLEET REQUIREMENTS: Vehicles with a Gross vehicle weight rating ("GVWR") greater than 8,500 lbs. and light-duty package delivery vehicles operated in California may be subject to the California Air Resources Board ("CARB") Advanced Clean Fleets regulations. Such vehicles may therefore be subject to requirements to reduce emissions of air pollutants. For more information, please visit the CARB Advanced Clean Fleets webpage at https://ww2.arb.ca.gov/our-work/programs/advanced-clean-fleets. Contractor shall at all times have a valid Certificate of Reported Compliance, as described in section 2449(n) of Title 13 of the California Code of Regulations ("CARB Certificate of Compliance"), and shall confirm that each subcontractor listed in Contractor's Bid has a valid CARB Certificate of Compliance, for each fleet of vehicles subject to 13 CCR section 2449 that may be used in performance of this Contract. No such vehicle is permitted on the project site unless and until Contractor provides County with a valid Certificate of Reported Compliance applicable to such vehicle.

31. ORDER OF PRECEDENCE: In the event of conflict between the provisions contained in the numbered sections 1 through 34 of this Agreement ("Numbered Section") and the provisions contained in the Exhibits, the provisions contained in the Numbered Sections of this Agreement shall prevail over those in the Exhibits other than Exhibit C, which Exhibit C shall control and prevail over all other provisions of this Contract. CONTRACTOR agrees that in the event of any discrepancy, inconsistency, gap, ambiguity, or conflicting language between the Bid attached hereto as Exhibit B, on the one hand, and any other provision(s) of this Contract on the other, the provisions of this Contract (including the Numbered Sections of this Agreement, Exhibit A, and Exhibit C) other than Exhibit B shall take precedence and control and prevail over the provisions of the Bid attached hereto as Exhibit B.

32. TERMINATION.

A. COUNTY may, by written notice to CONTRACTOR, terminate this Contract in whole or in part at any time, whether for COUNTY's convenience, for nonappropriation of funds, or because of the failure of CONTRACTOR to fulfill its obligations hereunder.

1. **For Convenience.** COUNTY may terminate this Contract in whole or in part upon thirty (30) days' written notice. During such thirty (30) day period, CONTRACTOR shall, as directed by COUNTY, wind down and cease Work as quickly and efficiently as reasonably possible, without performing unnecessary services or activities and by minimizing negative effects on COUNTY from such winding down and cessation of Work.

2. **For Nonappropriation of Funds.** Notwithstanding any other provision of this Contract, in the event that no funds or insufficient funds are appropriated or budgeted by federal, State or COUNTY governments, or sufficient funds are not otherwise available for payments hereunder in the fiscal year(s) covered by the Term of this Agreement, then COUNTY will notify CONTRACTOR of such occurrence, and COUNTY may terminate or suspend this Contract in whole or in part, with or without a prior notice period. Subsequent to termination of this Contract under this provision, COUNTY shall have no obligation to make payments with regard to the remainder of the Term.

3. **For Cause.** Should CONTRACTOR default in the performance of this Contract or materially breach any of the provisions hereof, COUNTY may, at COUNTY's sole option, terminate or suspend this Contract in whole or in part upon written notice ("Termination Notice"). Upon receipt of such Termination Notice, CONTRACTOR shall immediately discontinue all Work (unless otherwise directed in such Termination Notice) and notify COUNTY in writing of the status of CONTRACTOR's performance of Work hereunder. The date of termination shall be the date the Termination Notice is received by CONTRACTOR, unless the Termination Notice directs otherwise.

B. Upon termination, CONTRACTOR shall deliver to COUNTY all data, estimates, graphs, summaries, reports, and all other property, records, documents or papers as may have been accumulated or produced by CONTRACTOR in performing this Contract, whether completed or in process, except such items as COUNTY may, by written permission, permit CONTRACTOR to retain. Notwithstanding any other payment provision of this Contract, COUNTY shall pay CONTRACTOR for satisfactory Work performed as of the date of termination, to include a prorated amount of compensation due hereunder less payments, if any, previously made. In no event shall CONTRACTOR be paid an amount in excess of the Maximum Contract Amount, or for unperformed portions of Work. CONTRACTOR shall furnish to COUNTY such financial information as in the judgment of COUNTY, is necessary to determine the reasonable value of the Work rendered

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by CONTRACTOR. The foregoing is cumulative and shall not affect any right or remedy which COUNTY may have in law or equity.

33. JURISDICTION; VENUE. This Contract shall be governed by the laws of the State of California. Any litigation arising out of this Contract shall be filed in the County of Santa Barbara, if in state court, or in the federal district court nearest to the County of Santa Barbara, if in federal court.

34. NO WAIVER. COUNTY's delay or failure to act with respect to a breach of this Contract by CONTRACTOR shall not constitute or be construed as a waiver of COUNTY's rights with respect to subsequent or similar breaches. Any delay or failure of COUNTY to exercise or enforce any right or provision of this Contract shall not constitute a waiver of such right or provision, and every power and remedy given by this Contract to COUNTY shall be exercised from time to time and as often as may be deemed expedient in the sole discretion of COUNTY. No remedy herein conferred upon or reserved to COUNTY is intended to be exclusive of any other remedy or remedies, and each and every such remedy, to the extent permitted by law, shall be cumulative and in addition to any other remedy given hereunder or now or hereafter existing at law or in equity or otherwise.

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IN WITNESS WHEREOF, the parties hereto have executed this Agreement to be effective as of the date executed by the County.

COUNTY
County of Santa Barbara

By: _____
LAURA CAPPS, CHAIR

BOARD OF SUPERVISORS

Dated: _____

ATTEST:
MONA MIYASATO,

CONTRACTOR

{LEGAL NAME OF CONTRACTOR}, a California corporation

_____
COUNTY EXECUTIVE OFFICER

CLERK OF THE BOARD

By: _____
AUTHORIZED REPRESENTATIVE
Name: {NAME}

By: _____
Deputy Clerk of the Board

Title: {TITLE OF AUTHORIZED REPRESENTATIVE}

APPROVED AS TO FORM:
RACHEL VAN MULLEM,
COUNTY COUNSEL

APPROVED AS TO ACCOUNTING FORM:
BETSY SCHAFFER, CPA, CPFO
AUDITOR-CONTROLLER

By: _____
Deputy County Counsel

By: _____
Deputy Auditor-Controller

APPROVED AS TO FORM:
GREG MILLIGAN, ARM
RISK MANAGER

RECOMMENDED FOR APPROVAL
KIRK LAGERQUIST, DIRECTOR
GENERAL SERVICES DEPARTMENT

By: _____
Risk Management

By: _____
Department Head

Dept 063 Fund 0030 Program 193 Account 8200 Project 23018

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TERMS & CONDITIONS

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TERMS & CONDITIONS

Public Project Contracts
Specifications and General Conditions

THESE TERMS & CONDITIONS apply to the Contract established between the County of Santa Barbara, a political subdivision of the State of California ("we/us/our/County") by its Purchasing Division ("Purchasing"), and the individual or entity identified as "Vendor" on the Contract form to which this document is attached ("you/you/Contractor"), including your agents, employees or sub-contractors. **Your signature means you have read and accepted these terms and conditions.**

SPECIFICATIONS

The Contractor shall furnish all tools, equipment, apparatus, labor, materials, workmanship, transportation, and services necessary to perform and complete the job at the designated location in a good and workmanlike manner, in accordance with the attached contract specifications.

1. **EXAMINATION OF SITE.** The Contractor shall have examined the site of work and shall be responsible for having acquired full knowledge of the job and of all problems affecting it. No variations or allowance from the Contract sum will be made because of lack of such examination.

2. **RESPONSIBILITIES OF THE CONTRACTOR.** It shall be the responsibility of the Contractor to establish knowledge of the general area and the specific site to familiarize her/himself with the access and egress, construction or building difficulties and method of delivery and installation, all of which could affect Contractor's ability to perform the work. It shall be the responsibility of the Contractor to cope with all these eventualities.

3. **PROTECTION OF PROPERTY.** The Contractor shall take all needed precautions to protect the property both real and personal of the County and private individuals and shall safeguard the passing public from harm and from any eventualities arising during the course of the work. The Contractor shall make certain that these safeguards are used both during and after the hours of work.

4. **WORKMANSHIP.** All work shall be performed in a neat and professional manner using the best recognized practices of the particular trade involved and shall be accomplished by mechanics and

workers skilled and trained to properly complete the work required. The work shall proceed vigorously to completion once it is started. Time is of the essence.

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5. **COSTS**. The Contract price is to include all materials and all labor and shall cover all costs of the use of the usual machinery and tools required in the work and shall include all of the Contractor's profits, supervision, and other expenses. This amount shall include all of the Contractor's costs of insurance for property damage and public liability protection, social security benefits, unemployment insurance for workers, and any other benefits, costs, or charges required to be forwarded by the Contractor.

6. **PAYMENTS NOT ACCEPTANCE**. No certificate given or payments made under this Contract, except the final payment, shall be evidence of the performance of this Contract, either wholly or in part, against any claim upon the Contractor. Final payment for the work performed under this Contract shall not be made until the lapse of thirty (30) days after the Notice of Completion of said work has been filed for record and no payment shall be construed to be acceptance of any defective work or improper materials. The Contractor agrees that the payment for final quantities due under this Contract and the payment of undisputed contract amounts due for any work in accordance with any amendments of this Contract, shall release the County of Santa Barbara from any and all claims or liabilities on account of work performed under this Contract or any amendments thereof related to those amounts.

7. **EXCAVATIONS**. Before any pavement resurfacing, displacement or excavation of the ground that may be required by any performance under this Agreement, the Contractor shall obtain an inquiry identification number by calling Underground Service Alert (USA) 1 (800) 422-4133 or 1 (800) 227-2600 or by such other means as may be required; shall conform to all requirements of Government Code Sections 4215 through 4217 regarding any such pavement resurfacing, displacement or excavation, including the payment of any fees required; and shall facilitate performance by the County of any obligation required of the County under said Sections. There shall be no performance under this Contract by either party unless and until the provisions of such Sections are complied with and the County Representative is notified regarding the compliance.

8. **RIGHT TO AUDIT**. The Contractor shall keep such business records pursuant to this Contract as would be kept by a reasonably prudent practitioner of the Contractor's profession and shall maintain such records for at least four (4) years following the termination of this Contract. All accounting records shall be kept in accordance with generally accepted accounting principles. The County shall have the right to audit and review all such documents and records at any time

during the Contractor's regular business hours or upon reasonable notice. In addition, if this Contract exceeds ten thousand dollars ($10,000.00), the Contractor's records shall be subject to the examination and audit of the California State

Auditor, at the request of the County or as part of any audit of the County, for a period of three (3) years after final payment under the Contract (Cal. Govt. Code Section 8546.7). The Contractor shall participate in any audits and reviews, whether by the County or the State, at no charge to the County.

9. **COMPLIANCE WITH LAW, AMENDMENTS**. The Contractor shall keep fully informed of all laws, ordinances and regulations which do or may affect the conduct of the work, the materials used therein or persons engaged or employed thereon and all such orders of bodies and tribunals having any jurisdiction over same. If it be found that the Special Provisions or Standard Specifications for the work conflict with any such law, ordinance or regulation, the Contractor

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shall immediately report same to the County Representative in writing. The Contractor shall at all times observe and comply with and shall cause all agents and employees to observe and comply with all such laws, ordinances, regulations or decrees as the same now exists or may be hereafter amended and all superseding provisions thereof. The Contractor acknowledges, particularly, the provisions of Sections 9364 and Sections 9550 and 9560, inclusive, of the Civil Code of California

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ARTICLE 1: CONTRACT DOCUMENTS

1.1 DEFINITIONS

1.1.1 The Contract Documents: The Contract Documents consist of the Agreement between the Owner and the Contractor, the Conditions of the Contract (General Conditions, General Requirements, Special Provisions, and other Conditions), the Drawings, the Specifications, all Addenda, Supplements, Invitations to Bid and Proposal Forms issued prior to execution of the Contract and all Modifications issued after the execution of the Contract. A Modification is (1) a written amendment to the Contract signed by both parties (2) a Change Order, (3) a written interpretation issued by the Architect/Engineer pursuant to Subparagraph 3.2.2 or (4) a written order for a minor change in the Work issued on the Owner's behalf pursuant to Paragraph 13.4.1.

1.1.2 The Contract: The Contract Documents form the Contract with the Contractor. This Contract represents the entire and integrated agreement and supersedes all prior negotiations, representations, or agreements, either written or oral. The Contract may be amended or modified only by a Modification as defined in Subparagraph 1.1.1. The Contract Documents shall not be construed to create any contractual relationship of any kind between the Architect/Engineer and the Contractor or between the Architect/Engineer and the Designated Representative, but the Architect/Engineer and the Designated Representative shall be entitled to performance of the obligations of the Contractor intended for their benefit and to enforcement thereof. Nothing contained in the Contract Documents shall create any contractual relationship between the Owner, the Designated Representative or the Architect/Engineer and any Subcontractor or Sub-subcontractor.

1.1.3 The Work: The term "Work" means the construction and services required by the Contract Documents, whether completed or partially completed, and includes all other labor, materials, equipment, and services provided or to be provided by the Contractor to fulfill the Contractor's obligations. The Work may constitute the whole or part of the project.

The Project: The "Project" is the total construction of which the Work performed under the Contract Documents may be the whole or a part and which may include construction by the Owner or by separate contractors.

1.1.5 The Owner: As defined in Article 2 of the General Conditions, the Owner for this project is:
Santa Barbara County, through its
Board of Supervisors

1.1.6 Architect/Engineer: As defined in Article 3 of the General Conditions.

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1.1.7 Designated Representative: As defined in Article 4 of the General Conditions, the Designated Representative is also the Labor Compliance Coordinator for the Work.

1.1.8 Contractor: As defined in Article 5 of the General Conditions.

1.1.9 Product: The term "product" shall include materials, equipment, and systems.

1.1.10 The Drawings: The Drawings are the graphic and pictorial portions of the Contract Documents, wherever located and whenever issued, showing the design, location, and dimensions of the Work, generally including plans, elevations, sections, details, schedules, and diagrams.

1.1.11 The Specifications: The Specifications are that portion of the Contract Documents consisting of the written requirements for materials, equipment, construction systems, standards and workmanship for the Work and performance of related services.

1.1.12 The Bid Package: The Bid Package is the volume usually assembled for the Work which may include the bidding requirements, sample forms, conditions of the Contracts and Specifications.

1.1.13 As Approved: Where used in conjunction with the Designated Representative or the Architect/Engineer's response to submittal's, requests, applications, inquiries, reports and claims by the Contractor, the meaning of the term "approved" shall not exceed the limitations of the Designated Representative or the Architect/Engineer's responsibilities and duties as established in these General Conditions.

1.1.13.1 In no case shall "approval" by the Designated Representative or the Architect/Engineer be interpreted as a release of the Contractor from the responsibilities to fulfill the requirements of the Contract Documents.

1.1.13.2 Approval, where required for an item, shall be obtained from the Architect/Engineer through the Designated Representative in writing.

1.1.14 Indicated: The term "indicated" is a cross reference to details, notes or schedules on the drawings, other paragraphs

or schedules in the Specifications and similar means of recording requirements in the Contract Documents.

1.1.14.1 Where terms such as "shown", "noted", "scheduled", and "specified" are used instead of "indicated", it is for the purpose of helping the reader accomplish the cross reference and no limitation of locations is intended except as specifically noted.

1.1.14.2 Directed, Requested, Etc.: Where not otherwise explained, terms such as "directed", "requested", "authorized", "selected:,

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"approved", "required", "accepted", and "permitted" mean "directed by the Architect/Engineer, Designated Representative or Owner's Representative", "requested by the Architect/Engineer, Designated Representative or the Owner's Representative", etc. However, no such implied meaning will be interpreted to extend to the Architect/Engineer's or Designated Representative's responsibility in the Contractor's area of construction supervision.

1.1.15 Installer: The person or entity engaged by the Contractor or its Subcontractor or Sub-subcontractor for the performance of a particular unit of Work at the project site, including installation, erection, application and similar required operations. It is a General Requirement that installers be recognized as experienced and competent in the Work that they are engaged to perform.

1.1.16 Suitable, Reasonable, Proper, Correct, and Necessary: Such terms shall mean as suitable, reasonable, proper, correct or necessary for the purpose intended as required by the Contract Documents, subject to the judgment of the Architect/Engineer or the Designated Representative.

1.1.17 Including, Such As: The Terms "including" and "such as" shall always be taken in the most inclusive sense, namely, "including, but not limited to", and "such as, but not limited to."

1.1.18 Option: The term "option" shall mean a choice from the specified products which shall be made by the Contractor. The choice is not "whether" the Work is to be performed, but "which" product or "which" procedure is to be used. The product or procedure chosen by the Contractor shall be provided at no increase in the cost to the Owner or the Designated Representative and with no lessening of the Contractor's responsibility for its performance. All or any options selected or proposed are still subject to all requirements for submittals and for approval of same.

1.1.19 Exposed: The term "exposed" shall mean any item or surface, exterior or interior, which can be seen by a person outside the building, or seen by a person inside any usable space within the building during normal activity.

1.1.20 At No Additional Cost: The term "at no additional cost" shall mean at no additional cost to the Owner and at no cost to the Architect/Engineer or the Designated Representative.

1.1.21 Testing Laboratory: An independent entity engaged to perform specific inspections or tests of the Work, either at the project site or elsewhere; and to report and interpret the results of those inspections or tests.

1.1.22 Record Documents: Construction Documents revised to show changes made during the construction process, usually based on marked-up prints, drawings and other data furnished by the Contractor to the Designated Representative.

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1.1.23 Compliance Group Representative: The person or entity representing a third-party observer whose sole purpose on the PROJECT is to interview contractor employees, including any subcontractor for prevailing wage compliance consistent with federal and state prevailing wage requirements as set forth in the David-Bacon Act and other related codes, laws or regulations.

1.2 ABBREVIATIONS

1.2.1 The language of the specifications and elsewhere in the Contract Documents is of the abbreviated type in certain instances and implies words and meanings which will be appropriately interpreted.

1.2.2 Actual word abbreviations of a self-explanatory nature have been included in the Specifications and Drawings. These are generally defined in the Specifications Section at the first instance of use of each term so abbreviated. They are generally summarized in a list on the Drawings.

1.2.3 Singular words will be interpreted as plural and plural words will be interpreted as singular where applicable and the full context of the requirements so indicates.

1.3 EXECUTION, CORRELATION, AND INTENT

1.3.1 By executing this Agreement, the Contractor represents that he has visited the site, familiarized himself with the local conditions under which the Work is to be performed and correlated its observations with the requirements of the Contract Documents. Claims, as a result of failure to do so, will not be considered.

1.3.2 The contract agreement shall be signed in triplicate by the Owner and Contractor. Original copies are to be provided to Owner, Contractor, and Designated Representative. Digital signatures are acceptable by the County of Santa Barbara

The intent of the Contract Documents is to include all items necessary for the proper execution and completion of the Work. The Contract Documents are complementary and what is required by anyone shall be as binding as if required by all. Work not covered in the Contract Documents will not be required unless it is consistent therewith and is reasonably inferable therefrom as being necessary to produce the intended results. Words and abbreviations in the Contract Documents which have well-known technical or trade meanings are used in accordance with such recognized meanings.

1.3.3 The organization of the Specification into divisions, sections and articles and the arrangements of Drawings shall not control the Contractor in dividing the Work among Subcontractors or in establishing the extent of Work to be performed by any Trade.

1.3.4 All indications or notations which apply to one or a number of

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similar situations, materials or processes shall be deemed to apply to all such situations, materials or processes wherever they appear in the Work, unless otherwise indicated in the Contract Documents.

1.3.4.1 Where the word "similar" appears on the drawings, it shall be interpreted in its general sense and not as meaning identical and all details shall be worked out in relations to their location and connection with other parts of the Work.

1.3.4.2 Where, on any drawings, a portion of the Work is drawn out and the remainder is indicated in outline, the parts drawn out shall also apply to parts outlined.

1.3.5 All manufactured articles, materials and equipment shall be applied, installed, connected, erected, used, cleaned and conditioned in accordance with the manufacturer's written or printed directions and instructions unless otherwise indicated in the Contract Documents.

1.3.6 The Contract Documents should be read as one package and are dependent on one another for interpretation. If there is an ambiguity or conflict between documents, the Contractor or its Subcontractor has the duty of inquiring with the Designated Representative and the Architect/Engineer before he bids on the job. Conflicts and discrepancies discovered during the process of the Work shall be referred to the Architect/Engineer and Owner via the Designated Representative for resolution.

1.3.7 Any noted discrepancies between the Contract Documents shall be promptly called to the attention of the Designated Representative and the Architect/Engineer and no Work so affected shall be undertaken in advance of the Designated Representative's and the Architect/Engineer's decision, except at the Contractor's own risk.

1.4 OWNERSHIP AND USE OF DOCUMENTS

1.4.1 All Drawings, Specifications, and copies thereof of this project shall remain the Owner's property. They are to be used only with respect to this project and are not to be used on any other project.

1.4.2 Project approved Working Drawings, Specifications, Exhibits, and Reports will be posted on the Owner's website specified in the Invitation to Bid. Owner will not furnish paper copies of approved Working Drawings, Specifications, Exhibits, and Reports to Contractor. Contractor is responsible to download Working Drawings, Specifications, Reports, and Exhibits via the Owner's website specified in Invitation to Bid.

ARTICLE 2: OWNER

2.1 DEFINITION

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2.1.1 The Owner is the person or entity identified as such in the Agreement between the Owner and the Contractor and is referred to throughout the Contract Documents as if singular in number. The term Owner means the Owner or its authorized representative.

2.2 INFORMATION AND SERVICES FURNISHED BY THE OWNER

2.2.1 The Owner will furnish all surveys describing the physical characteristics and approximate known utility locations for the site of the Project.

2.2.2 Except as provided in Subparagraph 5.7.1, the Owner will secure and pay for necessary approvals, easements, assessments and charges required for the construction, use, or occupancy of permanent structures or for permanent changes in existing facilities unless otherwise noted.

2.2.3 Information or services under the Owner's control will be furnished by the Owner with reasonable promptness to avoid delay in the orderly progress of the Work.

2.2.4 The Owner shall forward all instructions to the Contractor through the Designated Representative.

2.2.5 The Owner shall always have access to the Work for inspection, wherever it is in preparation or in progress. When directed by the Designated Representative, the Contractor shall provide facilities for such access and inspection at the Contractor's cost.

2.3 DELEGATION

2.3.1 The Board of Supervisors delegates to the County Director of General Services the authority to act on its behalf in the administration of this contract.

2.3.2 The Director of General Services has the authority to change the Designated Representative when the Designated Representative is an employee of the County.

2.3.3 If the Designated Representative is a person or entity other than an employee of the County, the Director of General Services shall recommend to the Board of Supervisors a replacement for the Designated Representative whenever such replacement is in the best interest of the County. An affirmative majority vote by the Board of Supervisors is required to complete the replacement of the Designated Representative.

2.3.4 The Director of General Services may execute Change Orders in accordance with Article 13 in a cumulative amount not to exceed 10% of the first $250,000 of the base contract amount plus 5% of the

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base contract amount over$250,000, and for time extensions as the director may deem equitable. Any Change Orders in excess of 10% of the first $250,000 of the base contract amount plus 5% of the base contract amount over $250,000 shall be approved by a majority vote of the Board of Supervisors.

2.4 AUTHORITY OF BOARD AND INSPECTION

2.4.1 The Board of Supervisors has the final authority in all matters affecting the work covered by the plans and specifications. Within the scope of the contract, the Designated Representative has the authority to enforce compliance with the plans and specifications. The Contractor shall promptly comply with instructions from the Designated Representative.

2.4.2 On all questions relating to quantities, the acceptability of material, equipment, or work, the execution, progress or sequence of work, and the interpretation of specifications or drawings, the decision of the Designated Representative is final and binding, and shall be precedent to any payment under the contract, unless otherwise ordered by the Board.

2.4.3 Labor Compliance Monitoring: To ensure compliance with prevailing wage requirements in the WORK, the Board of Supervisors has adopted a *Joint Labor Compliance Monitoring Program.* This program monitors labor compliance by conducting interviews with Contractor employees and subcontractors at the project site. A copy of the *Joint Labor Compliance Monitoring Program Community Workforce Agreement (CWA)* is available at the Capital Projects Division Office, is included herewith and referenced as Document 00 45 20. The Contractor, and all subcontractors, shall cooperate by allowing approved Compliance Group Representatives access to its employees on the project site for the purpose of conducting prevailing wage compliance interviews. The Compliance Group Representative shall restrict their on-site activities to prevailing wage compliance interviews only. Promotion, advertising or other related activities of the Compliance Group Representative is strictly prohibited. Any additional effort required by the Contractor in compliance with this Article shall be incorporated into the Bid Scope of Work and no additional compensation will be considered.

2.4.4 The Designated Representative (or its designee) may accompany any Compliance Group Representative when conducting prevailing wage compliance interviews. The Compliance Group Representative will display in plain view a county-issued identification card when conducting prevailing wage compliance interviews at the project site.

ARTICLE 3: ARCHITECT/ENGINEER

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3.1 DEFINITIONS

3.1.1 The Architect/Engineer is the person lawfully licensed to practice architecture or engineering or an entity lawfully practicing architecture or engineering who has entered into an Agreement with the Owner to serve as Architect/Engineer and is referred to throughout the Contract Documents as if singular in number and masculine in gender. The term Architect/Engineer means the Architect/Engineer or its authorized representative.

3.1.2 Architect/Engineer shall be entitled to performance by the Contractor of any obligations expressly set forth which are intended for the Architect/Engineer's benefit and to enforcement thereof.

3.1.3 In the case of the termination of the employment of the Architect/Engineer, the Owner shall appoint a capable and reputable Architect/Engineer. The status under the Contract of the Architect/Engineer so appointed shall be that of the former Architect/Engineer. The Owner shall notify the Contractor whenever the Architect/Engineer is replaced.

3.1.4 The Architect/Engineer may be an employee of the County or other governmental entity.

3.2 ARCHITECT/ENGINEER'S DUTIES DURING CONSTRUCTION

3.2.1 The Architect/Engineer shall at all times have access to the Work wherever it is in preparation and progress. When directed by the Designated Representative, the Contractor shall provide facilities for such access at the Contractor's cost so the Architect/Engineer may perform its functions under the Contract Documents.

3.2.2 The Architect/Engineer will be the interpreter of the requirements of the Drawings and Specifications. Written interpretations necessary for the proper execution or progress of the Work, in the form of drawings or otherwise, will be issued with reasonable promptness by the Architect/Engineer through the Designated Representative and in accordance with any schedule agreed upon. The Contractor or Owner shall make written dated request through the Designated Representative to the Architect/Engineer for such interpretations. Such interpretations shall be consistent with and reasonably inferable from the Contract Documents. The Contractor or Owner shall execute and complete the Work in accordance with such interpretations. The Architect/Engineer shall not be liable to the Contractor for the result of any interpretation or decisions rendered in good faith in such capacity.

3.2.2.1 The Architect/Engineer shall interpret the requirements of Change Orders and he shall decide all other questions of design intent in connection with the Work.

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3.2.2.2 It shall be the responsibility of the Architect/Engineer to make interpretations and render opinions in regard to all claims to the Owner or Designated Representative involving questions of interpretation of the intent of the drawings and specifications. Such opinions and interpretations, together with the reasons therefore, shall be furnished in writing by the Architect/Engineer to the Owner, Designated Representative and Contractor within ten (10) days after a request is made thereof.

3.2.2.3 Neither the Contractor, the Designated Representative nor the Owner shall be bound by any determination, interpretation or opinion of the Architect/Engineer if it is determined that such is not in accord with the true intent of the Contract Documents. The party taking issue with the determination, interpretation, or decision of the Architect/Engineer shall give the other party or parties, as the case may be, written notice of such fact within ten (10) days after the determination, interpretation, or opinion is rendered by the Architect/Engineer. However, it is the intent of this Paragraph 3.2 that in the actual performance of the Work, the Contractor and the Designated Representative shall, in the first instance, proceed in accordance with the instruction given by the Architect/Engineer unless the Owner and the Designated Representative mutually agree that the Contractor and the Designated Representative shall proceed otherwise.

3.2.3 The Architect/Engineer's decisions in matters relating to artistic effect will be final if consistent with the intent of the Contract Documents.

3.2.4 The Architect/Engineer will have the authority to reject Work which does not conform to the Contract Documents. Whenever, in its opinion, he considers it necessary or advisable for the implementation of the intent of the Contract Documents, he will have authority to require special inspection or testing of the Work in accordance with Subparagraph 8.7.2 whether or not such Work be then fabricated, installed or completed. However, neither the Architect/Engineer's authority to act under this Subparagraph 3.2.4, nor any decision made by him in good faith either to exercise or not to exercise such authority, shall give rise to any duty or responsibility of the Architect/Engineer to the Contractor, any Subcontractor, any of their agents or employees, or any other person performing any of the Work.

3.2.4.1 The Architect/Engineer will be the judge of the performance of the Work and will use its powers under the Contract to enforce its faithful performance. The Architect/Engineer will determine the amount, quality, acceptability and fitness of all parts of the Work.

3.2.4.2 The Architect/Engineer will recommend suspension of the Work whenever suspension may be necessary to ensure the proper execution of the Work.

3.2.5 The Architect/Engineer will review and approve or take other

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appropriate action upon Contractor's submittals such as Shop Drawings, Product Data and Samples, but only for conformance with the design concept of the Work and with the information given in the Contract Documents. Such action shall be taken with reasonable promptness so as to cause no delay. The Architect/Engineer approval of a specific item shall not indicate approval of an assembly of which item is a component.

3.2.6 The Architect/Engineer along with the Designated Representative will conduct inspections to determine the dates of Substantial Completion and Final Completion and will receive and review written warranties and related documents required by the Contract and assembled by the Contractor.

3.2.7 Architect/Engineer shall prepare and deliver to the Owner in an electronic format record construction drawings and record construction specifications showing significant changes in the Work during the construction process based upon as-built construction drawings and other data provided by the Contractor through the Designated Representative.

3.2.8 The Architect/Engineer will communicate with the Contractor through the Designated Representative.

3.2.9 The Architect/Engineer will visit the site at intervals appropriate to the stage of construction to become generally familiar with the progress and quality of Work and to determine in general if the Work is being performed in a manner indicating that the Work, when completed, will be in accordance with the Contract Documents. However, the Architect/Engineer will not be required to make exhaustive or continuous on-site inspections to check quality or quantity of the Work. On the basis of on-site observations as an Architect/Engineer, the Architect/Engineer will keep the Owner informed of progress of the Work and will endeavor to guard the Owner against defects and deficiencies in the Work.

3.2.10 The Architect/Engineer will not have control over or charge of and will not be responsible for construction means,

methods, techniques, sequences or procedures, or for safety precautions and programs in connection with the Work, since these are solely the Contractor's responsibility as provided in Paragraph 5.3. The Architect/Engineer will not be responsible for the Contractor's failure to carry out the Work in accordance with the Contract Documents. The Architect/Engineer will not have control or charge of and will not be responsible for acts or omissions of the Contractor, Subcontractor, or their agents or employees, or of any other persons performing portions of the Work.

3.2.11 The Architect/Engineer has no authority to prepare and issue change orders. All change order proposals shall be prepared by the Contractor, shall be approved by the Owner or Director of General Services, and shall be issued to the Contractor through the Designated Representative.

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ARTICLE 4: DESIGNATED REPRESENTATIVE

4.1 DEFINITION

4.1.1 The Designated Representative is the person or entity who has been identified in writing by the Owner to serve as Designated Representative and is referred to throughout the Contract Documents. When the Designated Representative is an entity, the term Designated Representative includes the Designated Representative acting through its authorized representatives as indicated to the Contractor in writing at the preconstruction meeting or whenever changes in personnel assignments occur.

4.2 ADMINISTRATION OF THE CONTRACT

4.2.1 The Designated Representative will provide, as the Owner's authorized representative, the general administration of the Project as herein described.

4.2.2 The Designated Representative will be the Owner's construction representative during the construction until final payment and shall have the responsibility to monitor the Work of the Contractor.

4.2.3 The Designated Representative shall monitor the Work to be performed through final completion and project close-out. The Designated Representative's activities shall in no way supersede or dilute the Contractor's obligation to perform the Work in conformance with all contract requirements, but s/he is empowered, by the Owner, to act on its behalf with respect to the proper execution of the Work and shall give instructions to require such corrective measures as may be necessary, in its opinion, to ensure the proper execution of the contract or to protect the Owner's interest. The Designated Representative shall have the authority to require prompt execution of Work whenever such action may be necessary, in its opinion, to ensure the proper execution of the Work or to protect the interests of the Owner. Except as otherwise provided herein, the Designated Representative shall determine the amount, quality, acceptability, fitness and progress of the Work covered by the Contract without, however, assuming any of the Architect/Engineer's statutory or customary obligations.

4.2.4 The Designated Representative shall be deemed to be the Owner's Representative to the extent set forth below and elsewhere in this Contract. The Designated Representative shall have no authority to obligate or otherwise bind the Owner.

4.2.5 The Designated Representative shall review and monitor the Contractor's Work and construction schedule and establish specific measures and actions which the Contractor shall take to maintain the current approved schedule.

4.2.6 The Designated Representative shall examine the Contractor's Work

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to determine if the construction conforms to the requirements of this Contract (provided, however, that such action by the Designated Representative shall not supersede or diminish the Contractor's obligation to furnish materials and perform the Work in conformity with all requirements of this Contract).

4.2.7 The Designated Representative shall determine any corrective measures which may be necessary to bring the Contractor's performance into conformity with Contract requirements.

4.2.8 The Designated Representative shall monitor the Contractor's performance in coordinating the Contractor's Work under this Contract with the Work being performed or to be performed by other separate contractors.

4.2.9 The Designated Representative shall assist the Owner and the Architect/Engineer in the resolution of questions of Contract interpretation. If the Contractor either disagrees with the Designated Representative's interpretation or considers that such interpretation constitutes a constructive change in Contract requirements, the question shall be referred to the Owner for contract interpretation.

4.2.10 The Designated Representative shall establish and recommend administrative procedures for coordinating the activities of the Contractor, the Designated Representative, the Architect/Engineer and the Owner.

4.2.11 The Designated Representative shall monitor the Contractor's submittal schedule.

4.2.12 The Designated Representative shall coordinate the activities of the Testing Agencies with the activities of the Contractor.

4.2.13 The Designated Representative shall review all requests or recommendations for changes affecting this Contract, review proposals, assist in negotiating and submit recommendations thereon to the Owner.

4.2.14 The Designated Representative shall make recommendations, together with the Architect/Engineer where appropriate, to the Owner as to the qualifications of Subcontractors or Suppliers wherever submittals of Subcontractors and Suppliers are required to be furnished under this contract.

4.2.15 The Designated Representative shall transmit to the Owner all written guarantees and warranties which the Contractor is required to furnish under this contract.

4.2.16 The Designated Representative may call meetings which shall be attended by the Contractor, Subcontractors and Material Suppliers, as the Designated Representative may deem necessary.

4.2.17 The Designated Representative shall have the authority to reject

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Work which does not conform to the Contract Documents and to require any Special Inspection and Testing in accordance with Subparagraph 8.7.2.

4.2.18 The Designated Representative shall review all applications by the Contractor for progress payments and final payment and make recommendations to the Architect/Engineer and Owner for approval thereof in accordance with the Owner's procedures.

4.2.19 The Designated Representative along with the Architect/Engineer will conduct inspections to determine the dates of Substantial Completion and Final Completion and will receive and review written warranties and related documents required by the Contract and assembled by the Contractor.

4.2.20 In the event any claim is made or any action brought in any way relating to the design or construction of the Project, the Designated Representative will render to the Owner any and all assistance required of it.

4.2.21 The Owner may, at his option, designate the Designated Representative as its representative to perform additional functions, including functions for which other authorized representatives may be designated by the provisions of this contract.

4.2.22 It shall be the duty of the Contractor to comply with all procedures established and implemented by the Designated Representative and approved by the Owner as stated above. In the event any such procedures are at a variance with other provisions of the Contract Documents, such procedures shall prevail.

4.2.23 The Designated Representative shall, at all times, have access to the Work wherever it is in preparation and progress. When directed by the Designated Representative, the Contractor shall provide facilities for such access so the Designated Representative may perform its functions under the Contract Documents.

4.2.24 In no event shall any act or omission on the part of the Designated Representative relieve the Contractor from its obligation to perform its Work in full compliance with the Contract.

4.3 OWNER'S AND DESIGNATED REPRESENTATIVE'S RIGHT TO STOP WORK

4.3.1 If the Contractor fails to correct defective Work as required by Paragraph 14.2 or persistently fails to carry out the Work in accordance with the Contract Documents, the Designated Representative or the Owner through the Designated Representative may order the Contractor to stop the Work, or any portion thereof, until the cause for such order has been eliminated.

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4.3.1.1 The Contractor shall bear all costs of such Work stoppage unless it is determined that no fault existed in the Contractor's Work. Any Work stoppage for the correction of defective Work or removal and replacement of unacceptable materials and equipment will not be considered as the basis for any time extension.

4.3.2 If the Contractor defaults or neglects to carry out the Work in accordance with the Contract Document and fails within 48 hours after receipt of written notice from the Designated Representative to commence and continue correction of such default or neglect with diligence and promptness, the Designated Representative may, by written notice and without prejudice to any other remedy he or the Owner may have, make good such deficiencies. In such case an appropriate Change Order shall be issued deducting from the payments then or thereafter due the Contractor the cost of correcting such deficiencies, including compensation for the Architect/Engineer's and the Designated Representative's additional services made necessary by such default, neglect or failure.

4.3.3 The relationship of the Designated Representative to the Owner may be that of an independent contractor and the Designated Representative shall have no authority to bind the Owner in any way with the Contractor, its subcontractors, materials suppliers or any third parties.

ARTICLE 5: Contractor

5.1 DEFINITION

5.1.1 A Contractor is the person or entity identified as such in the Agreement between the Owner and a Contractor and is referred to throughout the Contract Document as if singular in number. The term Contractor means the Contractor or its authorized representative. It is the duty of the Contractor to comply with all procedures established and implemented by the Designated Representative and approved by the Owner as stated herein.

5.2 REVIEW OF CONTRACT DOCUMENTS

5.2.1 The Contractor shall carefully study and compare the Contract Documents, shall investigate existing site conditions, and shall at once report to the Designated Representative any error, inconsistency or omission he may or reasonably should discover.

5.2.2 All soil, test borehole and exploratory borings data, water table elevations, and soil analyses shown on the drawings or included in the Geotechnical Report and specifications apply only at the locations of the exploratory borings and to the depths indicated. Geotechnical Report is included in and made part of the bid documents. Any additional subsurface exploration shall be done by

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bidders or the Contractor at their own expense.

5.2.3 The indicated elevation of the water table is that existing at the date the test hole was determined. It is the Contractor's responsibility to determine and allow for the elevation of groundwater at the date of project construction. A difference in elevations between groundwater shown in exploratory soil boring logs, Geotechnical Report, and groundwater actually encountered during construction will not be considered as a basis for extra work.

5.3 SUPERVISION AND CONSTRUCTION PROCEDURES

5.3.1 The Contractor shall supervise and direct the Work, using the best skill and attention. He shall be solely responsible for all construction means, methods, techniques, sequences and procedures and for coordinating all portions of the Work under the Contract.

5.3.1.1 The Designated Representative may reject any means, methods, techniques, sequences, or procedures proposed by the Contractor, which might constitute or create a hazard to the Work or to persons or property, or which will not provide Work in accordance with the Contract Documents. However, neither the Designated Representative's acceptance of nor its failure to reject any means, methods, techniques, sequences, and procedures shall relieve the Contractor of its responsibilities to safely and properly complete the Work.

5.3.2 The Contractor shall be responsible to the Owner and the Designated Representative for the acts and omissions of its employees and all its Subcontractors and their agents and employees and other persons performing any of the Work under a contract with the Contractor.

5.3.3 Neither observations, inspections, tests, or approvals by persons other than the Contractor shall relieve the Contractor from its obligations to perform the Work in accordance with the Contract Documents.

5.3.4 The Contractor shall perform and be responsible for the correct horizontal and vertical layout out and completion of the Work as per the drawings and written instruction of the Designated Representative including all necessary leveling and checking. The Contractor shall protect and preserve all permanent survey monuments or benchmarks and shall bear the expense of replacing any that may be disturbed without permission of the Designated Representative. Replacement of damaged permanent survey monuments or benchmarks shall be performed by a licensed land surveyor hired by the Owner.

5.3.5 The Contractor shall keep the Designated Representative informed of the plan and progress of its Work. No Work shall be closed or covered until it has been duly inspected and approved. Should uninspected Work be covered, the Contractor shall, at its own

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expense, uncover all such Work so that it can be properly inspected; and after such inspection, he shall properly repair and replace all such Work.

5.4 LABOR AND MATERIALS

5.4.1 The Contractor shall provide and pay for all labor, equipment, tools, construction equipment and machinery, transportation and other facilities and services necessary for the proper execution and completion of the Work, whether temporary or permanent and whether or not incorporated or to be incorporated in the Work.

5.4.1.1 The Contractor shall accept delivery, store, protect, and provide security for any Owner-purchased materials, systems and equipment which are a part of the Work until such items are incorporated into the Work. The Contractor shall document receipt of such materials, systems, and equipment on forms acceptable to the Designated Representative.

5.4.1.2 The Contractor shall furnish, install, connect, make operable, and commission all heating, ventilating and air conditioning equipment, plumbing fixtures, lighting fixtures, kitchen equipment, and any other mechanical or electrical equipment shown on the plans or called for in the specifications or change orders. In connection therewith, the Contractor shall also furnish and install all necessary devices, hardware, and systems required to make said equipment properly and safely operable including, but not limited to, mounting hardware and framing, insulation, vibration control devices, duct systems, gas piping systems, hot and cold water systems, venting ducts, control systems, and electrical circuits.

5.4.1.3 The Contractor shall furnish and install complete utility systems ready for use and shall pay any special fees, permits or assessments required by the serving utility.

5.4.2 The Contractor shall at all times enforce strict discipline and good order among its employees and shall not employ on the Work any unfit person or anyone not skilled in the task assigned to him.

5.4.2.1 Any person employed, who is found to be incompetent, intemperate, troublesome, disorderly or otherwise objectionable, or who fails or refuses to perform its work properly and acceptably, shall be immediately removed from the work by the Contractor and not be re-employed on the jobsite.

5.4.2.2 The Owner may remove and may order the Contractor to remove any person who is incompetent or otherwise objectionable from the site of the Work.

5.4.3 Approval of the Architect/Engineer under any substitution clause shall be obtained in writing before any substitution is made. In the event of the Contractor failing to obtain such approval, no consideration will be given to any appeal from the decision of the Architect/Engineer condemning any materials furnished.

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5.4.4 Pursuant to the Public Contract Code, any reference in the specifications and plans to any brand name, article, device, product, materials, fixture, form or type of construction by brand name, make, or catalog number, such references shall be interpreted as establishing a standard of quality and shall not be construed as limiting competition; and the Contractor, in such cases, may at its option use any article, device, product, materials fixture, form or type of construction which in the judgment of the Architect/Engineer expressed in writing is equal to that specified. The Contractor must within forty (40) days after award of the Contract submit data substantiating a request for substitution.

5.4.5 Requests for substitutions prior to award of the Contract shall be submitted within the time indicated in the Instructions to Bidders.

5.4.6 Requests for substitutions after award of the Contract shall be submitted within THIRTY-FIVE (35) days of the date of the Notice of Award. This time period may be extended by the COUNTY OF SANTA BARBARA only, in its sole discretion.

5.4.7 NOT USED.

5.4.8 If the Contractor proposed to use a material which, while suitable for the intended use, deviates in any way from the detailed requirements of the Contract Documents he shall inform the Architect/Engineer through the Designated Representative in writing of the nature of such deviations at the time that the materials are submitted for approval and shall request a written approval of the deviation from the requirements of the Contract Documents.

5.4.9 In requesting approval of deviations or substitutions, the Contractor shall provide evidence leading to a reasonable certainty that the proposed substitutions or deviation will provide a quality of result at least equal to that otherwise attainable. If, in the opinion of the Architect/Engineer, the evidence presented by the Contractor does not provide a sufficient basis for such reasonable certainty, the Architect/Engineer may reject such substitution or deviation without further investigation.

5.4.10 The Architect/Engineer will judge the design and appearance of proposed substitutes on the basis of their suitability in relation to the overall design of the project, as well as for their intrinsic merits. The Architect/Engineer will not approve proposed substitutes as equal to items specified which, in its opinion, would be unharmonious, or otherwise inconsistent with the character or quality of design of the project.

5.4.11 Any additional cost, or any loss or damage, arising from the substitution of any material or method for those originally specified or drawn shall be borne by the Contractor, notwithstanding approval or acceptance of such substitution by the Owner or

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Architect/Engineer, unless such substitution was made at the written request or direction of the Owner or Architect/Engineer.

5.4.12 The investigation, review and approval of substitute materials requires a minimum of 15 calendar days additional time more than for specified items. The Contractor is required to assure the time impact will not delay its or other Contractor's Work when submitting (proposing) a substitution. Submittal of a substitution will be promptly rejected if the Contractor does not accept the delay responsibility in making its submittal.

5.4.13 The Contractor provides the same warranties and guarantees for the substitute that would be provided for that specified.

5.4.14 The Contractor, its agents and employees shall be bound by and comply with all applicable provisions of the California Labor Code, and with Federal, State, and local laws related to labor.

5.4.15 The Contractor shall strictly adhere to the provisions of the California Labor Code regarding minimum wages, the eight-hour day and the forty-hour week, overtime, Saturday, Sunday, and holiday work and non-discrimination because of race, color, national origin, religion, sex, age, or physically handicapped when otherwise qualified. The Contractor shall forfeit to the Owner the penalties prescribed in the California Labor Code for violations.

5.4.16 The Contractor, as required by the California Labor Code, Sections 1770 et seq., the Contractor shall pay not less than the prevailing rate of per diem wages for each classification of worker employed as determined by the Director of the California Department of Industrial Relations. A copy of the general prevailing rate of per diem wages is available at the General Services Department to be viewed upon request. The Contractor shall post a copy of such wage determination at each job site.

5.4.17 As provided in Section 1775 of the California Labor Code, as a penalty, the Contractor shall forfeit twenty-five dollars ($25.00) for each calendar day, or portion thereof, for each worker paid less than the prevailing rates for such work or craft in which such worker is employed for any public work done under the Contract by the Contractor or any Subcontractor under him.

5.4.18 The Contractor shall submit completed Payroll Reporting Forms for all Tradesmen employed on the Work with the monthly Progress Payment Application.

5.4.19 Payroll Reporting Forms shall be the forms prescribed by the Owner or computer-generated payroll reporting forms which have been approved in writing by the Owner or the Designated Representative.

5.4.20 The Contractor's attention is directed to Sections 1777.5, 1777.6, and 1777.7 of the California Labor Code and Title 8, California

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Administrative Code Section 200 et seq.

5.4.21 To ensure compliance and complete understanding of the law regarding apprentices, and specifically the required ratio thereunder, the Contractor and Subcontractors should, where some question exists, contact the Division of Apprenticeship Standards prior to commencement of the Work. Responsibility for compliance with the law lies with the Contractor.

5.4.22 The Owner's policy is to encourage the employment and training of apprentices in its construction contracts as may be permitted under local apprenticeship standards.

5.4.23 As required by Section 1773.8 of the California Labor Code, the Contractor shall pay travel and subsistence payments to each worker needed to execute the Work, as such travel and subsistence payments are defined in the applicable collective bargaining agreements filed in accordance with this section.

5.4.24 To establish such travel and subsistence payments, the representative of any craft, classification, or type of workman needed to execute the Work shall file with the Department of Industrial Relations fully executed copies of collective bargaining agreements for the particular craft classification or type of work involved. Such agreements shall be filed within ten (10) days after their execution and thereafter shall establish such travel and subsistence payments whenever filed thirty (30) days prior to the call for bids.

5.4.25 The Contractor shall comply with all applicable provisions of Sections 1810 to 1815, inclusive of the California Labor Code relating to working hours. As a penalty, the Contractor shall forfeit twenty-five dollars ($25.00) for each worker employed in the execution of the Work by the Contractor or by any Subcontractor for each calendar day during which such work is required or permitted to work more than eight (8) hours in any one calendar day and forty (40) hours in any one calendar week, unless such worker receives compensation for all hours worked in excess of these limits at not less than one and one half (1.5) times the basic rate of pay.

5.5 WARRANTIES AND GUARANTEES

5.5.1 Contractor shall obtain and preserve for the benefit of the COUNTY OF SANTA BARBARA, manufacturer's warranties on materials, fixtures, and equipment incorporated into the Work.

5.5.2 The Contractor, prior to or at the time of Substantial Completion for the Work and during administrative closeout of the project, shall submit one (1) digital copy of all final warranties and guarantees to the Designated Representative for subsequent transmittal to the Architect/Engineer and Owner. All final guarantees and warranties shall be in writing on guarantors'/warrantors' stationery or official forms and signed by

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a responsible company official and shall be submitted in full force and effect by the Contractor.

5.5.2.1 The Contractor warrants to the Owner and the Designated Representative that all installed materials and equipment will be new unless otherwise specified and that all Work will be of good quality, free from faults and defects and in conformance with the Contract Documents. All Work not conforming to these requirements, including substitutions not properly approved or authorized, shall be considered defective unless specifically accepted by the Owner. If required by the Designated Representative, the Contractor shall furnish satisfactory evidence as to the kind and quality of materials and equipment. This warranty is not limited by the provisions of Paragraph 14.2.

5.5.2.2 The warranty of materials, equipment and workmanship defined in 5.5.1 is separate from, independent of and in addition to any other guarantees in this contract or any other warranties required by the Contract Documents.

5.5.2.3 Except as otherwise specified, all Work shall be guaranteed by the Contractor against defects resulting from the use of inferior materials, equipment or workmanship for one year from the date of Substantial Completion of the Project and acceptance/occupancy by the Owner in writing, provided that if prior to the acceptance of the entire project, the Owner occupies or uses any separate unit of Work, the guarantee period shall, as to the unit so occupied or used, commence on the date of such occupancy or use, with the further provision that the Owner shall have first agreed in writing that the separate unit shall be occupied or used by the Owner until such certificate has been given. Equipment and facilities, which have seasonal limitations on their operations, shall be guaranteed for one full year from the date of test and acceptance in writing by the Owner.

5.5.2.4 If within any guarantee period, repairs or changes are required in connection with the guaranteed Work, as the result of the use of materials, equipment or workmanship which are defective or inferior or not in accordance with the terms of the Contract, the Contractor shall, promptly, within five (5) days after receipt of notice from the Designated Representative or Owner and without expense to the Owner or the Designated Representative, commence and continue to effect such repairs or changes.

(a.) The Contractor shall place in satisfactory condition, in every particular, all of such guaranteed Work and correct all defects therein.

(b.) The Contractor shall make good all changes to the structure or site or equipment or contents thereof, which, in the opinion of the Architect/Engineer and the Designated Representative is the result of the use of materials, equipment or workmanship which are inferior, defective or not in accordance with the terms of the Contract. The Contractor shall make good any Work or materials, or the equipment and contents of structures or site disturbed in fulfilling such guarantee.

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(c.) Notifications by Owner of defects shall stop the warranty time period. The guarantee or warranty period for that replaced or restored Work shall be reinstated for the remaining time period, starting on the date of acceptance of the replaced or restored Work.

5.5.2.5 In any case, where in fulfilling the requirement of the Contract or of any guarantee embraced in or required thereby, the Contractor disturbs any Work guaranteed under another contract, he shall restore such Work to a condition satisfactory to the Architect/Engineer and the Designated Representative and guarantee such restored Work to the same extent as it was guaranteed under such other contract.

5.5.2.6 If the Contractor, after notice, fails to proceed within 48 hours to commence and continue to comply with the terms of the guarantee, the Owner or Designated Representative may have the defect corrected in which case the Contractor and its surety shall be liable for all expenses incurred.

5.5.2.7 All special guarantees or warranties applicable to definite parts of the Work that may be stipulated in the Specifications or other papers forming a part of the Contract shall be subject to the terms of the Subparagraph 5.5.1.2 during the first year of the life of such special guarantee.

5.5.2.8 Nothing contained in Subparagraph 5.5.1 shall be construed to establish a period of limitation with respect to any other obligation which the Contractor might have under the Contract Documents, including liability for defective Work under Subparagraph 5.5.1. Subparagraph 5.5.1 relates to the specific obligation of the Contractor to correct the Work and does not limit the time within which its obligation to comply with the Contract Documents may be sought to be enforced, nor of the time within which proceedings may be commenced to establish the Contractor's Liability with respect to its other obligations under this contract.

5.5.2.9 In the event the Work of the Contractor is to be modified by another Contractor, either before or after the Inspection provided for in Subparagraph 10.7.1, the first Contractor shall remain responsible in all respects under the warranty given in Paragraph 5.5 and under any other warranties provided in the General Conditions or by law. However, the first Contractor shall not be responsible for any defects in materials or workmanship introduced by the Contractor modifying its Work. Both the first Contractor and the Contractor making the modifications shall be responsible solely for the Work done by each. The Contractor modifying the earlier Work shall be responsible for any damage to or defect introduced into the Work which it is modifying.

5.5.2.10 Warranties and guarantees shall clearly define what is to be guaranteed; the extent, terms, conditions, time and effective dates.

5.5.2.11 Copies of the same warranties and guarantees shall be included in the "Owner's Maintenance Manual" as specified herein.

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5.5.3 The Owner shall schedule an end of warranty review meeting with the Designated Representative, Architect/Engineer, and Contractor prior to the end of one year warranty to determine any work requiring correction.

5.5.4 Nothing herein shall limit any other rights or remedies available to County of Santa Barbara.

5.6 CONTROL OF OPERATIONS AND EMPLOYEES

5.6.1 The Contractor shall not use any of the existing Owner's facilities, such as, but not limited to, toilets, cafeteria, parking areas, power hookup, except with the Owner's written approval.

5.6.2 The Contractor shall confine and perform its operations in those areas where construction is required. Contractor shall protect the contiguous non-construction property. The Contractor shall protect from damage all existing trees, utilities, or other improvements at the site. Should damage result from the Contractor's failure to exercise reasonable care in the performance of its Work, the Contractor shall repair or restore any such damage at its own expense.

5.6.3 Obnoxious behavior or possession or consumption of alcoholic beverages or drugs on the premises is strictly prohibited. Violators shall be promptly discharged from the site and may be subject to prosecution.

5.6.4 All vehicular aisles and walking paths at the site where Work under the Contract is being performed are for the general use and the Contractor's operations must conform to the Owners regulations and requirements to keep areas free of obstructions. If the Work of a Contractor requires that such aisles and paths be temporarily discontinued, after obtaining Designated Representative's approval, the Work shall be done expeditiously, and alternate vehicular routes and paths of travel shall be identified by such Contractor and maintained as directed.

5.6.4.1 To minimize public inconvenience and possible hazards and to restore work areas to their original condition and former state of usefulness as soon as practicable, the Contractor shall diligently prosecute the work to completion. If, in the Designated Representative's opinion the Contractor fails to prosecute the work to the extent that the above purposes are not being accomplished, the Contractor shall, upon orders from the Designated Representative, immediately take the steps necessary to fully accomplish said purposes. All costs of prosecuting the work as described herein shall be borne by the Contractor. Should the Contractor fail to take the necessary steps to fully accomplish said purposes, after orders of the Designated Representative to do so, the Owner may suspend the work in whole or in part, until the Contractor takes said steps.

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5.6.4.2 If work is suspended through no fault of the Owner, all expenses and losses incurred by the Contractor during such suspensions shall be borne by Contractor . If the Contractor fails to properly provide for public safety, traffic, and protection of the work during periods of suspension, the Owner may elect to do so, and deduct the cost thereof from monies due the Contractor. Such action will not relieve the Contractor from liability.

5.6.5 The Contractor shall not disturb any existing structure, piping, apparatus or other Work unless expressly required by the contract. Where cutting, drilling or removals are required in existing walls, floor or roof construction, the Work shall be done in such a manner to safeguard and not endanger the structure and shall in all cases be as approved by the Owner and Designated Representative. Prior to any cutting, drilling or removals, the Contractor shall investigate both sides of the surface involved, shall determine the exact location of adjacent structural members by visual examination and shall avoid interference with such members. No structural members, such as joists, beams or columns supporting Work that are to remain shall be cut, drilled or removed unless such conditions are shown in detail on the Drawings and reinforcing of members affected or new members to compensate for such cutting, drilling and removals are shown. If unforeseen obstructions are encountered, the Contractor shall take all precautions necessary to prevent damage and shall apply for and obtain full instructions from the Designated Representative, in writing, before proceeding with the Work.

5.6.6 Rights of way or easements for the improvement as shown on the plans will be provided by the Owner. Unless otherwise provided, the Contractor shall make its own arrangements, pay for, and assume all responsibility for acquiring, using, and disposing of additional work areas and facilities temporarily required by him. The Contractor shall indemnify and hold the Owner, Designated Representative, and Architect/Engineer harmless from all claims for damages occasioned by such actions.

5.6.7 The Contractor shall remove and dispose at no cost to the Owner and with the Owner's approval, existing improvements for which no specific disposition is made on the plans but which could interfere with the work.

5.7 PERMITS, FEES AND NOTICES

5.7.1 Unless otherwise provided in the Contract Documents, the Contractor shall secure and pay for all permits including encroachment permits, governmental fees, licenses and inspections necessary for the proper execution and completion of this Work, which are customarily secured after execution of the contract and which are legally required at the time bids or proposals are received excluding permits cited in

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5.7.1.1 and 5.7.1.2.

5.7.1.1 The Project pays County Building Permit Fees.

5.7.1.2 The Owner will pay for building permits required by other governmental entities.

5.7.1.3 The Contractor shall sign for all building permits and shall be responsible for all inspections required.

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

5.7.3 Unless otherwise provided in the Contract Documents, it is the responsibility of the Contractor to make certain that the Contract Documents are in accordance with the applicable laws, statutes, building codes and regulations. If the Contractor observes that any of the Contract Documents are at variance therewith in any respect, he shall promptly notify the Designated Representative in writing and any necessary changes shall be by appropriate Modification.

5.7.4 If the Contractor performs any Work knowing it to be contrary to such laws, ordinances, rules and regulations and without such notices to the Designated Representative he shall assume full responsibility therefore and shall bear all costs attributable thereto.

5.8 ALLOWANCES

5.8.1 The Contractor shall include in the Contract Sum as defined in Subparagraph 10.1.1, all allowances stated in the Contract Documents. Items covered by these allowances shall be supplied for such amounts and by such persons as the Designated Representative may direct, but the Contractor will not be required to employ persons against whom he makes a reasonable objection.

5.8.2 Unless otherwise provided in the Contract Documents, all allowances shall cover the cost to the Contractor, less applicable trade discount, of the materials and equipment required by the allowances delivered at the site and all applicable taxes.

5.8.3 Unless otherwise provided in the Contract Documents, the Contractor's costs for unloading and handling (including hoisting) on the site, labor, installation costs, overhead, profit and other expenses contemplated for the original allowance shall be included in the Contract Sum and not in the allowance.

5.8.4 Unless otherwise provided in the Contract Documents, whenever the cost is more than or less than the allowance, the Contract Sum shall be adjusted accordingly by Change Order, the amount of which recognizes changes, if any, in handling costs on the site, labor, installation costs, overhead, profit and other expenses.

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5.9 SUPERINTENDENT

5.9.1 The Contractor shall employ an experienced, competent superintendent and necessary assistants who shall be in attendance at the Project site full time during the progress of the Work until the date of Substantial Completion and

for such additional time thereafter as the Designated Representative may deem necessary for the expeditious completion of the Work. The superintendent shall be satisfactory to the Designated Representative and shall not be changed without the consent of the Designated Representative, unless the superintendent proves to be unsatisfactory to the Contractor or ceases to be in its employ. The superintendent shall represent the Contractor and all communications given to the superintendent shall be as binding as if given to the Contractor. Important communications shall be confirmed in writing. Other communications shall be so confirmed on written request in each case.

5.9.2 The Contractor shall submit a job organization chart and resumes which identify the key personnel he intends to assign to the project, to the Designated Representative within 48 hours after receipt of the Notice to Proceed One. The Owner, acting through the Designated Representative, reserves the right to approve the Contractor's proposed personnel and anyone not so approved shall be immediately replaced by someone acceptable. If in the course of construction, the Owner, on advice of the Designated Representative, determines that it would be in its best interest to request a change in the Contractor's personnel, he may do so; and the Contractor shall immediately assign a suitable replacement who is acceptable to the Owner and the Designated Representative at no additional cost.

5.9.2.1 A duly authorized representative of the Contractor shall be available for emergency telephone communication from the Owner or Designated Representative on a 24-hour basis, seven days a week during the performance of the Work.

5.10 CONSTRUCTION SCHEDULE

5.10.1 Contractor shall provide to COUNTY OF SANTA BARBARA, Designated Representative, and Architect a schedule in conformance with the Contract Documents and as required in the Notice to Proceed One and Notice to Proceed Two and the Contractor's Submittals and Schedules section of these General Conditions.

5.10.2 Submission of Schedule and Format.

5.10.2.1 Within Thirty (30) **calendar days** of the Notice to Proceed One, the Contractor shall submit to the Designated Representative a construction Schedule covering the entire project.

5.10.2.2 The Schedule shall be prepared utilizing the critical path method of scheduling. CONTRACTOR shall utilize Primavera Scheduling

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Software (P6) to employ the Critical Path Method (CPM) in the development and maintenance of the construction schedule. If the version of Primavera Scheduling Software (P6) used is greater than Version 15.1, the CONTRACTOR shall save & export schedules in Version 15.1 before submitting to COUNTY OF SANTA BARBARA for review. The scheduling software shall be capable of being resource loaded with manpower, costs, and materials. It shall also be capable of generating time-scaled logic diagrams, resource histograms and profiles, bar charts, layouts, and reports with any and/or all activity detail. The Schedule will show the Contractor's plan for construction in sufficient detail to indicate the sequence of construction and planned dates for achieving major milestones.

5.10.2.3 The maximum duration for any single activity will be fifteen (15) working days unless approved by the County of Santa Barbara, with the exception of "Fabrication and Delivery" activities. Although portions of the Work may take longer than 15 working days, all work shall be presented in the schedule to allow for monitoring of progress through completion of incremental activities with a duration not exceeding 5 days.

5.10.2.4 A sufficient number of activities will be carried in the schedule so that each subcontract subdivision is represented and the planned start and completion of each Subcontractor's Work can be determined.

5.10.2.5 All submittals required by the specifications will be scheduled along with the approval period (fifteen calendar days minimum) and fabrication and delivery periods.

5.10.2.6 The Contractor shall submit to the Designated Representative for approval a computer-generated critical path schedule and bar charts. The schedule shall contain the following information and shall be presented in a legible format acceptable to the Designated Representative.

(a.) The Critical path schedule shall indicate for each activity:

Description
Original
Duration
Remaining
Duration
Percentage
Complete
Total Float (critical path
highlighted) Responsibility
Code (who will perform the
work) Early Start/Finish
Dates (current update)
Late Start/Finish Dates (current update)
Predecessor and Successor Activities to the activity (arrow connections)

(b.) The Contractor shall submit a bar chart schedule listing all activities in the schedule as organized by responsibility, area or

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date as approved by the Designated Representative. The bar chart shall include all the information listed in paragraph (a.) above for each activity except the listing of predecessor and successor activities.

5.10.2.7 If construction must commence during Schedule preparation and approval period, the Contractor shall prepare a **ninety (90) calendar day preliminary construction schedule** to cover the initial field construction and submittals within 10 days after the Notice to Proceed One. Activities on this Schedule should have maximum durations of five (5) days to allow for monitoring of progress through completion of the incremental activities.

5.10.2.8 A copy of the Schedule shall be submitted via email to the Designated Representative for review. At the time of submittal, The Contractor's lead on-site manager or superintendent will make a presentation to the Designated Representative on the planned construction sequence/schedule. Within **Fifteen (15) calendar days** of receipt, the Designated Representative will notify the Contractor, in writing, as to any objections to the Schedule submitted. If the Schedule is deemed objectionable, the Contractor will have **five (5) calendar days** from receipt to revise theschedule and resubmit it as above. The Contractor's presentation will include, but not be limited to:

a. Describing the sequence of work
b. Delineating any area subdivision used to plan the work sequence/schedule.

c. Identifying the critical path
d. Identifying when the milestone events specified herein are planned to be achieved (earliest ad latest times)
e. Any plans for shift work, weekend work, or extended work weeks and non-workdays (i.e. observed holidays)
f. Any planned interruptions of building power, water, communications, or other utilities.
g. Any assumptions used in planning and sequencing the work.
h. Long lead fabrication items.
i. Manpower projections for the project
j. Noise/dust control measures.
k. Safety plan.
l. Plans for moving materials into the building and removing refuse and debris.
m. Any other planning information requested by the Owner or its Designated Representative prior to the presentation.

5.10.3 Updating of the Schedule

5.10.3.1 The Schedule documents will be updated monthly at a minimum to reflect progress through the "Data Date". All contract changes as they are agreed to shall be specifically incorporated into the

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appropriate Schedule update. The Data Date may be the last working day of the month or it may be the "closure" date of the requisition for payment, as the Contractor may choose and as approved by the Designated Representative. However, when one of the above Data Dates is selected, it will be used throughout the project. The update will be submitted concurrently with the monthly payment application but no later than the fifth day of the succeeding month .

5.10.2.1 The Contractor shall submit marked up copies of the approved critical path schedule and the bar chart indicating progress through the data date. If the Contractor has elected to submit a computer-generated schedule, monthly update reports and schedule plots shall be submitted as directed by the Designated Representative.

5.10.4 Revision of the Schedule

5.10.4.1 Every effort shall be made by all parties to Work in accordance with the accepted Project Schedule. The Schedule will be revised only if the actual status of Work cannot be brought into conformance with the existing Schedule. If the Schedule is revised, the revised Schedule will be submitted as if any initial Schedule.

5.10.5 Minor Changes of the Schedule

5.10.5.1 The Schedule is not considered to be "revised" if the

Contractor must make minor changes, such as:

(a.) Adding additional details to a sub-network to facilitate

coordination of subcontract Work.

(b.) Additions/deletions/modifications of Schedule activities to reflect Work added or deleted by change order.

5.10.6 Extensions of Contract Time

5.10.6.1 All claims for extensions to contract time shall be supported by a detailed comprehensive analysis of the accepted Schedule. This analysis shall provide sufficient supporting evidence to justify a time extension. No time claims will be considered without the supporting analysis. If a time extension is granted, it shall be included in the next update of the Schedule.

5.10.7 During Construction

5.10.7.1 Construction milestone event dates will be incorporated into the detailed Construction Schedule as "target dates". These dates will be clearly noted and fixed on the Schedule graphics and corresponding computer file. It is the intent that the Work will be undertaken so as to achieve each target date and thereby achieve overall project completion as specified in the Contract.

5.10.7.2 The milestone event target dates will not be revised unless delays beyond the control of the Contractor occur.

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5.10.7.3 If, when the Schedule is updated, the planned dates for achieving any milestone(s) falls more than ten (10) working days behind the target date(s), and if this has occurred through no fault of the Owner, the Architect/Engineer or their consultants, the Contractor may be directed by the Owner or the Designated Representative, to take any and all actions required to bring the actual construction back into accordance with the target dates.

5.10.7.4 When the Contractor falls behind its schedule and is not entitled to any time extension other than extensions already reflected in the current approved schedule, he shall submit its plan for bringing the Work back up to schedule and shall implement the plan. If other measures will not be sufficient to make up the lag, the Contractor's plan and implementation thereof shall include, but not be limited to increasing the number of shifts and days of Work, additional Work, additional equipment, increasing manpower and expediting deliveries, all at the Contractor's sole expense.

5.10.7.5 If the Contractor works overtime, more than forty (40) hours per week, Saturdays, Sundays or holidays; whether by choice or by necessity, the Contractor shall be responsible for the reimbursement of the Owner for additional costs incurred for the Owner's, Designated Representative's and Architect/Engineer's overtime services.

5.10.7.6 In the event the Contractor fails or refuses to implement such measures as will bring its Work back up to conformity with the approved schedule, its right to proceed with any or all portions of the Contract requirements may be canceled or suspended; but permitting the Contractor to proceed shall in no way operate as a waiver of any rights of the Owner or deprive the Owner of its rights under any provisions of this contract.

5.10.7.7 The Contractor shall include milestone activities in the Schedule as applicable to the Work. Milestone events shall at a minimum include the following as applicable:

a. Demolition and excavation complete.
b. Start foundation concrete.
c. Complete footings and piers.
d. Complete all subgrade concrete construction.
e. Each level's structural slab complete.
f. Roof level structural slab complete.
g. Penthouse level structural slab complete.
h. Begin structural steel.
i. Complete structural steel.
j. Complete decks/structure.
k. Permanent power available.
l. Temporary heating/cooling available.
m. Begin roofing.
n. Complete roofing.
o. Begin exterior façade.

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p. Complete exterior façade.
q. Begin exterior glazing.
r. Complete exterior glazing.
s. Building dry-in.
t. Elevators operational.
u. Begin mechanical/electrical/plumbing rough-in.
v. Begin building controls.
w. Complete building controls.
x. System start-up.
y. Begin partition rough-in.
z. Complete partition rough-in.
aa. Begin drywall.
bb. Begin finishes and millwork.
cc. Begin sitework and landscaping.
dd. Complete grading.
ee. Begin underground utilities.
ff. Complete underground utilities.
gg. Complete site paving.
hh. Complete landscaping.
ii. Substantial completion.
jj. Start installation of Owner furnished equipment.
kk. Project complete/beneficial occupancy.

5.10.8 Owner Directed Schedule

5.10.8.1 On projects involving extensive coordination between the Contractor and the Owner's ongoing operations, the Owner may issue with the Contract Documents an Owner Directed Schedule which shall be used by the Contractor in preparing its plan of operations. The Contractor shall not deviate from the Owner Directed Schedule without the written prior approval of the Owner or Designated Representative. As indicated in Paragraph 5.10.6, the Contractor may be directed by the Owner or Designated Representative to take any and all actions required to perform the actual construction in accordance with the Owner Directed Schedule and its "target dates".

5.11 SUBMITTAL SCHEDULE

5.11.1.1 The Contractor shall prepare a schedule of required submittals not later than **ten (10) days** after the receipt of the Notice to Proceed One. The schedule shall include a complete list of items requiring shop drawings, design mixes, material certification, product data, brochures, catalog cuts, etc., to be approved by the Architect/Engineer. The Contractor shall coordinate all submittals requiring approvals by code enforcement agencies and shall include these special approvals in the submittal schedule. The schedule is to be submitted on a form approved by the Designated Representative. The schedule shall be updated monthly or as required by the Designated Representative. All shop drawings and other submittals shall be accompanied by a transmittal letter and reference should be indicated to the item numbers of the above-mentioned schedule. The Contractor is to indicate the following in its submittal schedule.

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a. Description of item.
b. Specification division, page numbers, article and paragraph.
c. Type of submittal (shop drawings, sample, product data).
d. Date that submittal shall be delivered to the Designated Representative's office.
e. Date that contractor must have submittal.
f. Date that material, equipment must be on site in order to maintain the contractor's progress schedule.

5.11.2 The Contractor's submittal schedule shall allow reasonable time (15 calendar days minimum) for review by the Designated Representative and the Architect/Engineer, and revision or correction, resubmittal and approval, sufficiently in advance of the time that the item is scheduled for incorporation into the Work.

5.11.3 The Designated Representative and the Architect/Engineer shall review the Contractor's submittal schedule for completeness, fulfillment of Specification requirements and compatibility with the anticipated construction schedule. The sequence and duration of Contractor, Architect/Engineer, Designated Representative activities on the submittal schedule may be adjusted by the Designated Representative.

5.12 DRAWINGS AND SPECIFICATIONS AT THE SITE

5.12.1 The Contractor shall maintain at the site for the Designated Representative and the Architect/Engineer, two (2) copies of all drawings, specifications, addenda, change orders, responses to requests for information, proposals and other modifications, in good order and marked currently to record all changes made during the construction, including any changes in locations, size and arrangement of the various components of the Work or any other variations from the drawings or shop drawings. The Contractor shall mark each drawing as the Work shown thereon is completed in the field, revising any or adding lines, dimensions, elevations, depths, notes or any other information required to accurately record conditions. These drawings, marked to record all changes during the construction and approved shop drawings, product data, samples, addenda, change orders, responses to requests for information, proposals and other records of modifications shall be delivered to the Designated Representative, for the Owner, upon completion of the Work.

5.12.1.1 In addition to maintaining and delivering to the Designated Representative those record drawings required by Subparagraph 5.12.1, the Contractor shall also prepare and submit to the Designated Representative, upon completion of the Work, record reproducible drawings if the technical specifications so require.

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5.13 USE OF SITE

5.13.1 The Contractor shall confine operations at the site to areas approved by the Designated Representative, permitted by law, ordinances, permits and the Contract Documents and shall not unreasonably encumber the site with any materials or equipment.

5.13.2 The Contractor shall not disturb existing monuments and markers at the site. Should monuments or markers or both be disturbed at any time by the Contractor, he shall bear the cost of a licensed surveyor engaged by the Owner for the purpose of relocating such monuments or markers.

5.13.3 The Contractor shall lay out its Work and shall be responsible for the accuracy of all lines, elevations and measurements, grading, utilities, and other Work executed by Contractor under its Contract. Contractor must exercise proper precaution to verify figures shown on drawing before laying out Work and will be held responsible for any error resulting from its failure to exercise such precaution.

5.13.4 All discrepancies shall be brought to the attention of the Designated Representative in writing for review and direction before proceeding with the Work. Should the Contractor proceed without direction, he shall be responsible to make whatever changes are necessary and pay call costs incurred by that Contractor, the Designated Representative, the Owner, or other Contractors.

5.13.5 Any enclosure including safety barricades, perimeter rails, opening covers and devices required to protect the Work, workmen, materials, or equipment shall be provided by the Contractor.

5.13.6 Weather protection shall be supplied by the Contractor and shall include all enclosure, supplemental heating and furnishing all other features (insulation, etc.), or meeting conditions required by the Designated Representative or by the specifications relative to the Contractor's Work, to protect the Work and any materials stored on site.

5.13.7 Protection of finished Work until acceptance shall be furnished by the Contractor.

5.13.8 Nothing herein contained shall be interpreted as granting to Contractor exclusive occupancy of the Site, the Premises, or of the Project. The COUNTY OF SANTA BARBARA shall have complete access to the Project Site for any reasonable purpose at all times.

5.14 CUTTING AND PATCHING WORK

5.14.1 The Contractor shall be responsible for all cutting or patching that may be required to complete the Work or to make its several parts fit together properly. He shall provide protection of existing Work as required.

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5.14.2 The Contractor shall not damage or endanger any portion of the Work or the Work of any separate contractors by cutting, patching or otherwise altering any Work or by excavation. The Contractor shall not cut or otherwise alter the Work of any separate contractor except with the written consent of the Designated Representative and of such separate contractor. The Contractor shall not unreasonably withhold from any separate contractor its consent to cutting or otherwise altering the Work.

5.14.3 Contractor shall do all cutting, fitting, patching, and preparation of Work as required to make its several parts come together properly, to fit it to receive or be received by work of other contractors, and to coordinate tolerances to various pieces of work, showing upon, or reasonably implied by, the Drawings and Specifications for the completed structure, and shall conform them as COUNTY OF SANTA BARBARA and/or Architect may direct.

5.14.4 All cost caused by defective or ill-timed Work shall be borne by Contractor, inclusive of repair work.

5.14.5 Contractor shall not endanger any work performed by it or anyone else by cutting, excavating, or otherwise altering work and shall not cut or alter work of any other contractor except with written consent of COUNTY OF SANTA BARBARA.

5.14.6 The Contractor shall not cut, weld to or otherwise alter any structural member without the written consent of the Architect/Engineer obtained through the Designated Representative.

5.15 DAILY AND FINAL CLEAN UP

5.15.1 The Contractor shall be responsible for daily and final clean up and continuous removal of all rubbish and debris from the building and site.

5.15.1.1 The Contractor at all times shall keep the premises free from accumulation of waste materials or rubbish caused by its operations. At the completion of the Work Contractor shall remove all its waste materials and rubbish from and about the Project, as well as all its tools, construction equipment, machinery and surplus materials.

5.15.2 The job site shall be maintained in a neat and orderly condition and kept free from accumulations of waste materials and rubbish during the entire construction period. Remove all crates, cartons and other flammable waste materials or trash from the Work areas at the end of each working day to appropriate waste hauling receptacles.

5.15.3 Elevator shafts, electrical closets, pipe and duct shafts, chases, furred spaces and similar spaces which are generally unfinished, shall be cleaned and left free from rubbish, loose plaster, mortar drippings, extraneous construction materials, dirt and dust before Substantial Completion inspection.

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5.15.4 The Contractor shall be responsible for the cleaning of all surfaces as necessary to make them free of spatters or other deposits of paint, plaster, mortar, concrete, adhesives, roofing, dirt, soil, oil, and all other materials foreign to the surface involved.

5.15.5 The Contractor shall provide all services, labor, materials, and equipment necessary for protecting the Work, , furnishings, equipment, and building structure from damage until its Completion and final acceptance by COUNTY OF SANTA BARBARA. At Completion of the Work and portions thereof, Contractor shall clean to the original state any areas beyond the Work area that become dust laden because of the Work. The Contractor always must maintain good housekeeping practices to reduce the risk of fire damage and must make a fire extinguisher, fire blanket, and/or fire watch, as applicable, available at each location where cutting, braising, soldering, and/or welding is being performed or where there is an increased risk of fire.

5.15.6 If the Designated Representative, Architect, or COUNTY OF SANTA BARBARA observe the accumulation of trash and debris, the COUNTY OF SANTA BARBARA will give the Contractor a 24-hour written notice to mitigate the condition.

5.16 COMMUNICATIONS

5.16.1 The Contractor shall forward all communications to the Owner and Architect/Engineer through the Designated Representative.

5.16.1.1 The Contractor shall promptly return telephone calls or respond to any other form of communication initiated by the Designated Representative. Failure to promptly do so shall be considered lack of performance on the part of the Contractor.

5.16.1.2 All written correspondence to the Designated Representative shall be dated and signed by the Contractor or its authorized representative.

5.16.2 Weekly project progress review meetings will be conducted with Designated Representative, Architect/Engineer, their consultants as necessary, and Contractor in attendance. The Designated Representative may call for special meetings of the Contractor, Subcontractors and material suppliers as he deems necessary for the proper coordination of the Work. Such meetings shall be held at the job site on regular working days during regular working hours. Unless otherwise directed by the Designated Representative, attendance shall be mandatory for all parties notified to attend the meeting.

5.17 ROYALTIES AND PATENTS

5.17.1 The Contractor shall pay all royalties and license fees. He shall

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defend all suits or claims for infringement of any patent rights and shall save the Owner and Designated Representative harmless from loss on account thereof, except that the Owner shall be responsible for all such loss when a particular design, process or the product of a particular manufacturer or manufacturers is specified, but if the Contractor has reason to believe the design, process or product specified is an infringement of a patent, he shall be responsible for such loss unless he promptly gives such information to the Designated Representative.

5.18 INDEMNIFICATION AND INSURANCE

5.18.1 Contractor agrees to indemnify, defend (with counsel reasonably approved by County) and hold harmless County and its officers, officials, employees, agents and volunteers from and against any and all claims, actions, losses, damages, judgments and/or liabilities arising out of this Agreement from any cause whatsoever, including the acts, errors or omissions of any person or entity and for any costs or expenses (including but not limited to attorneys' fees) incurred by County on account of any claim except where such indemnification is caused by the active negligence, sole negligence, or willful misconduct of the County.

5.18.2 NOTIFICATION OF ACCIDENTS AND SURVIVAL OF INDEMNIFICATION PROVISIONS

5.18.2.1 Contractor shall notify the County immediately in the event of any accident or injury arising out of or in connection with this Agreement. The indemnification provisions in this Agreement shall survive any expiration or termination of this Agreement.

5.18.3 INSURANCE

5.18.3.1 Without limiting the Contractor's indemnification of the County, Contractor shall procure the following required insurance coverages at its sole cost and expense. All insurance coverages are to be placed with insurers which (1) have a Best's rating of no less than A: VII, and (2) are admitted insurance companies in the State of California. All other insurers require the prior approval of the County. Such insurance coverage shall be maintained during the term of this Agreement. Failure to comply with the insurance requirements shall place Contractor in default. Upon request by the County, Contractor shall provide a certified copy of any insurance policy to the County within ten (10) working days. Contractor shall procure and maintain for the duration of this Agreement insurance against claims for injuries to persons or damages to property which may arise from or in connection with the performance of the work hereunder and the results of that work by the Contractor, its agents, representatives, employees or subcontractors.

5.18.3.2 Minimum Scope and Limit of Insurance Coverage shall be at least as broad as:

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Subcontractor to commence Work under the Contract, until Contractor and its Subcontractor(s) have procured all required insurance and Contractor has delivered in duplicate to the COUNTY OF SANTA BARBARA complete endorsements (or entire insurance policies) and certificates indicating the required coverages have been obtained, and the COUNTY OF SANTA BARBARA has approved these documents.

All endorsements, certificates and insurance policies shall state that COUNTY OF SANTA BARBARA, its trustees, employees and agents, the State of California, Designated Representative(s), Inspector(s) and Architect(s) are named additional insureds under all policies except Workers' Compensation Insurance and Employers' Liability Insurance.

Insurance Policy Limits:

Commercial General Liability	Includes: Personal & Advertising Injury, Product Liability and Completed Operations	$2,000,000 each occurrence; $4,000,000 general aggregate
Automobile Liability – Any Auto	Combined Single Limit	$2,000,000 per occurrence
Excess Liability (Umbrella)		$4,000,000 per occurrence; $4,000,000 aggregate
Workers Compensation		Statutory limits pursuant to State law
Employers' Liability		$2,000,000 each accident, each disease; $2,000,000 policy limit
Builder's Risk (Course of Construction)		Issued for the value and scope of Work indicated herein.
Property of Others	Combined Single Limit General Aggregate	Issued for the value and scope of Work stored off-site.

5.18.3.3 Other Insurance Provisions

The insurance policies must contain, or be endorsed to contain, the following provisions:

1. Additional Insured - County, its officers, officials, employees, agents and volunteers are to be covered as additional insureds on the CGL policy with respect to liability arising out of work or operations performed by or on behalf of the Contractor including materials, parts, or equipment furnished in connection with such work or operations. General liability coverage can be provided in the form of an endorsement to the Contractor's insurance at least as broad as ISO Form CG 20 10 11 85 or both CG 20 10, CG 20 26, CG 20 33, or CG 20 38; and CG 20 37 forms if later revisions used).
2. Primary Coverage - For any claims related to this Agreement, the

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Contractor's insurance coverage shall be primary insurance coverage at least as broad as ISO CG 20 01 04 13 as respects the County, its officers, officials, employees, agents and volunteers. Any insurance or self- insurance maintained by the County, its officers, officials, employees, agents or volunteers shall be excess of the Contractor's insurance and shall not contribute with it.

3. **Notice of Cancellation** - Each insurance policy required above shall provide that coverage shall not be canceled, except with notice to the County.
4. **Waiver of Subrogation Rights -You agree to waive rights of subrogation which any of your insurer may acquire** from you by virtue of the payment of any loss. You agree to obtain any endorsement that may be necessary to effect this waiver of subrogation. **The Workers' Compensation policy shall be endorsed with a waiver of subrogation** in favor of the County for all work performed by you, your employees, agents and subcontractors. This provision applies regardless of whether or not the County has received a waiver of subrogation endorsement from the insurer.
5. **Deductibles and Self-Insured Retention** - Any deductibles or self-insured retentions must be declared to and approved by the County. At County's option, either: cause the insurer shall reduce or eliminate such deductibles or self-insured retentions as respects the County, its officers, officials, employees, agents and volunteers; or provide a financial guarantee satisfactory to the County guaranteeing payment of losses and related investigations, claim administration, and defense expenses.
6. **Acceptability of Insurers** - Unless otherwise approved by Risk Management, insurance shall be written by insurers authorized to do business in the State of California and with a minimum A.M. Best's Insurance Guide rating of "A- VII".
7. **Verification of Coverage** -You must furnish proof of insurance, original certificates and amendatory endorsements as required by this Agreement. The proof of insurance, certificates and endorsements must be received and approved by the County before work commences. However, failure to obtain the required documents prior to the work beginning shall not waive your obligation to provide them. You must furnish evidence of renewal of coverage throughout the term of the Agreement. The County reserves the right to require complete, certified copies of all required insurance policies, including endorsements required by these specifications, at any time.
8. **Failure to Procure Coverage** - In the event that any policy of insurance required under this Agreement does not comply with the requirements, is not procured, or is canceled and not replaced, County has the right but not the obligation or duty to terminate the Agreement. Maintenance of required insurance coverage is a material element of the Agreement and failure to maintain or renew such coverage or to provide evidence of renewal may be treated by County as a material breach of contract.
9. **Subcontractors** -You must require and verify that all subcontractors maintain insurance meeting all the requirements stated herein, and you must ensure that County is an additional insured on insurance required from subcontractors. For CGL coverage subcontractors shall

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provide coverage with a format least as broad as CG 20 38 04 13.

10. **Claims Made Policies** - If any of the required policies provide coverage on a claims-made basis:
    i. The Retroactive Date must be shown and must be before the date of the contract or the beginning of contract work.
    ii. Insurance must be maintained, and evidence of insurance must be provided for at least five (5) years after completion of contract work.
    iii. If coverage is canceled or non-renewed, and not replaced with another claims-made policy form with a Retroactive Date prior to the contract effective date, you must purchase "extended reporting" coverage for a minimum of five (5) years after completion of contract work.
11. **Special Risks or Circumstances** - County reserves the right to modify these requirements, including limits, based on the nature of the risk, prior experience, insurer, coverage, or other circumstances.

The above insurance requirements are subject to periodic review by the County. The County's Risk Manager is authorized to change the above insurance requirements, with the concurrence of County Counsel, to include additional types of insurance coverage or higher coverage limits, provided that such change is reasonably based on changed risk of loss or in light of past claims against the County or inflation. This option may be exercised during any amendment of this Agreement that results in an increase in the nature of County's risk and such change of provisions will be in effect for the term of the amended Agreement. Such change pertaining to types of insurance coverage or higher coverage limits must be made by written amendment to this Agreement. Contractor agrees to execute any such amendment within thirty (30) days of acceptance of the amendment or modification.

Any failure, actual or alleged, on the part of County to monitor or enforce compliance with any of the insurance and indemnification requirements will not be deemed as a waiver of any rights on the part of County.

5.18.3.4 **Enforcement**

The General Services Department may assure your compliance with your insurance obligations. Ten days before an insurance policy lapses or is canceled during the Contract period you must submit to the General Services Department evidence of renewal or replacement of the policy.

If you fail to maintain any required insurance coverage, the General Services Department may maintain this coverage and withhold or charge the expense to you or terminate your control of the work.

You are not relieved of your duties and responsibilities to indemnify, defend, and hold harmless the County, its officers, agents, and employees by the General Services Department's acceptance of insurance policies and certificates.

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The minimum insurance coverage amounts do not relieve you for liability in excess of such coverage, nor do they preclude the County from taking other actions available to it, including the withholding of funds under this Contract.

5.18.3.5 Self-Insurance

Self-insurance programs and self-insured retentions in insurance policies are subject to separate annual review and approval by the County. If you use a self-insurance program or self-insured retention, you must provide the County with the same protection from liability and defense of suits as would be afforded by first-dollar insurance. Execution of the Contract is your acknowledgment that you will be bound by all laws as if you were an insurer as defined under Ins Code § 23 and that the self-insurance program or self-insured retention shall operate as insurance as defined under Ins Code § 22.

5.19 Contractor QUALITY CONTROL SYSTEM

5.19.1 The Contractor shall provide and maintain an effective quality control program of Contractor inspection system, which assure that all supplies and services required under the Contract conform to the Contract Documents whether constructed or processed by the Contractor or procured from subcontractors or vendors. The Contractor shall substantiate that all supplies and services conform to the Contract Documents and shall also perform or have performed all inspections and tests otherwise required by the Contract Documents unless the required inspection and test is specifically designated to be performed by the Owner or the Owner's designated representative. Mechanical and electrical personnel, either engineers or highly qualified technicians shall be provided during the testing, balancing, adjusting and regulating mechanical and electrical devices and systems. The Contractor's inspection system shall be documented, as specified herein, and shall be available for review by the Designated Representative prior to the start of construction and throughout the life of the Contract. The Contractor shall notify the Designated Representative in writing of any proposed change to its inspection system and change shall be subject to disapproval if they would, in the opinion of the Designated Representative, result in non-conformance with the Contract requirements. The Contractor's inspection system shall include the minimum requirements stated below. The Contractor's full time job site superintendent may function as the Contractor's Contractor Quality Control representative.

5.19.1.1 Preparatory Inspection: The Contractor's Quality Control organization shall perform prior to the beginning any Work on any definable segment of Work; a review of contract requirements; a check to assure that all materials and equipment have been tested, submitted and approved; a check to assure that provisions have been made to provide required control testing; examination of the Work area to ascertain that all preliminary Work has been

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completed; and a physical examination of materials and equipment to assure that they conform to approved shop drawings or submittal data and that all material and equipment are on hand. As a part of this preparatory Work, the Contractor's Quality Control organization will review and certify all shop drawings, certificates and other submittal data prior to submission to the Designated Representative. Each submittal offered to the Designated Representative will bear the date and the signature of a member of the Contractor's Quality Control organization indicating that he has reviewed the submittal and certified it to be in compliance with the Contract Documents (or showing the required change). The Designated Representative shall be notified a minimum of seventy two (72) hours prior to the beginning of a Preparatory Inspection. If inspection, testing, or observation is by authority other than the COUNTY OF SANTA BARBARA, the Contractor shall inform the Project Inspector and the Designated Representative not less than seventy-two (72) hours prior to the date fixed for such inspection, test, or observation.

5.19.1.2 The Contractor shall notify the COUNTY OF SANTA BARBARA's representative a sufficient time in advance of the manufacture of material to be supplied under the Contract Documents, that must by terms of the Contract Documents be tested, in order that the COUNTY OF SANTA BARBARA may arrange for the testing of same at the source of supply. This notice shall be, at a minimum, seventy-two (72) hours prior to the manufacture of the material that must be tested.

5.19.1.3 Initial Inspection: The Contractor's Quality Control organization shall perform, as soon as a representative segment of the particular item of Work has been accomplished, an examination of the quality of workmanship and a review of control testing for compliance with Contract Requirements, use of defective or damaged materials, omissions, and dimensions requirements.

5.19.1.4 Follow-Up Inspection: The Contractor's Quality Control organization shall perform daily, or as frequently as necessary, follow up inspections to assure continuing compliance with Contract Requirements, including control testing, until completion of the particular segment of the Work.

5.19.1.5 Unless Work outside the Inspector's regular working hours is required for recovery of construction schedule as deemed necessary by the County, If the Contractor performs Work outside the Inspector's regular working hours, over a period of more than eight (8) hours per day by any single person, on weekends/holidays or requests the Inspector to perform inspections off Site, then the costs of any inspections required outside regular working hours, over a period of more than eight (8) hours per day by any single person, on weekends/holidays or off Site, shall be borne by the Contractor and may be invoiced to the Contractor by the COUNTY OF SANTA BARBARA or the COUNTY OF SANTA BARBARA may deduct those expenses from the next Progress Payment.

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5.19.1.6 The Contractor shall maintain current records on an appropriate approved format of all inspections and tests performed. These records should provide factual evidence that the required inspections or tests have been performed, including type and number of inspections or tests involved; results of inspections or tests; nature of defects, causes for rejection, etc.; proposed remedial action and corrective actions taken. The Contractor shall not build upon or conceal any feature of the Work containing uncorrected defects, and payment on deficient items will be withheld until satisfactorily corrected or other actions taken as authorized. These records must cover both conforming and defective items and shall include a statement that all supplies and materials, incorporated in the Work, are in full compliance with the terms of the contract. Legible copies shall be furnished to the Designated Representative. The report will cover all Work placement subsequent to the previous report and will be verified by the prime Contractor's Quality Control representative. The Contractor shall include in all subcontracts, purchase orders or other agreements, either written or oral, with a commercial testing laboratory for quality control testing under the subject Contract, a requirement that copies of any test reports, data or other information relating to tests conducted by said laboratory under this Contract, be mailed simultaneously to the Designated Representative when said report, data or other information are mailed or delivered to the Contractor.

5.19.1.7 The Contractor shall establish controls necessary to assure scheduled completion dates established by the Contract are not impacted by the delinquent submittal data and operational tests. Twenty (20) days in advance of the Substantial Completion and prior to scheduling a pre-final inspection of the Work, or any phase of Work, under the Contract, the Contractor's Quality Control organization shall submit to the Designated Representative a complete and factual report of all remaining submittals, inspections and tests required prior to acceptance of the Work. The report shall include the following:

(a.) A list of outstanding shop drawing submittals or re-submittals requiring approval by the Contractor.

(b.) A list of manuals, test reports, spare parts, keys, etc., to be furnished to the Designated Representative and scheduled submittal dates.

(c.) Schedule of required operations tests and instruction periods.

(d.) Scheduled delivery dates for materials or equipment impacting contract completion dates.

(e.) Plan of action by the Contractor for correcting all known contract deficiencies including delay in scheduled progress.

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5.19.1.8 The Contractor shall maintain marked-up documents depicting Record Document conditions. These drawings will be maintained in a current condition at all times until completion of the Work and will be available for review by the Designated Representative at all times. All variations from the Contract Documents, for whatever reason, including those occasioned by the required coordination between trades, will be indicated. These variations will be shown in the same general detail utilized in the Contract Documents. Upon Substantial Completion, the marked-up documents shall be furnished to the Designated Representative for delivery to the Owner or the Owner's designated representative. The Contractor shall also furnish Record Documents as provided in the Technical Provisions of the specifications.

5.19.1.9 After the Contract is awarded and before construction operations are started, the Contractor shall meet with the Designated Representative and discuss the inspection system requirements. The meeting shall develop mutual understanding relative to details of the Contractor's Quality Control system including the form to be used for

recording the inspection, administration of the system and the interrelationship of the Contractor and the Designated Representative. The Contractor shall furnish to the Designated Representative within five (5) days after receipt of the Notice to Proceed One, an inspection system plan which shall include the procedures, instructions and reports to be used. No progress payments will be processed under this Contract until the inspection plan is acceptable to the Owner and the Designated Representative. The Contractor's Quality Control plan documentation will include the following minimum elements:

(a.) The inspection organization.
(b.) Number of qualifications of inspection personnel; to be used.
(c.) Authority and responsibilities of inspection personnel.
(d.) Schedule of use of inspection personnel by types and phase of Work.
(e.(Methods of inspection, including Subcontractor's work.
(f.) Test methods including as specified, name of qualified testing laboratory to be used, if applicable.
(g.) Method of documenting inspection and testing.
(g.) A copy of a letter of direction to the Contractor's Quality Control representative responsible for the quality control inspection, outlining its duties and responsibilities and signed by a responsible officer of the firm.

5.19.1.10 The Contractor's Quality Control inspection system shall provide for procedures which will assure that the latest applicable drawings, including shop drawings, specifications and instruction required by the contract, as well as authorized changes thereto, are used for fabrication, inspection and testing.

5.19.1.11 The Designated Representative and the Architect/Engineer reserves the right to inspect at source supplies or services not manufactured or performed within the Contractor's facility. The Designated Representative's and the Architect/Engineer's inspection shall not constitute acceptance, nor shall it in any way replace Contractor inspection or otherwise relieve the Contractor of its responsibility

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to furnish an acceptable end item. When inspection at Subcontractor's plant is performed by the Designated Representative, such inspection shall not be used by Contractor as evidence of effective inspection by such Subcontractor.

5.19.1.12 The Designated Representative may notify the Contractor or its Quality Control representative at the site of noncompliance with the foregoing provisions. This notice may be in writing by a form titled "Deficiency Correction Report" or "Notice of Noncompliance". The Contractor shall immediately, upon receipt of said notice, indicate the corrective action which will be taken and the date by which it will be complete, and submit this data for the Designated Representative's approval. If the Contractor refuses to comply promptly with these requirements, the Designated Representative may issue an order stopping all or part of the Work until satisfactory corrective action has been taken. No part of the time lost or cost of damages due to such stop orders shall be compensable and payment representing the noncompliance item and corrective action will be withheld until the Designated Representative has approved the corrective action.

5.19.1.13 Each of the Contractor's Quality Control Inspectors shall be responsible for inspecting the Work under its surveillance for compliance with OSHA Standards for the Construction Industry Section and approved safety program and shall immediately bring to the attention of the Contractor's supervisory personnel any unsafe Work conditions and instance of noncompliance noted.

5.19.2 Certificates of Compliance: The Designated Representative may require certificates of compliance with the specifications for materials or manufactured items produced outside of the job site. Such certificates will not relieve the Contractor from the requirements of providing material and manufactured items complying with the specifications even though they have been incorporated into the job.

5.19.3 Weighing Equipment: All scales used for proportioning materials shall be inspected for accuracy and certified within the past twelve (12) months by the State of California Bureau of Weights and Measures, by the County Director or Sealer of Weights and Measures, or by a Scale Mechanic registered with or licensed by the County.

5.19.3.1 The accuracy of the work of a scale service agency, except as stated herein, shall meet the standards of the California Business and Professions Code and the California Administrative Code pertaining to weighing devices. A certificate of compliance shall be presented prior to operation to the Designated Representative for approval and shall be renewed whenever required by the Designated Representative at no cost to the Owner.

5.19.3.2 All scales shall be so arranged that they may be read easily from the operator's platform or area. They shall indicate the true net weight without the application of any factor. The figures of the

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scales shall be clearly legible. Scales shall be accurate to within 1% when tested with the plant shut down. Weight equipment shall be so insulated against vibration or moving of other operating equipment in the plant area that the error in weighing with the entire plant running will not exceed 2% for any setting nor 1-1/2% for any batch.

5.20 COMPLETION INSPECTIONS

5.20.1 Contractor's Quality Control Completion Inspection: Based upon the Designated Representative's concurrence that the Work is nearing Substantial Completion, at least 15 days prior to pre-final inspection, the Contractor's Quality Control Inspection personnel shall conduct a detailed inspection. The Designated Representative shall be notified of the inspection date in order that he may participate, if s/he so elects. The Work shall be inspected for conformance to plans, specifications, quality, workmanship and completeness. The Contractor shall prepare an itemized list of Work not properly completed, inferior workmanship or not conforming to Contract Documents. The list shall also include outstanding administrative items such as Record Documents, operations and maintenance

manuals, spare parts, installed property list, etc. The list shall be included in the Quality Control documentation and submitted to the Designated Representative with an estimated date for correction of each deficiency within five (5) working days after conducting this inspection.

5.20.2 Pre-Final Inspection: The Contractor's Quality Control Inspection personnel, its superintendent, or other primary management person and the Designated Representative will attend this inspection. Additional Owner personnel, including but not limited to those from the Owner's General Services Department user groups, Board of Supervisors and the Architect/Engineer may be in attendance. The pre-final inspection will be formally scheduled by the Owner or the Designated Representative based upon notice from the Contractor. This notice will be given to the Owner or the Designated Representative at least ten (10) days prior to the pre-final inspection and must include the Contractor's assurance that all specific items previously identified to the Contractor as being unacceptable, along with the remaining Contract Work will be complete and acceptable by the date scheduled for the pre-final inspection. Failure of the Contractor to have all Contract Work acceptably complete for this inspection will be the cause of the Owner or the Designated Representative to be reimbursed by the Contractor for the additional inspection costs of the Owner or the Designated Representative. At this inspection, the Owner or the Designated Representative will develop a specific list of incomplete and unacceptable Work performed under the Contract and will subsequently furnish this list to the Contractor. Failure of the Owner or the Designated Representative to detect or list all incomplete and unacceptable Work during this inspection will not relieve the Contractor from acceptably performing all Work required by the Contract Documents. The Owner or the Designated

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Representative, at their option, may accept this inspection as the final acceptance inspection, if in its opinion the completion status of the inspected facilities and other Work performed under the Contract warrant this consideration.

5.20.3 Final Acceptance Inspection: The Contractor's Quality Control Inspection personnel, its superintendent or other primary management persons and the Owner or the Designated Representative will attend this inspection. Additional Owner personnel including, but not limited to, those from the Owner's General Services Department, user groups, Board of Supervisors and the Architect/Engineer may also be in attendance. The final acceptance inspection will be formally scheduled by the Owner based upon the Contractor's written assertion to the Owner that the Work is complete. This notice will be given to the Owner or the Designated Representative at least **five (5) days** prior to the final acceptance inspection and must include the Contractor's assurance that all specific items previously identified to the Contractor as being unacceptable, along with all remaining Work performed under the Contract, will be complete and acceptable by the date scheduled for the final acceptance inspection. Failure of the Contractor to have all Work acceptably complete for this inspection will be cause for the Owner and the Designated Representative to bill the Contractor for any additional inspection costs.

5.20.4 If, in the Designated Representative's judgment, the work has been completed in accordance with the plans and specifications and is ready for acceptance he will so certify to the Owner, which may accept the completed work. The Designated Representative will, in its certification to the Owner, give the date when the work was completed. This will be the date when the Contractor is relieved from responsibility to protect the work. This will also be the date to which liquidated damages will be computed.

5.21 WARRANTY OF CONSTRUCTION

5.21.1 Contractor shall obtain and preserve for the benefit of the COUNTY OF SANTA BARBARA, manufacturer's warranties on materials, fixtures, and equipment incorporated into the Work.

5.21.2 Performance Bond: The Performance Bond shall remain in effect for a 12-month warranty period after the date of substantial completion, as determined by the County. In addition to guarantees required elsewhere, Contractor shall, and hereby does guarantee and warrant all Work against all defects for a period of ONE (1) year after the date of completion as defined in Public Contract Code Section 7107 subdivision (c) or commissioning of the project whichever is later. Extended warranty periods shall be provided under manufacturer warranties, as required by project specifications.

5.21.3 In the event that the Contractor or its designated representative fails to commence and diligently pursue all Work required under Paragraph 5.5 within a reasonable time after receipt of written

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notification pursuant to the requirements thereof, the Owner or the Designated Representative shall have the right to demand that said Work be performed under the Performance Bond by making written notice on the surety. If the surety fails or refuses to perform the obligation it assumed under the Performance Bond, the Owner or the Designated Representative shall have the Work performed by others, and after completion of the Work, shall make demand for reimbursement of any or all expenses incurred by the Owner while performing the Work, including, but not limited to, administrative personnel.

5.21.4 Warranty repair work which arises to threaten the health or safety of personnel or the safety of property or equipment will be handled by the Contractor on an immediate basis as directed verbally by the Owner or the Designated Representative. Written verification will follow the Owner's or the Designated Representative's verbal instructions. Failure of the Contractor to respond as verbally directed will be cause for the Owner or the Designated Representative to have the warranty repair work performed by others and to proceed against the Contractor as outlined in Paragraph 5.21.2 above.

5.21.5 The above provisions do not in any way limit the guarantees on any items for which a longer guarantee is specified or on any items for which a manufacturer gives a guarantee for a longer period. Contractor shall furnish to COUNTY OF SANTA BARBARA all appropriate guarantee or warranty certificates as indicated in the Specifications or upon request by COUNTY OF SANTA BARBARA.

5.21.6 Pre-Warranty Conference: Prior to Substantial Completion and at a time designated by the Owner or the Designated Representative, the Contractor shall meet with the Owner or the Designated Representative to develop a mutual understanding with respect to the requirements of Paragraph 5.5 of this specification. The Owner or the Designated Representative shall establish communication procedures for the Contractor notification of warranty defects, priorities with respect to the type of defect and reasonable time required for the Contractor response and other details deemed necessary by the Owner or the Designated Representative for the execution of the construction warranty. In connection with these requirements, the Contractor will furnish the name, telephone number and e-mail address of a licensed and bonded company which is authorized to initiate and maintain warranty Work action on behalf of the Contractor. This single point of contact will be located within the local service area of the warranted construction and will be responsive to the Owner's inquiry on warranty Work action and status. This

requirement does not relieve the Contractor of any of its responsibilities in connection with Paragraph 5.5.

5.22 SUBCONTRACTS

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5.22.1 Each bidder shall file with its bid the name, license number, and the location of the place of business of each subcontractor who will perform work or labor or render service to the Contractor in or about the construction of the work or improvement, or a subcontractor licensed by the State of California who, under subcontract to the Contractor, specially fabricates and installs a portion of the work or improvement according to detailed drawings contained in the plans and specifications, in an amount in excess of one-half of one percent of the Contractor's total bid. Each bidder shall state the portion of the work which will be done by each subcontractor under this act. The Contractor shall list only one subcontractor for each such portion as is defined by the Contractor in its bid.

5.22.2 In each instance, the nature and extent of the work to be sublet shall be described. The failure of the Contractor to specify a subcontractor, or the listing of more than one subcontractor for the same portion of the work, constitutes an agreement by the Contractor that he is fully qualified to perform that portion himself, and that he shall perform that portion himself.

5.22.3 The Contractor must have the written consent of the Owner to substitute a subcontractor other than that designated in the original bid, to permit any subcontract to be assigned or transferred, or to allow a subcontract to be performed by other than the original subcontractor. The Contractor shall submit an acknowledgement signed by the original subcontractor that there is no objection to its replacement by another subcontractor. Any substitution of subcontractors must comply with California Public Contract Code.

5.22.4 Subcontracting of work for which no subcontractor was designated in the original bid, and which is more than one- half of one percent of the work, will be allowed only in cases of public emergency or necessity, and then only after a finding reduced to writing as a public record of the Owner, setting forth the facts constituting the emergency or necessity.

5.22.5 Violation of any of the above provisions will be considered a violation of the Contract, and the Owner may cancel the Contract or assess the Contractor a penalty of not more than 10% of the subcontract involved.

5.22.6 All persons engaged in the work, including subcontractors and their employees, will be considered as employees of the Contractor. He will be held responsible for their work. The Owner will deal directly with, and make all payments to the Contractor.

5.22.7 When subcontracted work is not being prosecuted in a satisfactory manner, the Contractor will be notified to take corrective action. If the Owner so orders, and on receipt by the Contractor of written instructions from the Owner, the subcontractor shall be removed

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immediately from the work. He shall not again be employed on the work.

5.23 LAWS TO BE OBSERVED

5.23.1 The Contractor shall keep himself fully informed of State and National laws and County and municipal ordinances and regulations which in any manner affect those employed in the work or the materials used in the work or in any way affect the conduct of the work. He shall at all times observe and comply with all such laws, ordinances and regulations.

5.23.2 Santa Barbara County Ordinance 2946 Unlawful Discrimination in Employment Practices: Contractor agrees with the County of Santa Barbara that it will not discriminate against any employee or applicant for employment in violation of any applicable State or Federal laws, rules or regulations which may now or hereafter specifically prohibit such discrimination on such grounds as race, religion, sex, color, national origin, physical handicap when otherwise qualified, Vietnam era veteran/disabled or age. If it is determined by the Board of Supervisors upon recommendation of the Affirmative Action Officer and the County Counsel that during the life of this contract any such unlawful discriminations have occurred, the County Board of Supervisors may forthwith terminate this contract. Contractor further agrees that whether or not the term of this contract is still in existence at the time of final determination of such unlawful discrimination, that it will forthwith reimburse the County for any and all damages, costs and expenses incurred in connection with such unlawful discrimination, including but not limited to damages from loss of Federal or State grants, subventions or loans; costs of processing, investigating and reporting complaints of unlawful discrimination; additional costs or expenses incurred in completion of this agreement by another party if this agreement is terminated before completion; all costs of suit including reasonable attorney's fees incurred in collecting any such damages, costs and expenses; and interest at 7% on all such damages, costs and expenses from the date they are incurred to date of payment.

5.23.2.1 Employment practices shall include, but are not limited to employment, promotion, demotion, transfer, recruitment and advertising for recruitment, layoff or other termination, rates of pay, employee benefits and all other forms of compensation, selection for training and apprenticeship and probationary periods.

5.23.2.2 Contractor further agrees to permit access at all reasonable times and places to all of its records of employment advertising, application forms, tests and all other pertinent employment data and records, to the County of Santa Barbara, its officers, employees and agents for the purpose of investigation to ascertain if any unlawful discrimination as described herein has occurred or is being practiced.

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5.23.2.3 Failure to fully comply with any of the foregoing provisions relating to unlawful discrimination in employment practices shall be deemed to be a material breach of this contract.

ARTICLE 6: SUBCONTRACTORS

6.1 DEFINITION

6.1.1 A Subcontractor is a person or entity who has a direct contract with a Contractor to perform any of the Work at the site. The term Subcontractor is referred to throughout the Contract Documents as if singular in number and masculine in gender and means a Subcontractor or its authorized representative.

6.1.2 Nothing in the Contract Documents shall create any contractual relationship between the Owner, the Architect/Engineer or the Designated Representative and any Contractor, any Subcontractor, or any Sub-subcontractor or its authorized representative.

6.2 SUB-CONTRACTUAL RELATIONS

6.2.1 By an appropriate agreement, written where legally required for validity, the Contractor shall require each Subcontractor to the extent of the Work to be performed by the Subcontractor, to be bound to the Contractor, by the terms of the Contract Documents and to assume toward the Contractor all the obligations and responsibilities which the Contractor, by these documents, assumes toward the Owner, the Designated Representative or the Architect/Engineer. Said agreement shall preserve and protect the rights of the Owner, the Designated Representative and the Architect/Engineer under the Contract Documents with respect to the Work to be performed by the Subcontractor so that the subcontracting thereof will not prejudice such rights and shall allow to the Subcontractor, unless specifically provided otherwise in the Contractor-Subcontractor agreement, the benefit of all rights, remedies and redress against the Contractor that the Contractor, by these Documents has against the Owner or Designated Representative. Where appropriate, the Contractor shall require each Subcontractor to enter into similar agreements with its Sub-subcontractors. The Contractor shall make available to each proposed Subcontractor, prior to the execution of the Subcontract, copies of the Contract Documents to which the Subcontractor will be bound by this Paragraph 6.3 and shall identify to the Subcontractor any terms and conditions of the proposed Subcontract which may be at variance with the Contract Documents. Each Subcontractor shall similarly make copies of such Documents to its Subcontractors.

ARTICLE 7: SEPARATE CONTRACTS

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7.1 OTHER CONTRACTORS

7.1.1 The Owner reserves the right to let other separate contracts in connection with the Work of the Project. The Contractor shall cooperate with other separate contractors and he shall afford the Designated Representative and other Contractors reasonable opportunity for the introduction and storage of their materials and equipment and execution of their Work and shall properly connect and coordinate its Work with others under the general direction of the Designated Representative. Temporary structures, equipment or materials shall be located where directed by the Designated Representative and if not so located, they shall be moved by the Contractor when directed at no additional cost.

7.2 CONTRACTOR TO INSPECT OTHER WORK

7.2.1 If any part of the Contractor's Work depends, for proper execution or results, upon the Work of the Designated Representative or any separate contractor, the Contractor shall, prior to proceeding with the Work, inspect and measure Work already in place and promptly report to the Designated Representative any discrepancies from the drawings and specifications or defects in such Work that render it unsuitable for such proper execution and results. The Contractor shall submit the report of discrepancies or defects in the form of a written request for information. Failure of the Contractor to so report shall constitute an acceptance of the other contractor's Work as fit and proper to receive its Work, except as to defect which may develop after the execution of its Work.

7.2.2 Copies of Drawings and specifications relating to these separate contracts will be available to the Contractor, upon request, for its information in carrying out the above provisions. The Contractor shall be held responsible for any damage or misfit resulting from its neglect to comply with the foregoing.

7.3 COORDINATION AND COOPERATION

7.3.1 The Contractor shall coordinate Work to be done hereunder with the Work of such other contractors in such manner as the Designated Representative may direct. The Work shall be scheduled and executed at such time and in such a way as to cause the least inconvenience to the Owner and with proper consideration for the rights of other contractors and public. The Contractor shall keep fully informed with the entire operation and install its Work promptly.

7.3.2 If the Designated Representative determines that the Contractor is failing to coordinate its Work with the Work of other contractors as directed, he may, upon written notice to the Contractor recommend the following actions by the Owner:

7.3.2.1 The Owner may withhold any payment otherwise due hereunder until the Designated Representative's directions are complied with by the

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Contractor.

7.3.2.2 The Owner, through the Designated Representative, may direct other contractors to perform portions of the contract and charge the cost of such Work to the contract amount.

7.3.2.3 The Owner may terminate any and all portions of the contract for the Contractor's failure to perform in accordance with the contract.

7.3.3 If the Contractor notifies the Designated Representative, in writing, that another contractor on this project is failing to coordinate its Work with the Work of this contract, as directed, the Designated Representative will promptly investigate the charge. If he finds it to be true, he will promptly issue such directions to the other contractor with respect thereto as the situation may require. The Designated Representative shall not, however, be liable for any damages suffered by this contractor by reason of the other contractor's failure to promptly comply with the directions so issued by the Designated Representative or by reason of another contractor's default in performance; it being understood that the Designated Representative does not guarantee the responsibility or continued efficiency of any contractor.

7.3.4 In the event of any labor dispute, affecting the Contractor or its employees, the Contractor shall utilize all possible means to resolve the dispute in order that the project not be delayed to any extent.

7.3.5 The Contractor shall cooperate with the Owner, the Architect/Engineer and the Designated Representative and other Contractors working on this project in order to avoid interference, inconvenience or damage. To aid in avoiding conflicts, the Contractor, without additional charge, shall make all reasonable modification in the Work as may be directed by the Designated Representative. In the event of the Contractor's operations causes any damage, interference, or inconvenience to Work being carried out under any other contract, the Contractor shall restore, replace, rectify, or otherwise make good any damage to the satisfaction of the Designated Representative or to the other contractors. Should the responsible Contractor fail to comply with this provision, the Work will be done by others at the expense of the responsible Contractor.

7.3.6 The Contractor shall ensure that all labor employed by him, its agents, or those he assigns for Work on the project shall be in harmony with and be compatible with all other labor being used by the Designated Representative or other Contractors. The Contractor shall observe hours and conditions of labor as directed by Designated Representative and in any event, in compliance with all applicable laws, ordinances and regulations. The Contractor shall coordinate its work with the work of other Contractors, the Owner and the Designated Representative and shall provide adequate information and planning of its work to allow for effective coordination by others with its operations. Whenever the Contractor

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has knowledge that any actual or potential labor dispute is delaying or threatens to delay the timely performance of the Work of this contract, the Contractor shall immediately give notice thereof to the Designated Representative. The Contractor shall then confirm the notice, in writing within 24 hours of the giving thereof, and shall include all relevant information with respect thereto. No claims will be accepted for costs incurred as a result of jurisdictional or labor practice disputes.

7.4 OWNER'S RIGHT TO CLEAN UP

7.4.1 If a dispute arises between the separate contractors as to their responsibility for cleaning up as required by Paragraph 5.15, the Owner may clean up and charge the cost thereof to the Contractor responsible therefore as the Owner shall determine to be just.

7.5 DAMAGES TO WORK

7.5.1 Should the Contractor wrongfully cause damage to the Work or property of the Owner or to other Work on the site, the Contractor shall promptly remedy such damage at no cost to Owner.

7.5.2 Should the Contractor wrongfully cause damage to the Work or property of any other Contractor, the Contractor shall, upon due notice, promptly attempt to settle with the other Contractor by agreement, or otherwise resolve the dispute. If such other Contractor sues the Owner or the Designated Representative or initiates any legal proceeding against the Owner or the Designated Representative on account of any damage alleged to have been caused by the Contractor, the Owner or Designated Representative shall notify the Contractor who shall defend such proceedings at the Contractor's expense and if any judgment or award against the Owner or Designated Representative arises from, the Contractor shall pay or satisfy it and shall reimburse the Owner or Designated Representative for all attorney's fees and court costs which the Owner or Designated Representative has incurred.

7.5.3 Should the Contractor sustain any damage through any act or omission of any other contractor having a contract for the performance of Work upon the site or of Work which may be necessary to be performed for the proper execution of the Work to be performed hereunder, the Contractor shall have no claim against the Owner, Architect/Engineer, Designated Representative or the Owner's consultants for such damage, but shall have a right to recover such damage from the other contractor as provided herein.

7.5.4 The Contractor shall indemnify and hold the Owner, Architect/Engineer and Designated Representative harmless from any and all claims or judgments for damages and from costs and expenses to which the Owner and Designated Representative may be subjected or which either may suffer or incur by reason of the Contractor's failure to comply with the Designated Representative's directions

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promptly.

ARTICLE 8: MISCELLANEOUS PROVISIONS

8.1 GOVERNING LAW

8.1.1 This contract shall be governed by the laws of the State of California.

8.2 SUCCESSORS AND ASSIGNS

8.2.1 The Owner and the Contractor each binds himself, its partners, successors, assignees and legal representatives to the other part hereto and to the partners, successors, assignees and legal representatives of such other parties in respect to all covenants, agreements and obligations contained in the Contract Documents. Neither party to the Contract shall assign the Contract nor sublet it as a whole without written consent of the other.

8.2.1.1 The Contractor shall not assign any monies due, or to become due, under this Contract without prior written consent of the Owner obtained through the Designated Representative.

8.3 WRITTEN NOTICE

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

8.4 CLAIMS FOR DAMAGES

8.4.1 Should either party to the Contract suffer injury or damage to person or property because of any act or omission of the other party or of any of its employees, agents or others for whose acts he is legally liable, claims shall be made in writing to such other party within a reasonable time after the first observance of such injury or damage.

8.5 PERFORMANCE BOND AND LABOR MATERIAL PAYMENT BOND

8.5.1 The Contractor shall deliver to the Designated Representative, on forms approved by the Designated Representative and Owner, all executed and Standard Performance Bond and Standard Labor Material Payment Bond and a one (1) year Maintenance (Warranty) Bond, both with an approved surety acceptable to the Owner or Designated Representative and each payable in the amount at least equal to one hundred (100%) percent of the accepted bid as guarantee for the

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faithful performance of the Contractor and the payment of all persons who have, and fulfill, contracts which are directly with the successful bidder. The sureties of all bonds shall be of such security company or companies as are approved by the Designated Representative and the Owner. No Contract shall be deemed to be in effect until all bonds have been approved.

8.5.2 The insurance and bonding companies providing or underwriting such bonding shall be duly authorized and registered to do business in the State of California and shall be acceptable to the Owner and the Designated Representative.

8.5.3 The performance bond required by the Contract Documents shall remain in full force and effect during the warranty periods required by the Contract so as to give the Designated Representative and Owner recourse on the bond if the Contractor fails to remedy defects during the warranty period.

8.5.4 The Contractor's Payment and Performance Bond shall name the Owner as obligee.

8.6 RIGHTS AND REMEDIES

8.6.1 The duties and obligations imposed by the Contract Documents and the rights and remedies available there under shall be in addition to and not a limitation of any duties, obligations, rights and remedies otherwise imposed or available by law.

8.6.2 No action or failure to act by the Designated Representative, Architect/Engineer or Contractor shall constitute a waiver of any right or duty afforded any of them under the Contract Documents nor shall any such action or failure to act constitute an approval or acquiescence in any breach there under, except as may be specifically agreed in writing.

8.7 TESTS

8.7.1 If the Contract Documents, laws, ordinances, rules, regulations or orders of any public authority having jurisdiction require any portion of the Work to be inspected, tested or approved, the Contractor shall give the Designated Representative timely notice of its readiness so the Architect/Engineer and Designated Representative may observe such inspection, testing, or approval. The Owner shall bear all costs of such inspections, tests or approvals unless otherwise noted. The Contractor shall bear all costs of retesting any work failing to pass initial testing.

8.7.2 If the Architect/Engineer or Designated Representative determine that any Work requires special inspection, testing, or approval which Subparagraph 8.7.1 does not include, he will, through the Designated Representative, instruct the Contractor to prepare for such special inspection, testing or approval and the Contractor

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shall give notice as in Subparagraph 8.7.1 If such special inspection or testing reveals a failure of the Work to comply with the requirements of the Contract Documents, Contractor shall bear all costs thereof, including compensation for the

Architect/Engineer's and the Designated Representative's additional services made necessary by such failure. If the Work complies, the Owner shall bear such costs and an appropriate Change Order shall be issued.

8.7.3 Where operating tests are specified, the Contractor shall test its Work as it progresses, on its own account and shall make satisfactory preliminary tests in all cases before applying to the Designated Representative for official tests.

8.7.4 Official tests shall be made as directed by the Designated Representative, in the manner specified, for the different branches of the Work or portions thereof. The Contractor shall furnish all materials and apparatus, make connections and conduct the official test under the observation of the Owner's independent testing agency where appropriate. The official test will be conducted in the presence of a representative of the Designated Representative. Should defects appear, they shall be corrected by the Contractor and the official test repeated until the installation is acceptable to the Designated Representative.

8.7.5 Required certificates of inspection, testing or approval shall be secured by the Contractor and promptly delivered by him through the Designated Representative to the Architect/Engineer.

8.7.6 If the Architect/Engineer or Designated Representative is to observe the inspections, tests or approval required by the Contract Documents, he will do so promptly and, where practicable, at the source of supply.

8.7.7 The Contractor shall deliver test samples of any of the materials specified in any of the Sections of the Specifications to the Owner's testing agency. This may apply to materials proposed for use, materials already delivered to the job, or materials already incorporated into the construction.

8.7.8 Neither the observations of the Architect/Engineer or the Designated Representative in their Administration of the Construction Contract, nor inspections, tests or approvals by persons other than the Contractor shall relieve the Contractor from its obligation to perform the Work in accordance with the Contract Documents.

8.7.9 Any materials which fail to meet the requirements of these specifications shall not be used whether or not previously approved by the Architect/Engineer. If they have been delivered to the job, they shall be removed. If they have already been incorporated into the construction, the Designated Representative or Architect/Engineer may order them removed, or, at the discretion of the Owner through the Designated Representative, they may be

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permitted to remain in place, providing the Contractor agrees to a proper deduction from the contract sum.

8.7.10 The services of a testing and inspection engineer, selected by the Owner, Designated Representative and Architect/Engineer, shall be provided and paid for by the Owner for the tests required in the various sections, unless specifically stated otherwise or due to deficient Work.

8.7.11 No Work of any kind shall be covered or enclosed before it has been tested and approved.

8.8 ORDER OF PRECEDENCE

8.8.1 In the event of any conflict or discrepancy in the provisions of the Contract Documents, the documents shall be interpreted on the basis of the following order or priority:

a. Agreement between the Owner and Contractor
b. Addenda, with later date having greater priority.
c. Special Conditions
d. General Requirements and Other Conditions
e. Drawings and Specifications

8.8.2 In the case of an inconsistency between Drawings and Specifications or within either Document not clarified by addendum the better quality or greater quantity of Work shall be provided in accordance with the Architect/Engineer's and Designated Representative's interpretation

ARTICLE 9: TIME

9.1 DEFINITIONS

9.1.1 Unless otherwise provided, the Contract Time is the period of time allotted in the Contract Documents for the Substantial Completion of the Work as defined in Subparagraph 9.1.3 including authorized adjustments thereto.

9.1.2 The date of commencement of the Work is the date established in a Notice to Proceed (NOP) from the Owner.

9.1.3 The Date of Substantial Completion of the Work or designated portion thereof is the date certified by the Architect/Engineer when construction is sufficiently complete in accordance with the Contract Documents, so that the Owner can occupy or utilize the Work or designated portion thereof for the use for which it is intended.

9.1.4 The term Day, as used in the Contract Documents, shall mean calendar day unless otherwise specifically designated.

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9.2 PROGRESS AND COMPLETION

9.2.1 All time limits stated in the Contract Documents are of the essence of the Contract.

9.2.2 The Contractor shall begin the Work on the date of commencement as defined in Subparagraph 9.1.2. He shall carry the Work forward expeditiously with adequate forces and shall achieve Substantial Completion within the Contract Time. The actual date on which the Contractor starts work will not affect the required time for completion of the work.

9.2.3 The Contractor shall furnish sufficient forces, plant and equipment and shall Work such hours, including night shifts and lawful overtime operations as may be necessary to ensure the execution of the Work in accordance with the Construction Schedule. If, in the opinion of the Designated Representative, the Contractor falls behind the progress schedule, the Contractor shall take such steps as may be necessary to improve its progress and shall submit its plans demonstrating the manner in which the desired rate of progress may be regained. It shall be the responsibility of the Contractor to maintain its schedule so as not to delay the progress of the project. If the Contractor delays the progress of the project, he shall, in order to maintain the overall schedule, take all necessary actions, not limited to an increase in the number of shifts, days of Work and to the extent permitted by law, to institute or increase overtime operations, all without additional cost.

9.2.4 If the Designated Representative determines that the Contractor, without just cause, fails or refuses to employ an adequate working force, or to employ them for a maximum number of hours per day as permitted by law or by shifts of its working forces as would be sufficient, in the opinion of the Designated Representative to complete the Work in accordance with the approved project schedule or within the time to which such completion may be extended, then after formal notice to the Contractor, the Owner shall have the right to complete or to have the Work completed by such means and in such manner, by contract or otherwise, as permitted by law, as the Owner may deem advisable, utilizing for such purpose such of the Contractor's plant, materials, equipment, tools and supplies remaining on the site. Formal notice in this article shall be e-mail, or registered letter to the last known business address of the Contractor.

9.2.5 The expense of such completion shall be charged against and deducted out of such money as would have been payable to the Contractor if he had completed the Work; the balance of such moneys, if any, subject to the other provisions of this contract, to be paid to the Contractor without interest after completion. Should the expense of such completion, so certified by the Designated Representative, exceed the total sum which would have been payable under this contract, if the same had been completed by the Contractor or its surety, the surety shall remit such balance due to the Owner upon

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its demand.

9.2.6 Whether or not the Contractor's right to proceed is terminated, he and its surety will be liable for any damage to the Owner, other Contractors and the Designated Representative from the Contractor's refusal to complete the Work in accordance with the approved progress schedule or within the time for which such completion may be extended. Formal notice in this article shall be by telegram, or registered letter to last known business address of the Contractor.

9.2.7 The permitting of the Contractor or the surety on the performance bond to proceed to complete all Work or any part of it after the date of Substantial Completion or after the date to which the time for Substantial Completion may have been extended, shall in no way operate as a waiver on the part of the Owner of any of its rights hereunder.

9.2.8 In order to expedite the completion of the Contractor's Work, the Designated Representative may direct the Contractor to Work on the basis of two (2) shifts instead of one (1) or to take such other measures as he deems necessary to expedite construction. If the need for such direction is not attributable to delays or other fault on the part of the Contractor, the Owner shall pay the Contractor any additional net cost. If, however, the Contractor is behind schedule due to its own delays or other fault on its part and the Designated Representative directs him to Work additional shifts, expedite deliveries or purchase additional materials or equipment in order to bring its Work up to schedule, all additional costs shall be borne by the Contractor.

9.2.9 With the Designated Representative's approval, the Contractor shall suspend any Work that may be subject to damage by climatic conditions. Under such conditions, the Contractor shall take measures to protect the Work and to minimize the impact on the progress of the Work.

9.3 DELAYS AND EXTENSIONS OF TIME

9.3.1 If the Contractor is delayed at any time in the progress of the Work by any act or neglect of the Owner, Designated Representative or the Architect/Engineer or by any employee of either, or by any separate contractor employed by the Owner, or by changes ordered in the Work, or by labor disputes, fire, unusual delay in transportation, adverse weather conditions not reasonably anticipated, unavoidable casualties or any causes beyond the Contractor's control, or by delay authorized by the Owner or Designated Representative pending litigation, or by any other cause which the Designated Representative determines may justify the delay, then the Contract Time shall be extended by Change Order for such reasonable time as the Director of General Services may determine. No adjustment of the Contract Time shall be made on account of any Excusable Delays or Compensable Delays unless those

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delay(s) actually and directly impact Work or Work activities on the critical path of the then current and updated approved Construction Schedule as of the date on which a delay first occurs.

9.3.2 Any claim for extension of time shall be made in writing to the Designated Representative not more than ten (10) days after commencement of the delay; otherwise, it shall be waived. Any claim for extension of time shall state the cause of the delay and the number of days of extension requested. If the cause of the delay is continuing, only one claim is necessary, but the Contractor shall report the termination of the cause for the delay within ten (10) days after such termination and shall simultaneously make final claim for said delay, otherwise any claim for extension of time based upon that cause shall be waived.

9.3.3 In the event of a delay attributable in part to the Contractor and in part to causes for which the Contractor is not responsible, then provided the Contractor has given proper and timely notice hereunder, the delay shall be equitably apportioned among the parties causing it and the Contractor shall remain liable for the portion not so excused.

9.3.4 If no agreement is made stating the dates upon which interpretations as set forth in Subparagraph 3.2.2 shall be furnished, then no claim for delay shall be allowed on account of failure to furnish such interpretations until fifteen days after written request is made for them and not then, unless such claim is reasonable.

9.3.5 If the Project is delayed as a result of the Contractor's refusal or failure to begin the Work on the date of commencement, as defined in Subparagraph 9.1.2, or its refusal or failure to carry the Work forward expeditiously with adequate forces, equipment, material or other resources, the Contractor shall be liable to the Owner for damages for every day Contractor's scheduled completion is exceeded, provided, however, that such refusal or failure is not the result of a justifiable delay as defined in Subparagraph 9.3.1.

9.3.6 Neither the Owner, Architect/Engineer, nor Designated Representative shall have liability to the Contractor nor to any other Contractor or subcontractor for delay, hindrance or interference in the performance of the Work, however caused, except for delay or hindrance resulting from active interference of the Owner or its representatives in such Contractor's execution of the Work.

9.3.7 In addition to damages, as defined in Subparagraph 9.3.5, the Contractor shall be liable to the Owner for any damages sustained as the result of the Contractor's refusal or failure to perform the Work, provided however that such refusal or failure is not the result of a justifiable delay as defined in Subparagraph 9.3.1

9.3.8 Contractor shall not request additional time to complete the project because of delays occurring on Sundays or holidays. Neither shall

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he request additional time for Saturday delays except and unless he can show proof of normally working on Saturdays in order to complete the Work on time.

9.3.9 Anticipated Normal Weather Days: The time estimated by the Contractor for completion of the entire Work ready for use shall include the number of calendar days, for anticipated delays due to normal weather conditions. No time extensions for delays due to weather will be allowed until and unless such delays exceed the time included for normal weather delays. In case of claims for extension of time because of abnormal inclement weather, such extension of time shall be granted only because such abnormal inclement weather prevented the execution of major items of Work on normal working days. The weather table below will be used to determine any contract time extension due to abnormally inclement weather. For the purpose of this contract, "abnormal inclement weather" will be interpreted as the number of days in excess of the normal on which rainfall exceeds 0.05 inch or snow/ice pellets exceed 1.0 inch. Extension of time to complete the project will be based on actual working days, i.e., Saturdays, Sundays and holidays will be considered in granting extension of time.

Weather Table:

January	6	July	0
February	5	August	0
March	5	September	1
April	4	October	1
May	1	November	3
June	0	December	5

9.3.10 Liquidated Damages: The Owner will suffer financial loss if the project is not substantially complete on the date set forth in the Contract Documents. The Contractor and its surety shall be liable for and pay to the Owner, hereinafter stipulated as fixed, agreed, and liquidated damages for each consecutive calendar day of delay until the Work is substantially complete, the sum of Five Hundred Dollars ($5,000). The Owner reserves the right to withhold the liquidated damages, incurred because of failure to complete the project on time, from the final payment to the Contractor. The Owner reserves the right to withhold liquidated damages from any progress payments occurring after the contract completion date.

9.3.11 If a suspension of work is ordered by the Designated Representative, due to the failure on the part of the Contractor to carry out orders given or to perform any provision of the contract, the days on which the suspension order is in effect shall be considered working days if such days are working days as defined.

ARTICLE 10: PAYMENTS AND COMPLETION

10.1 CONTRACT SUM

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10.1.1 The Contract Sum is stated in the Agreement between the Owner and the Contractor including adjustments thereto and is the total amount payable to the Contractor for the performance of the Work under the Contract Documents.

10.1.2 Payment for work performed or materials furnished under an assessment proceedings contract will be made as provided in the particular proceedings or legislative act under which such contract was awarded.

10.1.3 Whenever any portion of the work is performed by the Owner at the Contractor's request, the cost thereof shall be charged against the Contractor, and may be deducted from any amount due or becoming due from the Owner.

10.2 SCHEDULE OF VALUES

10.2.1 Within **ten (10) calendar days** after the effective notice to proceed One, the Contractor shall submit to the Designated Representative a schedule of values allocated to the various portions of the Work prepared in such a form and supported by such data to substantiate its accuracy as the Designated Representative may require. This schedule, unless objected to by the Designated Representative, shall be used only as a basis for the Contractor's Application for Payment.

10.2.2 The schedule of values shall equal in total the Contract Sum and shall correctly represent a reasonable apportionment of the Contract Sum.

10.2.3 When a bid item is included in the proposal form and subject to the limitation and conditions in the contract documents, the Contractor shall itemize in the schedule of values the costs of mobilization work in advance of construction operations and not directly attributed to any specific bid item. When no such bid item is provided, payment for mobilization costs will be considered in the other items of work.

10.2.4 With said Schedule of Values contractor shall provide to Owner's Designated Representative copies of hourly wage rates for all workers in all trades associated with the job. If, during the course of construction, wage rates change, the contractor shall provide to Owner's Designated Representative copies of revised hourly wage rates the same day as said change is adopted or agreed-upon.

10.3 APPLICATION FOR PAYMENT

10.3.1 The Designated Representative will, after award of the contract, establish a closure date for the purpose of making monthly progress payments. The Contractor may request in writing that such monthly closure date be changed. The Designated Representative may approve such request when it is compatible with the Owner's payment procedures.

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10.3.1.1 Each month, the Contractor will make an approximate measurement of the work performed to the closure date and as a basis for making monthly payments, estimate its value based on the contract unit prices or as provided for in the approved schedule of values.

10.3.1.2 At a fixed date each month as established by the Designated Representative during the progress of the Work, the Contractor shall render to the Designated Representative a notarized Application for Payment for a portion of the Contract Price, broken down into the categories itemized in the Contractor's Schedule of Values. The amounts invoiced shall be directly proportional to the percentage of completion of Work in each of the categories at the end of the closure date for the invoice period less any amounts previously invoiced. The Application for Payment shall be made on A.I.A. Document G702 with continuation sheets A.I.A. Document G703, or on other forms approved by the Designated Representative.

10.3.2 The Contractor shall certify monthly that he has made payment due to its Subcontractors and suppliers from the proceeds of prior payments and that he will make timely payments from the proceeds of the progress payment now due to its Subcontractor and suppliers in accordance with the contractual arrangements with them. The Contractor shall submit written certification that all amounts for equipment, materials, labor, union benefits and other services and all other items provided by the month covered by Contractor's invoice have been paid; and proof that Contractor has acquired title to the equipment and materials invoiced the previous month. Partial Waivers of Lien will be required with the second and succeeding monthly invoices. The Designated Representative may request Record Documents, schedule updates, payrolls for all labor and other data supporting payment to Subcontractors and material suppliers before processing the requisition.

10.3.3 With respect to material purchased during the preceding month by the Contractor as Owner's special purchasing subagent, the Contractor shall provide the Designated Representative with a statement showing the costs of such materials and any state or local sales and use taxes paid by the Contractor in connection with the purchase or use thereof during the preceding month, which statement shall be supported by copies of invoices, receipts, etc., clearly and separately showing the costs of such materials and taxes. This statement shall be filed with the Designated Representative within one month after the purchase of such items.

10.3.4 Unless otherwise provided in the Contract Documents, payment will be made on account of materials or equipment not incorporated in the Work but delivered and suitably stored at the site. Payments made for materials or equipment stored on the site shall be conditioned upon submission by the Contractor of bills of sale or such other procedures satisfactory to the Designated Representative to establish the Owner's title to such materials or equipment or otherwise protect the Owner's interest. Materials invoiced in pay

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applications, if not stored on site, must be kept stored in a bonded warehouse approved by the Designated Representative.

10.3.5 The Contractor warrants that title to all Work, materials and equipment covered by an Application for Payment will pass to the Owner by incorporation in the construction and upon the receipt of final payment by the Contractor free and clear of all liens, claims, security interests or encumbrances, hereinafter referred to in this Article 10 as "liens" and that no Work, materials or equipment covered by an Application for Payment will have been acquired by the Contractor by any other person performing its Work at the site or furnishing materials and equipment for its Work, subject to an agreement under which an interest therein or an encumbrance thereon is retained by the seller or otherwise imposed by the Contractor or such other person. All Subcontractors and Sub-subcontractors agree that title will so pass upon their receipt of payment from the Contractor.

10.4 PROGRESS PAYMENTS

10.4.1 If the Contractor has made Application for Payment in accordance with the General Requirements, the Designated Representative will, with reasonable promptness, review and process such Application for Payment in accordance with the Contract. From each progress estimate, five (5%) percent will be deducted and retained by the Owner, and the remainder less the amount of all previous payments will be paid to the Contractor.

10.4.2 No approval of an application for a progress payment, nor any progress payment, nor any partial or entire use or occupancy of the project by the Owner, shall constitute an acceptance of any Work not in accordance with the Contract Documents. Nor shall the same relieve the Contractor or its surety from any obligation under the Contract or the Standard Performance Bond and the Standard Labor and Material Payment Bond.

10.4.3 Except in case of bona fide disputes, or where the Contractor has some other justifiable reason for delay, the Contractor shall pay for all transportation and utility services not later than the end of the calendar month following that in which services are rendered and for all materials, tools and other expendable equipment to the extent of ninety percent (90%) of the cost thereof not later than the end of the calendar month following that in which such materials, tools and equipment are delivered at the site of the Project. The Contractor shall pay to each of its Subcontractors, not later than the end of the calendar month in which each payment is made to the Contractor, the representative amount allowed the Contractor on account of the Work performed by its Subcontractors, to the extent of each Subcontractor's interest herein. The Contractor shall, by an appropriate agreement with each Subcontractor, also require each Subcontractor to make payments to its suppliers and sub-subcontractors in a similar manner.

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10.4.4 Payment shall not relieve the Contractor from its obligations under the contract; nor shall such payment be construed to be acceptance of any of the work. Payment shall not be construed as the transfer of ownership of any equipment or materials to the Owner. Responsibility of ownership shall remain with the Contractor who shall be obligated to store, protect, repair, replace, rebuild or otherwise restore any fully or partially completed work or structure for which payment has been made; or replace any materials of equipment required to be provided under the contract which may be damaged, lost, stolen or otherwise degraded in any way prior to acceptance of the work under the contract, except as provided in Paragraph 10.7.2.

10.4.4.1 Guarantee periods shall not be affected by any payment but shall commence on the date equipment or material is placed into service at the direction of the Owner. In the event such items are not placed into service prior to partial or final acceptance of the project, the guarantee period will commence on the date of such acceptance.

10.4.4.2 If, within the time fixed by law, a properly executed notice to stop payment is filed with the Owner, due to the Contractor's failure to pay for labor or materials used in the work, all money due for such labor or materials will be withheld from payment to the Contractor in accordance with applicable laws.

10.4.5 Per the California Public Contract Code, upon the Contractor's request, the County will make payment of funds withheld to ensure performance of the Contract if the Contractor deposits in escrow with the Santa Barbara County Treasurer, or with a bank acceptable to the County/DISTRICT, securities eligible for investment under Government Code Section 16430 or bank or savings and loan certificates of deposit, upon the following conditions:

(a.) The Contractor shall bear the expense of the County/DISTRICT and the escrow agent, either the County Treasurer or the bank, in connection with escrow deposit made.

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

(c.) The Contractor shall enter into an escrow agreement satisfactory to the County/DISTRICT which agreement shall include provisions governing inter alia:

(1) the amount of securities to be deposited.
(2) the providing of power of attorney or other documents necessary for the transfer of the securities to be deposited.
(3) conversion to cash to provide funds to meet defaults by the Contractor including, but not limited to, termination of the Contractor's control over the work, stop notices filed pursuant to law, assessment of liquidated damages or other amounts to be kept or retained under the provisions of the contract.

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(4) decrease in value of securities on deposit.
(5) the termination of the escrow upon completion of the Contract.

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

10.5 PAYMENTS WITHHELD

10.5.1 The Designated Representative, Architect/Engineer or the Owner may decline approval of an Application for Payment if, in its opinion, the Application is not adequately supported. If the Contractor and the Designated Representative or Owner cannot agree on a revised amount, the Designated Representative shall process the application for the amount he deems appropriate. An amount equaling one hundred fifty (150%) percent of the value of the Work related to any Stop Notice shall be withheld from payments applied for by the Contractor until the Stop Notice is expunged. The Designated Representative may also decline to approve any Applications for Payment or, because of subsequently discovered evidence or subsequent inspections, he may nullify in whole or in part any approval previously made to such extent as may be necessary in its opinion because of:

(a.) Defective Work not remedied.
(b.) Third party claims filed or reasonable evidence indicating probably filing of such claims.
(c.) Failure of the Contractor to make payments properly to Subcontractor or for labor, materials, or equipment.
(d.) Reasonable evidence that the Work cannot be completed for the unpaid balance of the Contract Sum.
(e.) Damage to the Designated Representative, the Owner or another contractor working at the Project.
(f.) Reasonable evidence that the Work will not be completed within the Contract Time.
(g.) Persistent failure to carry out the Work in accordance with the Contract Documents.
(h.) The filing of a lien against the Project when lien is caused by the act or inaction of the Contractor or its subcontractor.
(i.) Refusal to follow the Project Safety Program issued as a Contract Document.
(j.) Failure to maintain records as specified.
(k.) Failure to maintain record drawings as specified.
(l.) Failure to secure required building inspections.

10.5.2 When the above grounds in Subparagraph 10.5.1 are removed, payment shall be made for the amounts withheld because of them, but in no case shall interest be paid on amounts withheld by the Owner to the Contractor.

10.6 FAILURE OF PAYMENT

10.6.1 If the Contractor is not paid within sixty (60) days after the Application for Payment is approved for payment by the Designated

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Representative and has become due and payable, then the Contractor may, upon thirty (30) additional days written notice to the Owner and the Designated Representative, stop the Work until payment of the amount owing has been received. The Contract Sum shall be increased by the amount of the Contractor's reasonable costs of shutdown, delay and start up, which shall be effected by the appropriate Change Order in accordance with Paragraph 13.3., but in no case shall interest be paid by the Owner to the Contractor.

10.7 SUBSTANTIAL COMPLETION

10.7.1 When the Contractor considers that the Work, or a designated portion thereof which is acceptable to the Owner, is substantially complete as defined in Subparagraph 9.1.3, the Contractor shall prepare for submission to the Designated Representative a list of items to be completed or corrected. The failure to include any items on such list does not alter the responsibility of the Contractor to complete all Work in accordance with the Contract Documents. When the Designated Representative and Architect/Engineer, on the basis of inspection, determine that the Work or designated portion thereof is substantially complete, the Architect/Engineer will then prepare a Certificate of Substantial Completion which shall establish the Date of Substantial Completion, shall state the responsibilities of the Owner, the Designated Representative and the Contractor for security, maintenance, heat, utilities, damage to the Work, insurance and shall fix the time within which the Contractor shall complete the items listed therein. Warranties required by the Contract Documents shall commence on the Date of Substantial Completion of the Work or designated portion thereof unless otherwise provided in the Certificate of Substantial Completion. The Certificate of Substantial Completion shall be submitted to the Owner, the Designated Representative and the Contractor for their written acceptance of the responsibilities assigned to them in such Certificate. The Owner may retain a sum equal to an amount not to exceed one hundred fifty percent (150%) of the estimated cost of completing any unfinished items, separately listed and estimated at the time of substantial completion. Thereafter, the Owner shall pay to the Contractor monthly, the amount retained for incomplete items as each of said items are completed.

10.7.2 The Owner shall have the right to take possession of and use for any purpose any partially completed portion of the Work. The Designated Representative will give notice to the Contractor of the Owner's intention to take said possession and use. Such taking possession or use shall not be deemed to be the Designated Representative's acknowledgement of completion and acceptance of said portion of Work.

10.7.2.1 The Owner's taking over and utilizing all or part of any completed facility or appurtenance will relieve the Contractor of responsibility for injury or damage to said completed portions of the improvement resulting from use by the public or from the action of the elements or from any other cause, except injury or damage

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resulting from the Contractor's operations or negligence. The Contractor will not be required to reclean such portions of the improvements before final acceptance, except for cleanup made necessary by its operations. Nothing in this section shall be construed as relieving the Contractor from full responsibility for correcting defective work or materials.

10.7.2.2 In the event the Owner exercises its right to place into service and utilize all or part of any completed facility or appurtenance, the Owner shall assume the responsibility and liability for injury to persons or property arising out of or resulting from the utilization of the facility or appurtenance so placed into service, except for any such injury to persons or property caused by any willful or negligent act or omission of the Contractor, subcontractor, their officers, employees or agents.

10.8 FINAL COMPLETION AND FINAL PAYMENT

10.8.1 Following the Architect/Engineer's issuance of the Certificate of Substantial Completion of the Work or designated portion thereof and the Contractor's completion of the Work, the Contractor shall notify the Designated Representative in writing that the Work will be ready for final inspection and test on a definite date. Notice shall be given at least five (5) days in advance of said date. Designated Representative shall forward the notice to the Architect/Engineer who will attach its endorsement as to whether or not he concurs with the Contractor's statement that the Work will be ready for final inspection or test on the date given, but such endorsement shall not relieve the Contractor of its responsibility in the matter. If the Architect/Engineer concurs that the Work will be ready for final inspection or test on the date given, the Architect/Engineer and the Designated Representative will make such inspection. The Contractor is required to furnish access for the final inspection as provided in Subparagraph 3.2.1. If the Work is found acceptable under the Contract Documents and the Contract fully performed the Designated Representative, upon receipt of a correct final Application for Payment, shall recommend to the Owner that such payment be made.

10.8.2 Neither the final payment nor the remaining retained percentage shall become due until the Contractor submits to the Designated Representative all (1) inspection sign-offs, (2) final certificate of occupancy, (3) an affidavit that all payrolls, bills for materials and equipment and other indebtedness connected with the Work for which the Owner or its property might in any way be responsible, have been paid or otherwise, (4) consent of surety, if any, to final payment and executed "General Release and Lien Waiver and General Guarantee:, on forms to be provided by the Designated Representative, (5) if required by the Owner, other data establishing payment or satisfaction of all such obligations, such as receipts, releases and waivers of liens arising out of the contract, to the extent and in such form as may be designated by

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the Owner or Designated Representative. If any Subcontractor refuses to furnish a release or waiver required by the Owner or Designated Representative, the Contractor may furnish a bond satisfactory to the Owner and Designated Representative to indemnify them against any such lien. If any such lien remains unsatisfied after all payments are made, the Contractor shall refund to the Owner or Designated Representative all monies that the latter may be compelled to pay in discharging such lien, including all costs and reasonable attorney's fees. Contractor is required to submit all "Record Documents" and operating manuals as required by the Contract Documents prior to the processing of the final payment.

10.8.3 If, after Substantial Completion of the Work, final completion thereof is materially delayed through no fault of the Contractor or by the issuance of Change Orders affecting the final completion, and the Designated Representative so confirms, the Owner shall upon certification by the Designated Representative and without terminating the Contract, make payment of the balance due for that portion of the Work fully completed and accepted. If the remaining balance of Work not fully completed or corrected is less than the retention stipulated in the Contract Documents and if the bonds have been furnished as provided in Paragraph 8.5, the written consent of the surety to the payment of the balance due for that portion of the Work fully completed and accepted shall be submitted by the Contractor to the Designated Representative prior to such payment. Such payment shall be made under the terms and conditions governing final payment, except that it shall not constitute a waiver of claims.

10.8.4 Upon successful completion of the final inspection and Work required by the Contract, acceptance of the same by the Owner and the filing of all affidavits, consents of surety and other data required in Subparagraph 10.8.2 and the submission of all bonds, written warranties and guarantees and of all data documents required for project closeout by the Contract Documents, the Architect/Engineer shall file a written certification of completion with the Owner and with the Designated Representative as to the entire amount of Work performed and compensation earned, including extra Work and compensation therefore. At the expiration of thirty-five (35) days after the Owner's confirmation of such Certificate of Completion or as prescribed by law, the Owner shall pay the Contractor the amount stated therein, less all prior payments and advances, whatsoever, to or for the account of the Contractor except such amounts as are required to be withheld by properly executed and filed notices to stop payment or as may be authorized by the contract to be further retained. All prior estimates and payments including those relating to extra Work shall be subject to correction by this payment, which is throughout the Contract called "Final Payment."

10.8.5 The making of Final Payment shall constitute a waiver of all claims by the Owner or Designated Representative except those arising from:

(a.) Unsettled liens.
(b.) Faulty or defective Work appearing after Substantial

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Completion.
(c.) Failure of the Work to comply with the requirements of the Contract Documents
(d.) Terms of any special warranties required by the Contract Documents.

10.8.5.1 The acceptance by the Contractor of the Final Payment shall be and operate as a release to the Owner and to the Designated Representative of all claims and of all liability to the Contractor for all things done or furnished in connection with this Contract.

10.8.6 In accordance with Section 4551 of the Government Code, the Contractor and subcontractors shall conform to the following requirements. 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 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. Sec. 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 of 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.

10.8.7 In accordance with Section 4552 of the Government Code, the bidder shall conform to the following requirements. In submitting a bid to a public purchasing body, the bidder offers and agrees that if the bid is accepted, it will assign to the purchasing body all rights, title, and interest in and to all causes of action it may have under Section 4 of the Clayton Act, Chapter 2 (commencing with Section 16700) of Part 2 of Division 7 of the Business and Professions Code, arising from purchases of goods, materials, or services by the bidder for sale to the purchasing body pursuant to the bid. Such assignment shall be made and become effective at the time the purchasing body tenders final payment to the bidder.

10.9 MEASUREMENT OF QUANTITIES FOR UNIT PRICE WORK

10.9.1 General: Unless otherwise specified, quantities of work shall be determined from measurements or dimensions in horizontal planes. However, linear quantities of pipe, piling, fencing, and timber shall be considered as being the true length measured along the longitudinal axis. Unless otherwise provided in the Contract Documents, volumetric quantities shall be the product of the mean area of vertical or horizontal sections and the intervening horizontal or vertical dimension. The planimeter shall be considered an instrument of precision adapted to the measurement of all areas.

10.9.2 Methods of Measurement: Materials and items of work which are to be

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paid for on the basis of measurement shall be measured in accordance with the methods stipulated in the particular section involved.

10.9.3 Certified Weights: When payment is to be made on the basis of weight, the weighing shall be done on certified platform scales or, when approved by the Designated Representative, on a completely automated weighing and recording system. The Contractor shall furnish the Designated Representative with duplicate licensed weighmaster's certificates showing the actual net weights. The Designated Representative will accept the certificate as evidence of the weights delivered.

10.9.4 Units of Measurement: Measurements shall be in accordance with U. S. Standard Measures. A pound is an avoirdupois pound. A ton is 2,000 pounds avoirdupois. The unit of liquid measure is the U. S. gallon.

10.9.5 Lump Sum Items: Items for which quantities are indicated as "Lump Sum", "L.S.", "Job", or words of like import shall be paid for at the price named. Such payment shall be full compensation for the work named and all work appurtenant thereto required by the contract which is not specifically provided for by other pay items.

10.9.6 Actual Quantities: The quantities listed in the bid schedule will not govern final payment. Payment to the Contractor will be made only for the actual quantities of contract items constructed in accordance with the plans and specifications. Upon completion of the construction, if the actual quantities show either an increase or decrease from the quantities given in the bid schedule, the contract unit prices will prevail subject to the provisions of Article 13.

10.9.7 Waste: Payment will not be made for materials wasted or disposed of in a manner not called for under the Contract. This includes rejected materials not unloaded from vehicles, material rejected after it has been placed and material placed outside of the plan lines. No compensation will be allowed for disposing of rejected or excess material.

ARTICLE 11: PROTECTION OF PERSONS AND PROPERTY

11.1 SAFETY PRECAUTIONS AND PROGRAMS

11.1.1 Contractor will be solely and completely responsible for conditions of the Work Site, including safety of all persons and property during performance of the Work. This requirement will apply continuously and not be limited to normal working hours.

11.1.2

11.1.3 The Contractor expressly undertakes, both directly and through its

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Subcontractor, to take every precaution at all times for the protection of persons, including employees and property. The Contractor shall be responsible for initiating, maintaining and supervising all safety precautions and programs in connection with the Work.

11.1.4 The Contractor shall comply with the provisions of the "Construction Safety Act" and the "Occupational Safety and Health Act of 1970" and the Designated Representative's safety program, as well as all other applicable, Federal, State and local requirements. The Contractor shall submit its safety program to the Designated Representative prior to mobilizing the job and shall be responsible for the safety, efficiency and adequacy of its plant, appliances and methods and for any damage which might result from failure or improper construction, maintenance or operation. The Contractor shall provide a safety report to the Designated Representative on a weekly basis. During the conduct of the Work, the Contractor shall take immediate corrective action, as required upon notification of any deficiencies in safety provisions by the Designated Representative or identification of any deficiencies by Subcontractor personnel.

11.1.5 If the Contractor fails to maintain the safety precautions required by law or directed by the Designated Representative, the Designated Representative may take such steps as necessary and charge the Contractor therefore.

11.1.6 The failure of the Owner to take any such action shall not relieve the Contractor of its obligations in Subparagraph 11.1.1.

11.1.7 The Contractor shall immediately notify the Designated Representative of all accidents and submit a written report describing in detail the circumstances of all accidents within twenty-four (24) hours.

11.1.8 The Contractor alone shall be responsible for the safety, efficiency and adequacy of its plant, appliances and methods and for any damage which may result from their failure or their improper construction, maintenance or operation.

11.1.9 The wearing of hard hats will be mandatory at all times for all personnel on Site. Contractor shall supply sufficient hard hats to properly equip all employees and visitors.

11.1.10 Any construction review of the Contractor's performance is not intended to include review of the adequacy of the Contractor's safety measures in, on, or near the Work Site.

11.1.11 Implementation and maintenance of safety programs shall be the sole responsibility of the Contractor.

11.1.12 Contractor shall furnish to the COUNTY OF SANTA BARBARA a copy of the Contractor's safety plan within the time frame indicated in the Contract Documents and specifically adapted for the Project.

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11.2 SAFETY OF PERSONS AND PROPERTY

11.2.1 The Contractor shall take all reasonable precautions for the safety of and shall provide all reasonable protection to prevent damage, injury or loss to:

(a.) All employees on the Project and all other persons who may be affected thereby;

(b.) All the Work and all materials and equipment to be incorporated therein, whether in storage on or off the site, under the care, custody or control of the Contractor or any of its Subcontractors or Sub-subcontractors; and

(c.) Other property at the site or adjacent thereto, including trees, shrubs, lawns walks, pavements, roadways, structures and utilities not designed for removal, relocation or replacement in the course of construction.

11.2.2 The Contractor shall give all notices and comply with all applicable laws, ordinances, rules, regulations and lawful orders of any public authority bearing on the safety of persons or property or their protection from damage, injury or loss.

11.2.3 The Contractor shall erect and maintain, as required by existing conditions and progress of the Work, all reasonable safeguards for safety and protection, including posting danger signs and other warnings against hazards promulgating safety regulations and notifying the Owners and users of adjacent utilities. He shall protect the Owner's property from injury or loss arising in connection with this Contract. He shall adequately protect adjacent property as provided by law and the Contract Documents. He shall provide and maintain all passageways, guard fences, light and other facilities for protection required by public authority, local conditions or any of the Contract Documents. If the Contractor fails to so comply, he shall, at the direction of the Designated Representative, remove all forces from the Project without cost or loss to the Owner or Designated Representative, until he is in compliance.

11.2.4 When the use or storage of explosives or other hazardous materials or equipment is necessary for the execution of the Work, the Contractor shall exercise the utmost care and shall carry on such activities under the supervision of properly qualified personnel.

11.2.5 The Contractor shall notify the Designated Representative of any flammable, combustible and toxic materials intended for use on the project and shall furnish the Designated Representative literature pertinent to the use and control of such materials.

11.2.6 Every employee will be dressed for the Work he performs. Minimum dress will consist of long pants, tee shirt and work shoes. Shorts,

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cut-offs, "tank-top" shirts or soft-soled shoes will not be permitted.

11.2.7 The Contractor shall promptly remedy all damage or loss (other than damage or loss insured under Paragraph 12.2) to any property, referred to under Articles 11.2.1.2 and 11.2.1.3, caused in whole or in part by the Contractor, its Subcontractors or anyone directly or indirectly employed by any of them, or by anyone for whose acts any of them may be liable and for which the Contractor is responsible under the Articles 11.2.1.2 and 11.2.1.3, except damage or loss attributable to the acts or omissions of the Owner or Architect/Engineer or anyone directly or indirectly employed by either of them or by anyone for whose acts either of them may be liable and not attributable to the fault or negligence of the Contractor. The foregoing obligations of the Contractor are in addition to its obligations under Paragraph 5.18. The Contractor shall be responsible to the Owner and the Designated Representative for the acts and omissions of all its employees and all Subcontractors, their agents and employees and all other persons performing any of the Work under a contract with the Contractor.

11.2.8 The Contractor and each Subcontractor shall designate a responsible member of its organization at the site to act as its Safety Representative whose duty shall be the prevention of accidents and who shall be responsible to maintain all Safety requirements of the Contractor and shall attend all Project Safety Meetings scheduled by the Contractor. This person shall be the Contractor's or Subcontractor's Superintendent unless otherwise designed by the Contractor in writing to the Designated Representative.

11.2.9 The Contractor shall not load or permit any part of the Work to be loaded so as to endanger safety.

11.2.10 When necessary for the proper protection of the Work, temporary heating of a type approved by the Designated Representative and Architect/Engineer shall be provided by the Contractor unless otherwise specified.

11.3 EMERGENCIES

11.3.1 In an emergency affecting the safety or life of individuals, of the Work, or of adjoining property, the Contractor without special instruction or authorization from the Owner or Designated Representative or Architect/Engineer shall act, at its discretion, to prevent such threatened loss or injury. Also, should he, to prevent threatened loss or injury, be instructed or authorized to act by the Owner or Designated Representative or Architect/Engineer, he shall so act, without appeal. Any additional compensation or extension of time claimed by the Contractor on account of any emergency Work shall be determined as provided by Article 13 - Changes in the Work.

11.3.2 Whenever immediate action is required to prevent impending injury,

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death, or property damage, and precautions which are the Contractor's responsibility have not been taken and are not reasonably expected to be taken, the Owner or Designated Representative may, after reasonable attempt to notify the Contractor, cause such precaution to be taken and shall charge the cost thereof against the Contractor, or may deduct such cost from any amount due or becoming due from the Owner. The Owner's or Designated Representative's action or inaction under such circumstances shall not be construed as relieving the Contractor or its surety from liability.

ARTICLE 12: UTILITIES

12.1 LOCATION

12.1.1 The Owner will search known substructure records and furnish the Contractor, when requested by the Contractor, with copies of documents which describe the location of utility substructures, or will indicate on the plans for the project those substructures, except for service connections, which may affect the work. Information regarding removal, relocation, abandonment, or installation of new utilities will be furnished to prospective bidders.

12.1.2 Where underground main distribution conduits such as water, gas, sewer, electric power, telephone or cable television are shown on the plans, the Contractor, for the purpose of preparing its bid, shall assume that every property parcel will be served by a service connection for each type of utility.

12.1.3 At least two (2) working days before entering on the work, the Contractor shall request the utility owners whose utilities will be affected by the Contractor's work to mark or otherwise indicate the approximate location of their subsurface facilities including, but not limited to, structures, main conduits and service connections. This requirement will not apply to sewer and storm drain installations where their location and depth are shown on the plans for the project.

12.1.4 It shall be the Contractor's responsibility to determine the location and depth of all utilities, including service connections, which have been marked by the respective utility owners and which he believes may affect or be affected by its operations. If no pay item is provided in the contract for this work, full compensation for such work shall be considered as included in the prices bid for other items of work.

12.2 PROTECTION

12.2.1 The Contractor shall not interrupt the service function or disturb the supporting base of any utility without authority from the utility owner or order from the Designated Representative.

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12.2.2 Where protection is required to insure support of utilities located as shown on the plans or in accordance with Paragraph 12.1, the Contractor shall, unless otherwise provided, furnish and place the necessary protection at its expense.

12.2.3 Upon learning of the existence and location of any utility omitted from or shown incorrectly on the plans, or not properly marked, the Contractor shall immediately notify the Designated Representative in the form of a written request for information. When authorized by the Owner, support or protection of the utility will be paid for as provided in Article 13.

12.2.4 The Contractor shall immediately notify the Designated Representative and the utility owner if any utility is disturbed. The Contractor shall bear the costs of repair or replacement of any utility damaged.

12.2.5 Contractor shall take adequate precautions to protect existing roads, sidewalks, curbs, pavements, utilities, adjoining property, and structures (including, without limitation, protection from settlement or loss of lateral support), and to avoid damage thereto, and repair any damage thereto caused by construction operations.

12.2.6 When placing concrete around or contiguous to any non-metallic utility installation, the Contractor at its own expense, shall (1) furnish and install a two-inch cushion of expansion joint material or other similar resilient material; or (2) provide a sleeve or other opening which will result in a two-inch minimum clear annular space between the concrete and the utility; or (3) provide other acceptable means to prevent embedment in or bonding to the concrete. Where concrete is used for backfill or for structures which would result in embedment, or partial embedment, of a metallic utility installation; or where the coating, bedding or other cathodic protection system is exposed or damaged by the Contractor's operations or as may be required by the work, the Contractor shall notify the Designated Representative and arrange to secure the advice of the affected utility owner regarding the procedures required to maintain or restore the integrity of the system.

12.3 EXCAVATIONS

12.3.1 For any displacement or excavation of the ground that may be required by any performance under this Contract, the Contractor shall obtain an inquiry identification number by calling Underground Service Alert (USA) 1 (800) 422- 4133 or by such other means as may be required; shall conform to all requirements of Government Code Sections 4215 through 4217 regarding any such displacement or excavation, including the payment of any fees required; and shall facilitate performance by the Owner of any obligation required of the County under said sections.

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Contractor, except in an emergency, shall contact the appropriate regional notification center at least two (2) days prior to commencing any excavation if the excavation will be conducted in an area or in a private easement that is known, or reasonably should be known, to contain subsurface installations other than the underground facilities owned or operated by the COUNTY OF SANTA BARBARA, and obtain an inquiry identification number from that notification center. No excavation shall be commenced and/or carried out by the Contractor unless an inquiry identification number has been assigned to the Contractor or any Subcontractor and the Contractor has given the COUNTY OF SANTA BARBARA the identification number. Any damages arising from Contractor's failure to make appropriate notification shall be at the sole risk and expense of the Contractor. Any delays caused by failure to make appropriate notification shall be at the sole risk of the Contractor and shall not be considered for an extension of the Contract time.

12.3.2 There shall be no performance under this Contract by either party unless and until the provisions of such Sections are complied with and the Designated Representative is notified regarding the compliance.

12.4 REMOVAL

12.4.1 Unless otherwise specified, the Contractor shall remove all interfering portions of utilities shown on the plans or indicated in the bid documents as "abandoned" or "to be abandoned in place".

12.4.2 Before starting removal operations, the Contractor shall ascertain from the Designated Representative whether the utility abandonment is complete, and the costs involved in the removal and disposal shall be absorbed in the bid for the items of work necessitating such removals.

12.5 RELOCATION

12.5.1 When feasible, the utility owners responsible for utilities within the area affected by the work will complete their necessary installations, relocations, repairs or replacements before commencement of work by the Contractor. When the Contract Documents or plans indicate that a utility installation is to be relocated, altered or constructed by others, the Owner will conduct all negotiations with the utility owners and the work will be done at no cost to the Contractor.

12.5.2 Utilities which are relocated in order to avoid interference with the proposed permanent work shall be protected in their relocated position and the cost of such protection shall be absorbed in the various items of the contract.

12.5.3 After award of the contract, portions of utilities which are found

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to interfere with the work will be relocated, altered or reconstructed by the utility owners, or the Owner may order changes in the work to avoid interference. Such changes will be paid for in accordance with Article 13.

12.5.4 When the plans or specifications provide for the Contractor to alter, relocate, or reconstruct a utility, all costs for such work shall be included in the bid for the items of work necessitating such work. Temporary or permanent relocation or alteration of utilities requested by the Contractor for its own convenience shall be its responsibility, and he shall make all arrangements and bear all costs.

12.5.5 The utility owner will relocate service connections as necessary within the limits of the work or within temporary construction or slope easements unless otherwise specified. When directed by the Designated Representative, the Contractor shall arrange for the relocation of service connections as necessary between the meter and property line, or between a meter and the limits of temporary construction or slope easements. The relocation of such service connections when not detailed on the plans or in the specifications will be paid for in accordance with provisions of Article 13. Payment will include the restoration of all existing improvements which may be affected thereby. The Contractor may, for its own convenience or to expedite the work, agree with any utility owner to disconnect and reconnect interfering service connections. The Owner will not be involved in any such agreement.

12.6 DELAYS

12.6.1 The Contractor shall notify the Designated Representative of its construction schedule insofar as it affects the protection, removal or relocation of utilities. Said notification shall be in writing and shall be included as a part of the construction schedule required in Paragraph 5.10. He shall notify the Designated Representative in writing of any subsequent changes in its construction schedule which will affect the time available for protection, removal or relocation of utilities.

12.6.2 The Contractor will not be entitled to damages or additional payment for delays attributable to utility relocations or alterations if correctly located, noted and completed in accordance with Paragraph 12.1. The Contractor may be given an extension of time for unforeseen delays attributable to utility relocations or alterations not shown or incorrectly shown on the plans, or for unreasonably protracted interference by utilities in performing work correctly shown on the plans. If the Contractor sustains loss due to delays attributable to interferences, relocations or alterations not covered by Paragraph 12.1, which could not have been avoided by the judicious handling of forces, equipment or plant, there shall be paid to the Contractor such amount as the Owner may find to be fair and reasonable compensation for such part of the Contractor's actual loss as was unavoidable.

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12.7 COOPERATION

12.7.1 When necessary, the Contractor shall so conduct its operations as to permit access to the work site and provide time for utility work to be accomplished during the progress of the contract work.

ARTICLE 13: CHANGES IN THE WORK

13.1 CHANGE ORDERS

13.1.1 A Change Order is a written order to the Contractor signed by the Owner issued after the execution of the Contract authorizing a change in the Work or an adjustment in the Contract Sum or the Contract Time. The Contract Sum and the Contract Time may be changed only by a Change Order. The County Director of General Services is authorized to execute Change Orders for the Owner in accordance with Article 2.3. A Change Order signed by the Contractor indicates its agreement therewith, including the adjustment in the Contract Sum or the Contract Time, and Contractor agrees that the change in the contract sum and contract time set forth in the Change Order shall constitute the complete compensation and time extension for the change in the work including, but not limited to, Contractor's field and home office overhead, profit, and supervision costs. The Contractor shall not proceed with any change in the Work unless directed in writing by the Designated Representative.

13.1.2 The Owner or Designated Representative, without invalidating the Contract, may order changes in the Work within the general scope of the Contract consisting of additions, deletions or other revisions, the Contract Time being adjusted accordingly. All such changes in the Work shall be authorized by a Change Order and shall be performed under the applicable conditions of the Contract Documents. Provisions of the Contract shall apply to all changes, modifications and additions with the same effect as if changes were embodied in the base Contract Documents.

13.1.3 A change in the Work may be initiated in one of three ways:

13.1.3.1 A "Request for Quotation" form from the Designated Representative to the Contractor describing the revision to the Work desired. Usually, it is accompanied by revised drawings, sketches or other data.

13.1.3.2 Formal notification from the Contractor documenting a "concealed condition" requesting investigation by the Designated Representative and Architect/Engineer which causes changes in the Contract Documents (and a subsequent Request for Quotation on the revised documents).

13.1.3.3 In response to a Contractor's "Request for Information", the Architect/Engineers' response may include instructions which the Contractor interprets as involving "extra work." In such cases, the

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Contractor must submit written notice to the Designated Representative requesting review and issuance of an appropriate Request for Quotation. Any other "instruction" given to the Contractor by the Owner, Designated Representative or Architect/Engineer shall require these procedures and as indicated in 13.4.1 below.

13.1.4 The cost or credit to the Owner resulting from changes in the Work, as outlined above, shall be made on the basis of one of the following methods:

(a.) By such applicable unit prices as set forth in the Contract Documents or subsequently agreed upon by both parties to the Contract.

(b.) By a lump sum mutually agreed upon by the Owner and the Contractor.

(c.) The Owner may direct the Contractor through the Designated Representative to proceed with Work on a time and material (T & M) basis, with a not to exceed cost and the Contractor shall keep and present, in such a form as the Designated Representative may direct, a correct account of all costs of the changes together with all vouchers. The costs shall include overhead and profit as subsequently set forth below. These costs then shall be finalized by a Change Order.

(d.) If the parties cannot agree upon a Lump Sum, Unit Pricing or T & M with a not to exceed cost, the Owner may, as recommended by the Designated Representative, issue a written directive Contract Amendment to proceed and the Contractor shall be compensated for the net cost of additional Work. The Contractor shall keep and present in such a form as the Designated Representative may direct a correct account of all costs of the changes together with all vouchers. The costs shall include overhead and profit as subsequently set forth below.

13.1.5 Lump sum prices and compensation for actual net cost plus overhead and profit shall be established as follows:

13.1.5.1 The net cost of Changes in the Work may include all items of labor or material, power tools and equipment actually used, prorate charges for foreman and payroll charges such as Public Liability and Workmen Compensation Insurance. No percentage for overhead, profit and commission shall be allowed on items of premium costs for overtime, social security, old age and unemployment insurance, fringe benefits, and payroll taxes. If deductions are ordered, the credit shall be the net cost. Items considered as overhead shall include insurance, other than that mentioned above, bond or bonds, superintendent, timekeeper, clerks, watchmen, use of small tools, incidental job burdens, transportation, and general offices expense. The percentages for overhead and profit shall be negotiated and may vary according to the nature, extent and complexity of the changed Work (other than those covered by unit prices set forth on the

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Contract Documents), but in no case shall exceed the following:

(a.) Allowable Mark-ups on Change Order Definitions:

Prime Contractor = General Contractor

First Tier Contractor to the Subcontractor = Prime Contractor.

Second Tier Contractor to the Subcontractor = First Tier Subcontractor.

Case A: For work within the scope of the Change Order performed by forces of the Prime Contractor:
Overhead:10% to Prime Contractor only.
Profit: 5% to Prime Contractor only.
Commission: No commission to any party.

Case B: For work within the scope of the Change Order performed by forces of the First Tier Subcontractor(s):
Overhead: 10% to First Tier Subcontractor(s)only.
Profit: 55 to First Tier Subcontractor(s) only.
Commission: 5% to Prime Contractor.

Case C: For work within the scope of the Change Order performed by forces of the Second Tier Subcontractor(s):
Overhead:10% to the Second Tier Subcontractor(s) only.
Profit: 5% to the Second Tier Subcontractor(s)only.
Commission: 5% to the Prime Contractor and 5% to the First Tier Subcontractor(s).
No commission to Second Tier Subcontractor(s).

(b.) Not more than four (4) mark-ups (Case C), not to exceed the maximum percentages shown above, shall be allowed.

(c.) All Cost Proposals for work shall be submitted to the Designated Representative on the attached document: "County of Santa Barbara General Services/Capital Projects Division Cost Proposal".

13.1.5.2 On proposals covering both increases and decreases in the amount of the contract, overhead, profit and commission shall be allowed on the net increase only as determined above. When the net difference is a deletion, no percentage for overhead profit and commission shall be allowed.

13.1.5.3 Contractor's cost for preparation of change order proposals shall be deemed to be included in amount of change order proposal.

13.1.6 The Contractor shall respond to the Designated Representative's request for a proposal within seven (7) calendar days. In this proposal, the Contractor shall furnish to the Designated Representative an itemized breakdown of the quantities and prices used in computing the value of changes that might be ordered. The

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Contractor shall submit with its proposal, its request for time extension (if any). If time for completion of the Contractor's Work is not affected by the change, the Contractor shall so state.

13.1.7 In figuring changes, instructions for measurements of quantities set forth in the specifications shall be followed.

13.1.8 After receipt of a proposal with a detailed breakdown, the Designated Representative shall act promptly thereon. However, when the necessity to proceed with a change does not allow sufficient time to properly check a proposal, the Owner through the Designated Representative may order the Contractor to proceed on the basis to be determined at the earliest practicable date. In this event, the value of the change, with the corresponding equitable adjustment to the contract, shall not be more than the increase or less than the decrease proposed.

13.1.9 The Designated Representative will inform the Contractor and the Contractor will inform the Designated Representative when either party recognizes that a proposed Request for Quotations (RFQ) may affect the progress of the Work schedule.

13.1.10 Designated Representative's Audit: Designated Representative's duly authorized auditors shall have access at all reasonable times, to all Contractor's and Subcontractors' personnel, books, records, correspondence, instructions, plans, drawings, receipts, vouchers and memoranda of every description pertaining to Change Orders for the purpose of auditing and verifying Contractor's net cost of Change Order or for any other reasonable purpose. Designated Representative's auditors shall have the right to reproduce any of the aforesaid documents. Contractor shall preserve and shall cause its Subcontractors to preserve all the aforesaid documents for a period of two (2) years after the completion and acceptance or termination of the Work.

13.1.11 If unit prices are stated in the Contract Documents or subsequently agreed upon and if the quantities originally contemplated are so changed in a proposed Change Order, that application of the agreed unit prices to the quantities of Work proposed will cause substantial inequity to the Owner, the Contractor or the Subcontractor, the applicable unit prices shall be equitably adjusted.

13.2 CONCEALED CONDITIONS

13.2.1 Should concealed conditions encountered in the performance of the Work below the surface of the ground or should concealed or unknown conditions in an existing structure be at variance with the conditions indicated by the Contract Documents, or should unknown physical conditions in an existing structure of an unusual nature, differing materially from those ordinarily encountered and generally recognized as inherent in Work of the character provided for in this Contract be encountered, the Contractor shall report the conditions

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to the Designated Representative before the conditions are disturbed. The Designated Representative shall thereupon notify the Architect/Engineer. Upon such notices, or upon its own observation of such conditions, the Architect/Engineer shall promptly make such changes in the Contract Documents as he finds necessary to conform to the different conditions. Any change in the cost of the Work or the time needed for completion resulting from concealed conditions shall be determined in accordance with Paragraph 13.1 provided a notice thereof is made within ten (10) days after the first observance of the conditions.

13.3 CLAIMS FOR ADDITIONAL COST

13.3.1 If the Contractor claims that any instructions given to him by the Owner or Designated Representative or by the Architect/Engineer, by drawings or otherwise, involve extra Work not covered by the Contract, he shall give the Designated Representative written notice thereof within ten (10) days after the receipt of such instructions and before proceeding to execute the Work, except in emergencies endangering life or property, in which case the Contractor shall proceed in accordance with Paragraph 11.3. Should it not be clear to the Contractor that a change will involve extra Work, written notice given within ten (10) days that the change may involve extra work will be considered sufficient notice. If it is later determined that the Work involved in such instruction shall be recognized as an extra, the amounts of additional compensation to be paid therefore, should be determined in accordance with Paragraph 13.1. Except as otherwise specifically provided, no claim for additional cost shall be allowed unless the notice specified by this Subparagraph is given by the Contractor or unless such Work is performed as provided in Subparagraph 13.1.4. Any change in the contract sum resulting from such claim shall be authorized by agreement amendment.

13.3.2 If the Contractor claims that additional cost is involved because of, but not limited to, (1) written interpretation issued pursuant to Subparagraph 3.2.2, (2) any order by the Owner or Designated Representative to stop the Work pursuant to Paragraph 4.3 where the Contractor was not at fault, or (3) any written order for a minor change in the Work issued pursuant to Paragraph 13.4, the Contractor shall make such claims as provided in Subparagraph 13.3.1.

13.3.2.1 Any claim for damages of any character, delays for which the Owner is liable under the Contract Documents, extra work or extra compensation of any other nature, shall be waived unless notice thereof is given to the Owner, in writing, within ten (10) days after the initial occurrence of the first event, which is relied upon to justify the claim or within such time as the event should have reasonably been discovered by the Contractor and in any event, before extra cost is incurred.

13.3.2.2 Any claim for a delay for which the Owner is liable will not be

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allowed where there is a concurrent delay that is the responsibility of the Contractor.

13.3.2.3 No claim for damages of any character due to delays caused by adverse weather, acts of God, strikes, fire or unavoidable casualties will be allowed. The Contractor shall bear the expenses related to additional time granted for "force majeure" events.

13.3.2.4 The written notice of potential claim shall set forth the reasons for which the Contractor believes additional compensation will or may be due, the nature of the costs involved, and, insofar as possible, the amount of the potential claim. The said notice as above required must have been given to the Designated Representative prior to the time that the Contractor shall have performed the work giving rise to the potential claim for additional compensation, if based on an act or failure to act by the Designated Representative, or in all other cases within ten (10) days after the happening of the event, thing or occurrence giving rise to the potential claim. It is the intention of this paragraph that differences between the parties arising under and by virtue of the contract be brought to the attention of the Designated Representative at the earliest possible time in order that such matters may be settled, if possible, or other appropriate action promptly taken. The Contractor hereby agrees that he shall have no right to additional compensation for any claim that may be based on any such act, failure to act, event, thing or occurrence for which no written notice of potential claim as herein required was filed.

13.4 MINOR CHANGES IN THE WORK

13.4.1 The Architect/Engineer will have the authority to order, through the Designated Representative, minor changes in the Work not involving an adjustment in the Contract Sum or an extension of the Contract Time and not inconsistent with the intent of the Contract Documents. Such changes will be effected by written order and such changes shall be binding on the Owner, the Designated Representative and the Contractor. The Contractor shall carry out such written orders promptly.

ARTICLE 14: UNCOVERING AND CORRECTION OF WORK

14.1 UNCOVERING OF WORK

14.1.1 If any portion of the Work should be covered contrary to the request of the Owner through the Designated Representative or Architect/Engineer, or to requirements specifically expressed in the Contract Documents, it shall, if required in writing by the Designated Representative, be uncovered for their observation and replaced, at the Contractor's expense.

14.1.2 If any other portion of the Work has been covered which neither the

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Designated Representative nor the Architect/Engineer has specifically requested to observe prior to being covered, the Architect/Engineer or Designated Representative, with written approval of the Owner, may request to see such work and it shall be uncovered by the Contractor. If such work is found in accordance with the Contract, the cost of uncovering and replacement shall, by an appropriate Change Order, be charged to the Owner, as the case may be. If such Work is found not in accordance with the Contract Documents, the Contractor shall pay such costs unless it is found that this condition was caused by a separate contractor employed as provided in Article 7 and in that event, the separate contractor shall be responsible for payment of such costs.

14.2 CORRECTION OF WORK

14.2.1 The Contractor shall promptly correct all Work rejected by the Architect/Engineer or the Designated Representative as defective or as failing to conform to the Contract Documents whether observed before or after Substantial Completion and whether or not fabricated, installed or completed. The Contractor shall bear all costs of correcting such rejected Work, including compensation for the Architect/Engineer's and Designated Representative's additional services made necessary thereby.

14.2.2 Notwithstanding acceptance of the Work by the Owner, if any of the Work is found to be defective or not in accordance with the Contract Documents, the Contractor shall correct it promptly after receipt of written notice from the Designated Representative to do so, unless the Owner has previously given the Contractor a written acceptance of such condition. This obligation shall survive the termination of the Contract. The Designated Representative shall give such notice promptly after discovery of the condition.

14.2.2.1 If, within one (1) year after the Date of Substantial Completion of the Work or the designated portion thereof, or within one (1) year after acceptance by the Owner of designated equipment or within such longer period of time as may be prescribed by law or by the terms of any applicable special warranty required by the Contract Documents, the Contractor shall correct it promptly after receipt of written notice from the Owner or Designated Representative to do so unless the Owner or the Designated Representative has previously given the Contractor written acceptance of such condition. This obligation shall survive the termination of the Contract. The Owner or Designated Representative shall give such notice promptly after discovery of the condition.

14.2.3 The Contractor shall remove from the site all portions of the Work which are defective or nonconforming and which have not been corrected under Subparagraph 5.5.1, 14.2.1 and 14.2.2 unless removal has been waived by the Owner.

14.2.4 If the Contractor fails to correct the defective or nonconforming Work as provided in Subparagraph 5.5.1, 14.2.1 and 14.2.2, the Owner

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may correct it in accordance with Subparagraph 4.3.2.

14.2.5 If the Contractor does not proceed with the correction of such defective or nonconforming Work within a reasonable time fixed by written notice from the Designated Representative, the Owner may remove it and may store the materials or equipment at the expense of the Contractor. If the Contractor does not pay the cost of such removal and storage within ten (10) days thereafter, the Owner may, upon ten (10) additional days written notice, sell such Work at auction or at private sale and shall account for the net proceeds thereof, after deducting all costs that should have been borne by the Contractor, including compensation for the Designated Representative's additional services made necessary thereby. If such proceeds of sale do not cover all costs, which the Contractor should have borne, the difference shall be charged to the Contractor and the appropriate Change Order shall be issued. If the payments then or thereafter due the Contractor are not sufficient to cover such amount, the Contractor shall pay the difference to the Owner.

14.2.6 The Contractor shall bear the cost of making good all Work of the Owner or other contractors destroyed or damaged by such removal or correction.

14.2.7 Nothing contained in this Paragraph 14.2 shall be construed to establish a period of limitation with respect to any other obligation which the Contractor might have under the Contract Documents, including Paragraph 5.5 hereof. The establishment of the time period of one (1) year after the Date of Substantial Completion or such longer period of time as may be prescribed by law or by the terms of any warranty required by the Contract Documents, relates only to the specific obligation of the Contractor to correct the Work and has no relationship to the time within which its obligation to comply with the Contract Documents may be sought to be enforced, nor to the time within which proceedings may be commenced to establish the Contractor's liability with respect to its obligations other than specifically to correct the Work.

14.3 ACCEPTANCE OF DEFECTIVE OR NONCONFORMING WORK

14.3.1 If the Owner prefers to accept defective or nonconforming Work, he may do so instead of requiring its removal and correction, in which case a Change Order will be issued to reflect reduction in the Contract Sum where appropriate and equitable. Such adjustment shall be affected whether or not Final Payment has been made.

ARTICLE 15: TERMINATION OF THE CONTRACT

15.1 TERMINATION BY THE CONTRACTOR

15.1.1 If the Work is stopped under an order of any court or other public authority having jurisdiction for a period of three

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(3) months, through no fault of the Contractor or a Subcontractor or their agents or employees or any other person performing any of the Work under a contract with the Contractor, he may, upon thirty (30) additional days written notice by the Contractor, stop Work or terminate the Contract and recover from the Owner payment for all Work executed and for any proven loss sustained upon any materials, equipment, tools, construction equipment and machinery.

15.2 TERMINATION BY THE OWNER

15.2.1 If the Contractor is adjudged bankrupt or if he makes a general assignment for the benefit of its creditors or if a receiver is appointed on account of its insolvency, or if he persistently or repeatedly refuses or fails, except in cases for which extension of time is provided, to supply enough properly skilled workmen or proper materials, or if he fails to make prompt payment to Subcontractors after payment is rendered or for materials or labor, or persistently disregards laws, ordinances, rules regulations, orders of any public authority having jurisdiction, or otherwise is guilty of a substantial violation of a provision of the Contract Documents, then the Owner may, without prejudice to any right or remedy and after giving the Contractor and its surety, fourteen (14) calendar days written notice, terminate the employment of the Contractor and take possession of the site and of all materials, equipment, tools, construction equipment and machinery thereon owned by the Contractor and may finish the Work by whatever method he may deem expedient. In such case the Contractor shall not be entitled to receive any further payment until the Work is finished.

15.2.1.1 If the unpaid balance of the Contract Sum exceeds the costs of finishing the Work, including compensation for the Designated Representative's additional services made necessary thereby, such excess shall be paid to the Contractor. If such costs exceed the unpaid balance, the Contractor shall pay the difference to the Owner.

15.2.1.2 The expenses incurred by the Owner or Designated Representative and the damage incurred through the Contractor's default shall be certified by the Architect/Engineer.

15.2.2 The Owner may terminate the contract at its own discretion or when conditions encountered during the work make it impossible or impracticable to proceed, or when the Owner is prevented from proceeding with the contract by act of God, by law, or by official action of a public authority.

15.2.3 After receipt of a Notice of Termination, the Contractor shall submit to the Owner through the Designated Representative its written termination claim in the form and with the certification which the Owner or Designated Representative may require. Such claims shall be submitted promptly, but in no event more than thirty (30) days after the effective date of termination.

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ARTICLE 16: PROJECT REQUIREMENTS

16.1 PROJECT REPORTS

16.1.1 Contractor Reports: Immediately after the contract is awarded, a meeting will be scheduled at the project site to review project procedures, designation of name and title of the authorized person or persons, representing the Contractor and responsible for the project management and field operation, designation of Emergency Contact, designation of representative for progress meetings, the requirements for daily, weekly and monthly reports and other submittals required to perform and administer the project. Without limiting the reports required, several reports are indicated below with their requirements:

16.1.2 Daily Force and Activity Reports: The Contractor shall prepare and submit to the Designated Representative, including similar data for each of its Subcontractors, a Daily Force and Activity Report. This report shall be on a form approved by the Designated Representative and shall indicate all Supervisors, Journeymen, Laborers or Helpers and, by crew, the activities, related to the Contractor's schedule, that are being performed. The Daily Force and Activity Report shall include information on material deliveries, tests, weather conditions and other significant events. Each Daily Force and Activity Report shall be delivered to the Designated Representative at the job site by 9:00 a.m. on the next succeeding business day.

16.1.3 Daily Change Documentation: The Contractor shall submit to the Designated Representative for review and verification, separate daily documentation of any "Change in the Work" being performed on any basis, other than agreed upon lump sum, as described in Article 13 of the General Conditions. This report shall be on a form approved by the Designated Representative. The Contractor shall certify the accuracy of this report.

16.1.4 Safety Reports: The Contractor shall submit to the Designated Representative copies of all accident reports and weekly minutes/reports of Safety Program "Tool Box" meeting and other safety information.

16.1.5 Material Status Reports: The Contractor shall prepare a Materials Status Report not later than fifteen (15) calendar days after the Notice to Proceed One. The report shall include a complete list of suppliers, items to be purchased from them, the fabricator and manufacturer, the time required and the promised delivery dates for each item. This report shall be updated and submitted with the payment requisition monthly as an integral part thereof and more frequently as requested by the Designated Representative.

16.1.6 Purchase Orders: A copy of each purchase order as issued by the Contractor shall be furnished to the Designated Representative, except that prices may be omitted.

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16.1.7 Job Cost Breakdown: The Contractor shall submit job cost breakdown reports for record and tax purposes to the Designated Representative. The first report shall be submitted within thirty (30) calendar days after date of each Notice to Proceed One on any portion of the Work and shall be consistent in format with the schedule of values. Another report shall be submitted at the completion of the job and shall include all additions and deletions. Interim reports on various elements of the Work shall be submitted as required by the Owner for investment, tax credit, pollution control, financing and other purposes.

16.1.8 Monthly Progress Payment Applications: The Contractor shall submit Monthly Progress Payment Applications in the form and at the time as approved by the Designated Representative.

16.1.9 Monthly Reports: The Contractor shall submit to the Designated Representative copies of all monthly reports, such as MBE Participation, etc., required by governing bodies.

16.1.10 Monthly Certification: The Contractor shall submit to the Designated Representative periodic evidence and a monthly certification that "Record Documents", Test Reports and other Project Record Documents are being maintained for ultimate submittal to the Designated Representative and Owner at the completion of the Work.

16.1.11 Weekly Request for Information Status: The Contractor shall submit, each week on a day agreed to between the Contractor and the Designated Representative, a Request for Information Status Report indicating the Contractor's perception of the status of all submitted Requests for Information. The Request for Information Status Report will include a brief description of the request, date the request was submitted to the Designated Representative, date a response is needed from the Architect/Engineer, date a response is actually made by the Architect/Engineer, and any pertinent remarks. The Request for Information Status Report shall be in a format approved by the Designated Representative.

16.2 DRAWINGS, PRODUCT DATA AND SAMPLES

16.2.1 Shop Drawings: Shop drawings are drawings, diagrams, schedules and other data especially prepared for the Work by the Contractor, Subcontractor, Sub-subcontractor, manufacturer, supplier or distributor to illustrate some portion of the Work. Shop drawings shall be signed by a registered professional engineer where required by law.

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

16.2.3 Samples: Samples are physical examples which illustrate materials,

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equipment or workmanship and establish standards by which the Work will be judged.

16.2.4 Submittals: Submittals forwarded by the Contractor to the Designated Representative shall be in conformance with the requirements of the Contract Documents. The Contractor shall notify the Architect/Engineer and Designated Representative in writing of any deviations in the submittals from the requirements of the Contract Documents at the time of submission. Before submission of each Shop Drawing, Product Data or Sample, the Contractor shall have determined and verified all quantities, dimensions, specified design and performance criteria, installation requirements, materials, catalog numbers and similar data with respect thereto and review or coordinated each Shop Drawing, Product Data or Sample with other Shop Drawings, Product Data and Samples and with the requirements of the Work and the Contract Documents. The term "submittal" as used herein includes Shop Drawings, Product Data and/or Samples as required by the Contract Documents. All submittals shall be submitted thirty (30) days prior to commencement of work affected.

16.2.5 Notice of Variation: At the time of each submission, the Contractor shall give the Architect/Engineer specific written notice of each Contractor perceived variation that the submittal may have from the requirements of the Contract Documents and, in addition, the Contractor shall cause a specific notation to be made on each Shop Drawing, Product Data and/or Sample submitted to the Architect/Engineer for review and "approval" demonstrating each such perceived variation.

16.2.6 Architect/Engineer Submittal Review: The Architect/Engineer will review and "approve" with reasonable promptness the required submittals. The Architect/Engineer's review and approval of the Contractor's submittal does not constitute a complete check, but indicates only that design, general method of construction and detailing is satisfactory. The Architect/Engineer's review and approval does not permit any deviation from the Contract Requirements and does not relieve the Contractor of the responsibility for errors in dimensions, details, sizes of member, etc., or the coordinating of installation and construction with actual conditions of the Work. The Architect/Engineer's review and "approval" will be only for conformance with the design concept of the Project and

for compliance with the information given in the Contract Documents and shall not extend to means, methods, techniques, sequences or procedures of construction (except where a specific means, the methods, technique sequence or procedure of construction is indicated in or required by the Contract Documents) or to safety precautions or safety programs incident thereto. The individual review and "approval" of a component item as such will not indicate "approval" of the integrated final assembly into which the item is placed and in which the item must function. The Contractor shall make any corrections required by the Architect/Engineer, without any additional cost to the Owner. The Contractor shall return the

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required number of corrected copies of submittals to the Architect/Engineer who will promptly, as required, review the re-submittals for conformance with the design concept.

16.2.7 Resubmission Notice: The Contractor shall direct specific attention, in writing or on resubmitted Shop Drawings, Product Data or Samples, to all revisions other than those requested by the Architect/Engineer or Designated Representative on previous submittals.

16.2.8 Contractor Responsibility: Review and "approval" of submittals by the Architect/Engineer shall not relieve the Contractor from responsibility for any variation from the requirements of the Contract Documents unless the Contractor has in writing called the Architect/Engineer's attention to each such variation at the time of submission as required and the Architect/Engineer has given written approval of each such variation by a specific written notation thereof incorporated in or accompanying the submittal "approval"; nor will any "approval" by the Architect/Engineer relieve the Contractor from the responsibility for the Contractor's own errors or omissions in the submittal or from the Contractor's responsibility for compliance with all Contract Document provisions.

16.2.9 No Work Prior to Submittal Approval: The Contractor shall resubmit submittals as required until the Architect/Engineer's approval is obtained. No work requiring submittals shall be executed until the Architect/Engineer's approval is given. Where a submittal is required by the Specifications, any related work performed prior to the Architect/Engineer's review and "approval" of the pertinent submission will be at the sole risk, expense and responsibility of the Contractor.

16.2.10 Transmittal Requirements: After checking and verifying all field measurements and complying with applicable procedures specified in the Contract Documents, the Contractor shall transmit all submittals to the Architect/Engineer with one (1) copy to the Designated Representative and shall include:

(a.) Date and time of revision dates.
(b.) Project title and number.

(c.) The names of:
(1.) Architect/Engineer
(2.) Designated Representative
(3.) Contractor
(4.) Contract Number
(5.) Subcontractor
or Supplier
(6.) Manufacturer
(7.) Separate Detailer when pertinent

(d.) Number of Shop Drawings, Product Data and Sample submitted. (System to be established by Designated Representative.)
(e.) Identification of product or material.

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(f.) Relation to adjacent structure or materials.
(g.) Field dimensions, clearly identified as such.
(h.) Specification section number and paragraph.
(i.) Applicable standards such as ASTM number or Federal Specification.
(j.) A blank space, minimum of 2 1/2 by 3 1/2 inches for the Architect/Engineer stamp.
(k.) Identification of deviations from Contract Documents.
(l.) Other pertinent data.

16.2.11 Approval Delays: The Contractor shall be responsible for any delays caused by the rejection of the submittal for inadequate or incorrect shop drawings, manufacturer's data or other information.

16.2.12 Working Drawings: The Contractor is responsible for seeing that only "Approved" copies of shop drawings bearing the stamp of the Architect/Engineer are allowed on the job.

16.2.13 Approved Equals: The Contractor's attention is directed to Article 5.4 LABOR AND MATERIALS. Where two or more products are specified for an item of Work, either one thereof is acceptable and the choice is left to the Contractor. Where only one product is specified and where the term "or approved equal" or similar wording is used in connection with specified products, the Contractor may, if he so desires, offer for consideration a substitute product which he judges to be equal in every respect to the required product. When a specific process is specified as well as a guarantee of the results, the Contractor shall, if in its judgement the process may not produce the required result, submit for approval, an alternative process which he would guarantee. All such submittals shall be made, within forty (40) calendar days after award of the Contract, in writing to the Designated Representative, who in turn will forward them to the Architect/Engineer. Review of any substitute product will (1) be contingent upon submission of substantiating serviceability to specified product; (2) use of the item will not entail changes in details and construction of related Work; (3) item conforms to required design and artistic effect. The Contractor shall furnish with the first submittal, a sufficient number of drawings, specifications, samples, performance data and other information necessary to assist the Architect/Engineer in determining whether the proposed substitution is acceptable. The burden of proof shall be upon the Contractor. No consideration will be given to incomplete submittals. Substitutions shall be approved in writing before they may be used.

16.2.14 Conflicting Instructions: When product manufacturer's instructions are in conflict with the Contract Documents, the Contractor shall notify the Designated Representative for clarification before proceeding. The Contractor shall keep a copy of the various product manufacturer's instructions applicable to the Work at the project site.

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16.2.15 Submittal Log: Each week on a day agreed to between the Contractor and the Designated Representative, the Contractor shall submit an updated submittal log to the Designated Representative indicating the Contractor's perception of the status of all required submittals and reviews. Similar information to that outlined below shall be provided for any required re-submittals. The submittal log will include such information as:

(a.) The schedule date to receive information from a subcontractor or supplier.
(b.) The actual date information was received from a subcontractor or supplier.
(c.) The scheduled date to submit information to the Architect/Engineer.
(d.) The date information was submitted to Architect/Engineer.
(e.) Anticipated date of return of information from Architect/Engineer.
(f.) Actual date information was received from Architect/Engineer.
(g.) Status or actions required.

16.2.16 Sample Submission: The Contractor shall submit all required samples for review and "approval" by the Architect/Engineer, with such promptness as to cause no delay in the Work. All samples shall be checked by the Contractor and accompanied by a specific written indication that the Contractor has satisfied Contractor's responsibilities under the Contract Documents with respect to the Contractor's review of the submission. The samples shall be identified clearly as to equipment, material, supplies and include pertinent data such as demonstrating compliance with a certain Specification Section, catalog number, etc., and the use for which the material is intended. An approved sample of each material shall be provided to the Designated Representative prior to delivery of any materials for which submission of samples is required.

16.2.17 Sample Review: The Contractor shall submit four (4) samples of materials to the Architect/Engineer for approval as indicated in the Specifications. All samples shall be properly labeled to indicate type of material submitted, intended use, manufacturer's name, trade name, project name, Designated Representative's name, Contractor's, Subcontractor's and Supplier's names; and shall be transmitted as required by paragraph 16.2.10. Samples will be inspected and tested as required and if acceptable an approved notice will be sent to the Contractor along with one (1) approved sample. Rejected samples will be returned along with a statement of reasons for rejection. Accepted samples will be retained by the Architect/Engineer, one of which will be provided to the Designated Representative and shall become the property of the Owner.

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16.2.18 Submittals Affecting the Contract Sum: The Architect/Engineers approval of submittals which deviate from the Contract Documents does not authorize changes to the Contract Sum. The Contractor shall notify the Architect/Engineer and the Designated Representative in writing at the time of transmittal of any changes to the Contract Sum affected by such approval of a submittal; otherwise, claim for extras will not be considered.

16.2.19 Ductwork Layout Drawings: As soon as practical and in no case starting later than thirty (30) days after the award of contract, the Mechanical Subcontractor shall prepare layout drawings of all duct work and piping at not less than 3/8" scale. The ductwork layout drawings shall show registers, grilles, diffusers and similar features as well as locations of all valves, dampers and other items requiring access for service and maintenance. The ductwork layout drawings shall also show beams, ceiling heights, walls, floor to floor dimensions, columns, doors and other major architectural and structural features as shown on the architectural and structural drawings.

16.2.20 Coordination with Subcontractors: The Contractor shall, within sixty (60) days after award, send a reproducible and two (2) prints of the ductwork layout drawings to the plumbing, materials handling, fire protection and electrical subcontractors who shall then make on the reproducible their own routings as well as other major items such as valves, access panels, switch panels, etc., as required to determine interrelationship and possible interferences with the mechanical ductwork and architectural or structural features. The marked-up reproducible shall then be returned to the Mechanical Subcontractor through the Contractor with copies to the Designated Representative no less than thirty (30) days after receipt by the other Subcontractors.

16.2.21 Composite Drawings: The Mechanical Subcontractor shall prepare preliminary composite drawings of such layout drawings, incorporating all the information and routings provided by the other Subcontractors. (At its option, a group of transparent overlays may be substituted, provided that they clearly show the relationship of all proposed installations.) The preliminary composite drawings, or the overlays, shall be reviewed during a series of meetings, called by the Contractor and attended by the Architect/Engineer and the Designated Representative, at which all Subcontractors and trades shall be represented, in order to review and resolve any real or apparent interferences or conflicts.

16.2.22 Agreement by Subcontractors: After all conflicts or interferences are resolved the Mechanical Subcontractor shall develop a final set of composite drawings showing the agreed upon routing, layout and juxtaposition of all ductwork, conveyers, piping, major conduit, valves, panels, lighting fixtures and all other major mechanical and electrical installations. In areas where no mechanical ductwork occurs, but where other mechanical and electrical installations are installed, each Subcontractor shall be responsible for its own Work

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and shall cooperate in preparing similar composite drawings, shall perform its own drafting Work and pay its own costs in connection therewith. In

preparation of all the final composite drawings, large scale details as well as cross and longitudinal sections shall be as required to fully delineate all conditions. Particular attention shall be given to the locations, size and clearance dimensions of equipment items, shafts and similar features. These final composite drawings shall then be signed-off by each of the Subcontractors, including the Mechanical Subcontractor, and the Contractor indicating their awareness of and agreement with the indicated routings and layouts and their interrelationship with the adjoining or contiguous Work. Thereafter, no unauthorized deviations will be permitted and if made without knowledge or agreement of the Architect/Engineer and Designated Representative, this unauthorized Work will be subject to removal and correction at no additional cost to Owner.

16.2.23 Minor Changes: In preparing the composite drawings, minor changes in duct, pipe or conduit routings that do not affect the intended function may be made as required to avoid space conflicts, when mutually agreed, but items may not be resized or exposed items relocated without the Architect/Engineers and Designated Representative's written approval No changes shall be made in any wall or chase locations, ceiling heights, door swings or locations, window or other openings or other features affecting the function or aesthetic effect of the building. If conflicts or interferences cannot be satisfactorily resolved, the Architect/Engineer and the Designated Representative shall be notified and their decision obtained.

16.2.24 Distribution of Composite Drawings: After the final composite drawings have been agreed upon and signed by all Subcontractors, the Contractor shall provide and distribute four (4) prints to each of the Subcontractors, to the Architect/Engineer and to the Designated Representative for reference and record purposes. The Contractor shall make similar distribution of all supplementary composite drawings, initiated by other Subcontractors as indicated herein before. All Subcontractors desiring additional prints of such drawings, beyond the basic distribution indicated above, shall arrange for and pay the cost of the same.

16.2.25 Record Composite Drawings: The record copies of the final composite drawings shall be retained by the Designated Representative and each Contractor as a working reference. All shop drawings, prior to their submittal to the Architect/Engineer, shall be compared with the composite drawings and developed accordingly by the Contractor and the responsible Subcontractor. Any revision to the composite drawings which may become necessary during the progress of the Work shall be noted by the Contractor and all Subcontractors and shall be neatly and accurately recorded on the record copies. The Contractor and each Subcontractor shall be responsible for the up-to-date maintenance of its record copies of the composite drawings and to keep two (2) copies available at the site. The composite

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drawings and any subsequent changes thereto, shall be utilized by the Contractor and each Subcontractor in the development of its "Record Document" drawings.

16.2.26 Timely Submissions: The composite drawings need not be submitted as a whole, but they shall be submitted in all cases in ample time to avoid construction delay. The coordination drawings may lack complete data in certain instances pending receipt of shop drawings, but sufficient space shall be allotted for the items affected. When final information is received, such data shall be promptly inserted on the composite drawings.

16.2.27 Improperly Coordinated Work: No extra compensation will be paid for relocating any duct, pipe, conduit, or other material that has been installed without proper coordination between the Contractor and all Subcontractors involved. If any improperly coordinated Work or Work installed that is not in accordance with the approved composite drawings, necessitates additional Work by the Contractor or other Subcontractors, the costs of all such additional Work shall be borne solely by the Contractor or the Subcontractor responsible for the nonconforming Work.

16.2.28 Incorporation of Changes: All changes in the scope of Work due to revisions formally issued and approved shall be shown on the composite drawings.

16.2.29 Quality Draftsmanship: All Work on shop drawings, ductwork layout drawings, coordination drawings, and composite drawings shall be performed by competent draftsmen and shall be clear and fully legible. The Architect/Engineer shall be the sole judge of the acceptability of the drawings.

16.2.30 Structural Cutting: The Contractor shall obtain specific positive written instructions from the Architect/Engineer through the Designated Representative before cutting beams or other structural members, arches or lintels, and the Contractor shall be guided by such instructions.

16.3 TEMPORARY SERVICES, SYSTEMS AND FACILITIES

16.3.1 Temporary Lighting, Power and Water: At its own expense, the Contractor shall furnish, install, maintain, and remove all temporary lighting, electric power, and potable water, including piping, wiring, lamps, and other equipment necessary for the execution and security of the Work; and shall be responsible for the cost of power and water usage. The Contractor shall not draw water from any fire hydrant, except to extinguish a fire, without first obtaining permission from the water agency concerned. The Contractor shall provide for distribution of drinking water to all work forces under this Contract.

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16.3.2 Sanitation: The Contractor shall provide and maintain portable enclosed toilets for the use of all work forces under this Contract. These accommodations shall be maintained in a neat and sanitary condition. They shall also comply with all applicable laws, ordinances and regulations pertaining to the public health and sanitation of dwellings and camps. The Contractor shall not interrupt the flow of existing sanitary sewers. Should the Work involve the disruption of existing sewer facilities, the Contractor shall convey the sewage in closed containers and shall dispose of it in a sanitary sewer system as approved by local health authorities and the Designated Representative. Sewage shall not be permitted to flow in trenches or be covered by backfill.

16.3.3 Vermin Control: The Contractor shall maintain the job site free of rodents, insects, vermin and pests throughout all phases of construction, including suspensions of work, and until final acceptance of the Work. Necessary extermination work shall be arranged and paid for by the Contractor as part of the contract work and contract time and shall be performed by a licensed agency in accordance with requirements of governing authorities. The Contractor shall be liable for injury to persons or property and responsible for the elimination of offensive odors resulting from extermination operations.

16.3.4 Water Pollution Control: The Contractor shall exercise every reasonable precaution to protect channels, storm drains, and bodies of water from pollution and shall conduct and schedule its operations so as to minimize or avoid muddying and silting of said channels, drains, and waters. Water pollution control work shall consist of constructing those facilities which may be required to provide prevention, control, and abatement of water pollution.

16.3.5 Air Pollution Control: The Contractor shall not discharge smoke, dust, or any other air contaminants into the atmosphere in such quantity as will violate the regulations of any legally constituted authority.

16.3.6 Project Site Maintenance: Throughout all phases of construction, including suspensions of work, and until final acceptance of the Work, the Contractor shall keep the job site, including the interior of all structures, clean and free from rubbish and debris. The Contractor shall provide and maintain rubbish containers and periodic rubbish removal services as required by the pace of the Work and health regulations, and as acceptable to the Designated Representative.

16.3.6.1 The Contractor shall abate dust nuisance by cleaning, sweeping, and sprinkling with water, or other means as necessary. The use of water resulting in mud on public streets will not be permitted as a substitute for sweeping or other methods.

16.3.6.2 Materials and equipment shall be removed from the site as soon as they are no longer necessary; and upon completion of the Work and before final inspection the entire work site shall be cleared of

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equipment, unused materials, and rubbish so as to present a satisfactory clean and neat appearance. All cleanup costs shall be absorbed in the Contractor's bid.

16.3.6.3 The Contractor shall take care to avoid spillage on haul routes. Any such spillage shall be removed immediately and the area cleaned by the Contractor.

16.3.6.4 Burning or burying of rubbish and waste materials on the project site is prohibited. Disposal of volatile fluid wastes in storm and sanitary sewer systems is prohibited.

16.3.6.5 Waste materials shall not be dropped or thrown from heights. Cleaning operations shall be scheduled so that dust and other contaminants resulting from the cleaning process will not fall on wet or newly painted surfaces. Dusty debris shall be sprinkled lightly with water as required to control dust.

16.3.6.6 The Contractor shall vacuum clean the interior of buildings prior to the start of finish painting. The Contractor shall continue vacuum cleaning thereafter on an as needed basis until the building is ready for acceptance.

16.3.6.7 Failure of the Contractor to comply with the Designated Representative's cleanup orders may result in an order to suspend the Work until the condition is corrected. No additional compensation will be allowed as a result of such suspension.

16.3.7 Final Cleaning: At the completion of the Work, the Contractor at its sole expense shall remove all waste materials and rubbish from and about the project, as well as all tools, construction equipment, temporary facilities, machinery, and surplus materials.

16.3.7.1 At completion of construction and just prior to final inspection, the Contractor shall thoroughly clean the interior and exterior of the buildings, including hardware, floors, roofs, sills, ledges, glass, or other surfaces where debris, plaster, paint, spots, and dirt or dust may have collected. All glass shall be washed clean and polished. All grease, stains, labels, fingerprints, and other foreign materials shall be removed from interior and exterior surfaces. The Contractor shall repair, patch, and touch up marred surfaces to match adjacent finishes.

16.3.7.2 The Contractor shall use only experienced workmen or professional cleaners for final cleaning. Use only cleaning materials recommended by the manufacturer of the surface to be cleaned, and use cleaning materials only on surfaces recommended by the cleaning material manufacturer.

16.3.7.3 The Contractor shall broom clean all paved surfaces and rake clean other surfaces of grounds.

16.3.7.4 The Contractor shall replace air conditioning filters, if units were

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operated during construction. The Contractor shall clean all ducts, blowers, and coils if air conditioning units were operated at any time without filters during construction.

16.3.7.5 The Contractor shall maintain the building in a clean condition until it is accepted by the Owner.

16.3.8 Fire Protection: The Contractor at its sole expense shall provide temporary fire safety equipment for general use. The Contractor shall provide fire extinguishers for its trailers, for use as required when cutting and burning is performed, and as required throughout the job site as instructed by the local fire marshal.

16.3.9 Communication Systems: The Contractor shall provide telephone services at its own expense. The Contractor at its sole expense shall maintain in service a facsimile telecopy machine whenever telephone service is available at the job site. The use of portable radios shall be in accordance with Federal Regulations and shall not interfere with other local radio operations.

16.3.10 Office Facilities: The Contractor at its sole expense shall provide, maintain and remove temporary field office facilities, including all furniture, equipment, copiers, heating, cooling, lighting, power, telephones, drinking water, plumbing and toilet fixtures as necessary for its performance of the Work; and shall make these spaces, telephones, and services available for the use of the Owner, the Designated Representative and the Architect/Engineer. A designated work area shall be provided for the use of the Owner, the Designated Representative and the Architect/Engineer.

16.3.11 Weather Protection: The Contractor at its sole expense shall be responsible for providing protection for its own Work against inclement weather, in order to maintain all Work, materials, apparatus, and equipment. All Work subject to damage by adverse weather conditions shall be covered or otherwise protected as required. Weather protection shall be adequate to permit the Contractor to Work on a continuous basis without shutdown due to temperature or weather conditions as far as possible.

16.3.12 Dewatering: The Contractor at its sole expense shall provide all temporary drainage and dewatering measures including all pumping, drainage, erosion control or other work required to protect the Work while in progress.

16.3.12.1 Inundation of partially completed work due to lack of control during non-working periods will not be permitted, and may be cause for requiring removal of work already completed with replacement at the Contractor's expense.

16.3.12.2 The Contractor shall be responsible for obtaining the use of any property, in addition to that provided for in the plans and specifications, which may be required for the diversion and

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protective works so as not to create a hazard to persons or property or to interfere with the water rights of others.

16.3.12.3 It shall be understood and agreed that the Contractor shall hold the Owner and the Designated Representative harmless from legal action taken by any third party with respect to construction and operation of the diversion and protective works.

16.3.12.4 All works installed by the Contractor in connection with dewatering, control, and diversion of water but not specified to become a permanent part of the project, shall be removed and the site restored, insofar as practical, to its original condition prior to completion of construction or when directed by the Designated Representative.

16.3.13 Material Handling: The Contractor at its sole expense shall be responsible for handling and transporting, including lifting, its material and equipment to the location of need in a timely manner.

16.3.14 Cranes, Hoists and Scaffolds: The Contractor at its sole expense shall furnish, erect, maintain and remove all cranes, temporary hoists and scaffolding as may be required by the Contractor for the performance of the Work.

16.3.15 Storage: The Contractor at its sole expense shall provide and remove whatever temporary storage facilities, sheds, buildings, enclosures, partitions, etc., he deems necessary for the protection of its materials, tools and equipment after receiving approval from the Designated Representative on specific details of the method proposed. Any damage caused to Work in place by these temporary measures will be repaired / replaced at the Contractor's expense.

16.3.16 Security Fences: The Contractor at its sole expense shall provide temporary site enclosures (fences), barriers, and pedestrian walkways as indicated by the Contract Documents or as required to control access to the job site.

16.3.17 Security Services: The Contractor at its sole expense shall be responsible for job site security during various phases of the Work, including non-working hours and at other times, and as may be required for the protection of the Owner and the Designated Representative's interests. All costs for same will be paid by the Contractor.

16.3.18 Openings, Sleeves and Supports: The Contractor at its sole expense shall provide all necessary openings, channels, chases, flues, sleeves, inserts, hangers, etc., if any, and such cutting, patching, finishing, etc., if any, required by the Contract Documents to complete the Work.

16.3.19 Protection and Restoration of Existing Improvements: The Contractor at its sole expense shall be responsible for the protection of public and private property adjacent to the Work and shall exercise

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due caution to avoid damage to such property. All costs to the Contractor for protecting, removing, and restoring existing improvements shall be paid by the Contractor.

16.3.19.1 The Contractor at its sole expense shall repair or replace all existing improvements which are damaged or removed as a result of its operations and which are not designated for removal (e.g. curbs, sidewalks, driveways, fences, walls, ceilings, floor coverings, signs, utility installations, pavements, structures, trees, shrubbery, grass etc.).

16.3.19.2 Repairs and replacements shall be at least equal to existing improvements and shall match them in finish and dimensions in such a manner that the repaired work will not be readily noticeable.

16.3.20 Excavation Protection: The Contractor at its sole expense shall provide and maintain fencing, shoring and bracing and dewatering of all excavation.

16.3.21 Temporary Safety Measures: The Contractor at its sole expense shall provide, maintain and remove when no longer required all temporary safety measures, including all construction supplies, barricades, pedestrian walkways and equipment as may be required by the Contract Documents for its Work.

16.3.22 Advertising: The names of the Contractor, Subcontractors, the Architect/Engineer, including their consultants, with their addresses and the designation of their particular specialties, may be displayed on removable signs. The size, format and location of such signs shall be subject to the Designated Representative's approval. Commercial advertising matter shall not be attached or painted on the surfaces of buildings, fences, canopies, or barricades. All signs shall be removed when directed by the Designated Representative but not later than final acceptance of the Work.

16.4 SAFETY

16.4.1 Contractor shall comply with Section 01 35 29, Health, and Safety Requirements.

16.4.2 Contractor shall comply with Section 01 35 60, Site Security Procedures.

16.4.3 Post hazard warning signage compliant with requirements of 29 CFR 1926.200, "Accident Prevention Signs and Tags", and recommendations of ANSI Z535.5 at perimeter of construction zone. Promptly remove signage after the COUNTY OF SANTA BARBARA's Designated Representative verifies that Work hazards no longer exist.

16.4.4 Contractor shall restrict access temporarily (if possible) or erect

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temporary covered passageways as required to ensure safe passage of persons on public rights of way during the conduct of the operations.

16.4.5 Contractor shall protect adjacent properties from dust and damage caused by the Work.

16.4.6 OSHA and California Codes and Regulations: The Contractor at its sole expense shall provide, erect, maintain, dismantle and remove any and all barricades, railings, covers, warning lights, safety netting, and similar safety devices required to complete its Work and protect the public in accordance with OSHA, California Administrative Code, Title 8 Industrial Relations, Chapter 4 Division of Industrial Safety, Section 4 Construction and Safety Orders, Article 8 Explosives, and all other applicable code requirements.

16.4.7 Traffic Control: The Contractor shall conduct its Work so as to interfere as little as possible with pedestrian and vehicular traffic and he shall, at its sole expense, provide and maintain proper warnings and detour signs at all pedestrian and vehicular closures, intersections and along detours, directing traffic around closed portions of roadways. He shall, at its own expense, wherever necessary or required, provide and maintain fences, temporary roadways, temporary crossing signs, watchmen, warning lights and take such other precautions as may be necessary to protect life and property and shall be responsible for all damages occasioned in any way by its act or neglect. All barricades and obstructions shall be illuminated at night and all lights shall be kept on from one-half hour before sunset until one-half hour after sunrise.

16.4.8 Fall Protection: When performing any cutting, removal, creating openings or holes, etc., the Contractor at its sole expense, by use of barricades, flagmen or other means, shall provide protective measures to assure that other workmen or the public are not exposed to potential injury by the operation being conducted.

16.4.9 Welding Protection: The Contractor at its sole expense shall provide, maintain and remove all shielding or similar precautions required to be taken adjacent to welding operations.

16.4.10 Personal Equipment: The Contractor at its sole expense shall provide and supervise the use of all proper safety and protective devices by its employees during any potentially dangerous phases of its Work.

16.4.11 Safety Orders: The Contractor shall have at the work site, copies or suitable extracts of: Construction Safety Orders, Electrical Safety Orders, and General Industrial Safety Orders issued by the State Division of Industrial Safety. The Contractor shall comply and shall require the compliance by all Subcontractors with provisions of these Safety Orders and all other applicable laws, ordinances, and regulations.

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EXHIBIT C

Indemnification and Insurance Requirements (For Construction Contracts)

INDEMNIFICATION

CONTRACTOR agrees to indemnify, defend (with counsel reasonably approved by COUNTY) and hold harmless COUNTY and its officers, officials, employees, agents and volunteers from and against any and all claims, actions, losses, damages, judgments and/or liabilities arising out of this Agreement from any cause whatsoever, including the acts, errors or omissions of any person or entity and for any costs or expenses (including but not limited to attorneys' fees) incurred by COUNTY on account of any claim except where such indemnification is caused by the active negligence, sole negligence, or willful misconduct of the COUNTY.

NOTIFICATION OF ACCIDENTS AND SURVIVAL OF INDEMNIFICATION PROVISIONS

CONTRACTOR shall notify COUNTY immediately in the event of any accident or injury arising out of or in connection with this Agreement. The indemnification provisions in this Agreement shall survive any expiration or termination of this Agreement.

INSURANCE

CONTRACTOR shall procure and maintain for the duration of this Agreement insurance against claims for injuries to persons or damages to property which may arise from or in connection with the performance of the work hereunder and the results of that work by the CONTRACTOR, its agents, representatives, employees or subcontractors.

A. Minimum Scope and Limit of Insurance
Coverage shall be at least as broad as:

1. **Commercial General Liability (CGL):** Insurance Services Office (ISO) Form CG 00 01 covering CGL on an "occurrence" basis, including products-completed operations, personal & advertising injury, with limits no less than $2,000,000 per occurrence and $4,000,000 in the aggregate.
2. **Automobile Liability**: Insurance Services Office Form CA 0001 covering Code 1 (any auto), with limits no less than $2,000,000 per accident for bodily injury and property damage.
3. **Workers' Compensation**: Insurance as required by the State of California, with Statutory Limits, and Employer's Liability Insurance with limit of no less than $1,000,000 per accident for bodily injury or disease.
4. **Contractor's Pollution Legal Liability and/or Asbestos Legal Liability:** (if project involves environmental hazards) with limits no less than $1,000,000 per occurrence or claim, and $2,000,000 policy aggregate.

If the CONTRACTOR maintains higher limits than the minimums shown above, the COUNTY requires and shall be entitled to coverage for the higher limits maintained by the CONTRACTOR. Any available insurance proceeds in excess of the specified minimum limits of insurance and coverage shall be available to the COUNTY.

B. Other Insurance Provisions
The insurance policies are to contain, or be endorsed to contain, the following provisions:

1. **Additional Insured** – COUNTY, its officers, officials, employees, agents and volunteers are to be covered as additional insureds on the CGL policy with respect to liability arising out of work or operations performed by or on behalf of the CONTRACTOR including materials, parts, or equipment furnished in connection with such work or operations. General liability coverage can be provided in the form of an endorsement to the CONTRACTOR'S insurance at least as broad as ISO Form CG 20 10 11 85 or **both** CG 20 10, CG 20 26, CG 20 33, or CG 20 38; **and** CG 20 37 forms if later revisions used).
2. **Primary Coverage** – For any claims related to this Agreement, the CONTRACTOR'S insurance coverage shall be primary insurance coverage at least as broad as ISO CG 20 01 04 13 as respects the COUNTY, its officers, officials, employees, agents and volunteers. Any insurance or self-insurance maintained by the COUNTY, its officers, officials, employees, agents or volunteers shall be excess of the CONTRACTOR'S insurance and shall not contribute with it.
3. **Notice of Cancellation** – Each insurance policy required above shall provide that coverage shall not be canceled, except with notice to the COUNTY.
4. **Waiver of Subrogation Rights – CONTRACTOR hereby agrees to waive rights of subrogation which any insurer of CONTRACTOR may acquire** from CONTRACTOR by virtue of the payment of any loss. CONTRACTOR agrees to obtain any endorsement that may be necessary to effect this waiver of subrogation. **The Workers' Compensation policy shall be endorsed with a waiver of subrogation** in favor of the COUNTY for all work performed by the CONTRACTOR, its employees, agents and subcontractors. This provision applies regardless of whether or not the COUNTY has received a waiver of subrogation endorsement from the insurer.
5. **Deductibles and Self-Insured Retention** – Any deductibles or self-insured retentions must be declared to and approved by the COUNTY. At the option of the COUNTY, either: the CONTRACTOR shall cause the insurer shall reduce or eliminate such deductibles or self-insured retentions as respects the COUNTY, its officers, officials, employees, agents and volunteers; or the CONTRACTOR shall provide a financial guarantee satisfactory to the COUNTY guaranteeing payment of losses and related investigations, claim administration, and defense expenses.
6. **Acceptability of Insurers** – Unless otherwise approved by Risk Management, insurance shall be written by insurers authorized to do business in the State of California and with a minimum A.M. Best's Insurance Guide rating of "A- VII".
7. **Verification of Coverage** – CONTRACTOR shall furnish the COUNTY with proof of insurance, original certificates and amendatory endorsements as required by this Agreement. The proof of insurance, certificates and endorsements are to be received and approved by the COUNTY before work commences. However, failure to obtain the required documents prior to the work beginning shall not waive the CONTRACTOR'S obligation to provide them. The CONTRACTOR shall furnish evidence of renewal of coverage throughout the term of the Agreement. The COUNTY reserves the right to require complete, certified copies of all required

insurance policies, including endorsements required by these specifications, at any time.

8. **Failure to Procure Coverage** – In the event that any policy of insurance required under this Agreement does not comply with the requirements, is not procured, or is canceled and not replaced, COUNTY has the right but not the obligation or duty to terminate the Agreement. Maintenance of required insurance coverage is a material element of the Agreement and failure to maintain or renew such coverage or to provide evidence of renewal may be treated by COUNTY as a material breach of contract.
9. **Subcontractors** – CONTRACTOR shall require and verify that all subcontractors maintain insurance meeting all the requirements stated herein, and CONTRACTOR shall ensure that COUNTY is an additional insured on insurance required from subcontractors. For CGL coverage subcontractors shall provide coverage with a format least as broad as CG 20 38 04 13.
10. **Claims Made Policies** – If any of the required policies provide coverage on a claims-made basis:
    i. The Retroactive Date must be shown and must be before the date of the contract or the beginning of contract work.
    ii. Insurance must be maintained and evidence of insurance must be provided for at least five (5) years after completion of contract work.
    iii. If coverage is canceled or non-renewed, and not replaced with another claims-made policy form with a Retroactive Date prior to the contract effective date, the CONTRACTOR must purchase "extended reporting" coverage for a minimum of five (5) years after completion of contract work.
11. **Special Risks or Circumstances** – COUNTY reserves the right to modify these requirements, including limits, based on the nature of the risk, prior experience, insurer, coverage, or other circumstances.

Any change requiring additional types of insurance coverage or higher coverage limits must be made by amendment to this Agreement. CONTRACTOR agrees to execute any such amendment within thirty (30) days of receipt.

Any failure, actual or alleged, on the part of COUNTY to monitor or enforce compliance with any of the insurance and indemnification requirements will not be deemed as a waiver of any rights on the part of COUNTY.

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CONSTRUCTION DRAWINGS

COUNTY OF SANTA BARBARA, CA 93445

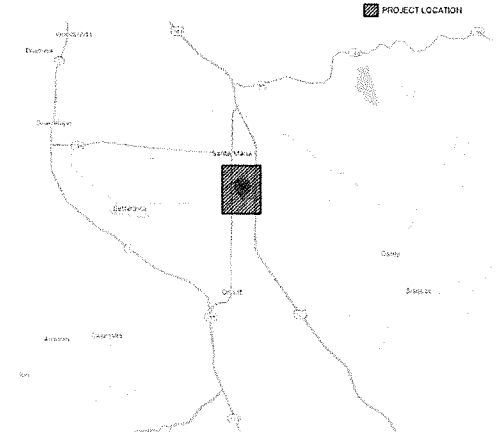
Santa Barbara HVAC and BAS

Issued for Bid Submittal
April 08, 2025

Mechanical and Electrical
P2S Inc.
Long Beach, CA
562.497.2999

VICINITY MAP

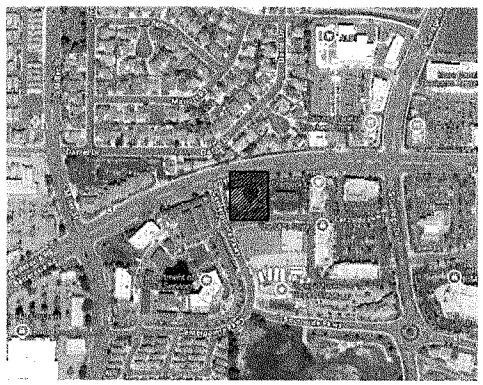
LEGEND
PROJECT LOCATION



NOT TO SCALE

SITE MAP

LEGEND
PROJECT LOCATION



NOT TO SCALE

SHEET INDEX

SHEET	DESCRIPTION
G001-A	COVER SHEET
G002-A	SPECIFICATIONS IN LIEU AND ASSEMBLY DRAWING
G003-A	ROOF PLAN DEMOLITION
G004-A	EQUIPMENT AND SCHEDULE DETAILS
M000-A	GENERAL NOTES, LEGEND, ABBREVIATIONS AND SHEET INDEX
M001-A	EQUIPMENT SCHEDULES
M002-A	PIPE FLOW DIAGRAM DESIGN
M003-A	ROOF PLAN DEMOLITION
M004-A	ROOF ATTACHMENT DETAILS
M005-A	ROOF PLAN NEW PIPING
M006-A	NETWORK ARCHITECTURE DIAGRAM
M007-A	CONTROL DIAGRAMS
M008-A	DETAILS
M009-A	TITLE 24 COMPLIANCE FORMS
M010-A	TITLE 24 COMPLIANCE FORMS
M011-A	TITLE 24 COMPLIANCE FORMS
M012-A	TITLE 24 COMPLIANCE FORMS
M013-A	ROOF PLAN DEMOLITION
M014-A	ROOF PLAN NEW PIPING
E000-A	GENERAL NOTES, LEGEND, ABBREVIATIONS AND SHEET INDEX
E001-A	PANEL SCHEDULE
E002-A	MECHANICAL SCHEDULE
E003-A	ROOF PLAN DEMO
E004-A	ROOF PLAN NEW
E005-A	SINGLE LINE DIAGRAM

PROJECT DESCRIPTION

1. REPLACE THE EXISTING ROOF TOP MECHANICAL PACKAGE UNITS WITH NEW ROOF TOP UNIT PACKAGES UNITS. THE SCOPE OF THE REMOVAL OF THE EXISTING PUBLIC SAFETY RADIO SYSTEM INFRASTRUCTURE EQUIPMENT WILL REQUIRE ADDITIONAL TIME TO BE INSTALLED BY A THE CAL FIRE AGENCY STAFF.
2. REPLACE OBSOLETE LEGACY BUILDING ENERGY MANAGEMENT SYSTEM WITH ASSOCIATED CONFIGURATION AND ELEMENTARY SEQUENCE

P2S ENG
p2seng.com
Consultant

Project Title
Santa Barbara HVAC and BAS
SANTA MARIA ADMIN
Betteravia Government
Administration Building
511 Lakeside Pkwy,
Santa Maria, CA 93455

Owner

269 N San Antonio Rd, Santa Barbara, CA 93110

Revisions

Number	Description	Date
	ISSUED FOR BID	05/01/2025

Designed	AR
Drawn	AR
Checked	JL
Approved	-
Date	05/01/2025
Submittal	ISSUED FOR BID
Scale	No Scale

Sheet Title
Cover Sheet

Sheet Number
G001-A

P2S No. 24-0295

ABBREVIATIONS

ABOVE FINISH FLOOR AS SHOWN	
ACI	AMERICAN CONCRETE INSTITUTE
AFF&PA	AMERICAN FOREST & PAPER ASSOCIATION (WOOD DESIGN)
AISC	AMERICAN INSTITUTE OF STEEL CONSTRUCTION
AISI	AMERICAN IRON AND STEEL INSTITUTE
ANSI/AWS	AMERICAN NATIONAL STANDARDS INSTITUTE
ASCE	AMERICAN SOCIETY OF CIVIL ENGINEERS
ASTM	AMERICAN SOCIETY FOR TESTING AND MATERIALS
AWS	AMERICAN WELDING SOCIETY
BLDG	BUILDING
BOCA	BUILDING OFFICIALS AND CODE ADMINISTRATORS INTERNATIONAL
BSC	BUREAU OF STEEL CONSTRUCTION
CEB	CONCRETE EUROPEAN BULLETIN
CSA	CANADIAN STANDARDS
DIA	STEEL JOIST INSTITUTE
DOASA	STEEL DECK INSTITUTE
	DEPARTMENT OF HEALTH, PLANNING AND ACCESS FOR DISABLED PERSONS ACT
EIC	EUROPEAN INTERNATIONAL COMMITTEE
FEMA	FEDERAL EMERGENCY MANAGEMENT AGENCY
GSA	GENERAL SERVICES ADMINISTRATION
ICBO	INTERNATIONAL CONFERENCE OF BUILDING OFFICIALS
IBC	INTERNATIONAL BUILDING CODE
IBHS	INSTITUTE FOR BUSINESS AND HOME SAFETY
NEHRP	NATIONAL EARTHQUAKE HAZARDS REDUCTION PROGRAM
NFPA	NATIONAL FIRE PROTECTION ASSOCIATION
NRCA	NATIONAL ROOFING CONTRACTORS ASSOCIATION
OSHA	OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION
SBCCI	SOUTHERN BUILDING CODE CONGRESS INTERNATIONAL
SDI	STEEL DECK INSTITUTE
SJI	STEEL JOIST INSTITUTE
SSPC	THE SOCIETY FOR PROTECTIVE COATINGS
UBC	UNIFORM BUILDING CODE

#	POUND OR NUMBER, OR SEVERITY
@	AT
~	APPROXIMATELY
'	FEET (LENGTH)
"	INCHES (LENGTH)
±	PLUS OR MINUS
°	DEGREES
Ø	DIAMETER

ADDL	ADDITIONAL
ADJ	ADJACENT
ALT	ALTERNATE
ALTERN	ALTERNATE, ALTERNATELY
ARCH	ARCHITECT, ARCHITECTURAL
BF	BOTH FACES
BKG	BACKING, BLOCKING
BSM	BASEMENT
BOT	BOTTOM
BTWN	BETWEEN
CANTIL	CANTILEVER
CG	CENTER OF GRAVITY
CL	CENTERLINE
CLR	CLEAR, CLEARANCE
CMU	CONCRETE MASONRY UNIT
COL	COLUMN
CONC	CONCRETE
CONN	CONNECT, CONNECTION
CONST	CONSTRUCT
D	PAIR OR METER (PREFIX)
DBL	DOUBLE
DIA	DIAMETER
DN	DOWN
DTAL	DETAIL
DWG	DRAWING
EA	EACH
EF	EACH FACE
ELEC	ELECTRICAL
EMBED	EMBED, EMBEDDED, EMBEDMENT
EQ'N	EQUATION (FORMULA)
EQ	EQUAL
EQUIP	EQUIPMENT
EW	EACH WAY
EXP	EXPANSION
EXT	EXTERIOR
GA	GAUGE
GALV	GALVANIZE
HORIZ	HORIZONTAL
I.D.	INSIDE DIAMETER
INFO	INFORMATION
INT	INTERSECTION OR INTERIOR
K	KIPS (FORCE)
KN/m2	KILONEWTONS PER SQUARE METER
KSF	KIPS PER SQUARE FOOT
KSI	KIPS PER SQUARE INCH

LBS	POUNDS
LG	LONG (LEG)
LLH	LONG LEG HORIZONTAL
LLV	LONG LEG VERTICAL
LOCS	LOCATIONS
LTWT	LIGHTWEIGHT
MAX	MAXIMUM
MIN	MINIMUM
MISC	MISCELLANEOUS
MTL	METAL
NEC	NECESSARY
NTS	NOT TO SCALE
OA	OVERALL
OC	ON CENTER
OPNG	OPENING
OPP	OPPOSITE
PAF	PAINT AFTER FABRICATION
PCF	POUNDS PER CUBIC FOOT
PERP	PERPENDICULAR
PL	PLATE
PSF	POUNDS PER SQUARE FOOT
PSI	POUNDS PER SQUARE INCH
PTS	POINTS
QTY	QUANTITY
REINF	REINFORCING
REQ'D	REQUIRE, REQUIRED
SHT'G	SHEATHING
SIM	SIMILAR
SPCS	SPACES
SQUIS	SQUARE
STAINLESS	STAINLESS STEEL
STD	STANDARD
STIFF	STIFFENER, STIFFENED
STRUCT	STRUCTURAL
SYM	SYMMETRICAL
THK	THICK, THICKNESS
TOS	TOP OF STEEL
TYP	TYPICAL
UNO	UNLESS NOTED OTHERWISE
VERT	VERTICAL
W/	WITH
W/O	WITHOUT
WT	WEIGHT

STRUCTURAL STEEL SHAPES	
L	ANGLE

GENERAL STRUCTURAL NOTES

DESIGN LOADS PER
CODE OF RECORD: 2022 EDITION, CALIFORNIA BUILDING CODE

DESIGN LOADS
SPECIAL INSPECTIONS: ..... SEE WRITTEN SPECIFICATIONS
WIND EXPOSURE CATEGORY: ..... B
WIND DESIGN CRITERIA: ..... SEE WIND DESIGN PARAGRAPH ON STRUCTURAL GENERAL NOTES

SEISMIC CATEGORY: ..... D
SEISMIC SITE CLASS: ..... D (DEFAULT)
SEISMIC DESIGN CATEGORY: ..... D
SPECTRAL RESPONSE ACCELERATION S_S: ..... S_S = 1.500 g, S_{MS} = 1.500 g
SPECTRAL RESPONSE ACCELERATION S_1: ..... S_1 = 0.600 g, S_{M1} = 0.900 g
SEISMIC IMPORTANCE FACTOR, I_E: 1.0

ABBREVIATIONS
STEEL FRAME CONSTRUCTION FACTOR: ..... C_{sf} = 0.9
CONCRETE SHEAR WALL CONSTRUCTION FACTOR: ..... C_{sw} = 1.0
CONCRETE FRAME CONSTRUCTION FACTOR: ..... C_{cf} = 0.9

1. THESE PLANS ARE CREATED FOR A SPECIFIC SCOPE AND ARE NOT TO BE USED FOR ANY OTHER PROJECT WITHOUT THE WRITTEN CONSENT OF THE ARCHITECT. THE ARCHITECT AND THE CONSULTANTS SHALL NOT BE LIABLE FOR DAMAGES RESULTING FROM THE UNAUTHORIZED USE OF THESE PLANS BY OTHERS.

2. ALL MECHANICAL, ELECTRICAL, PLUMBING AND STRUCTURAL DRAWINGS OR DETAILS SHOWN ARE DIAGRAMMATIC ONLY AND ARE NOT INTENDED TO BE CONSTRUCTION DRAWINGS. WORK SHALL INCLUDE ALL ITEMS NECESSARY FOR A COMPLETE AND FULLY WORKING INSTALLATION, EVEN IF NOT SPECIFICALLY SHOWN OR DETAILED ON THE PLANS.

3. CONTRACTORS AND SUBCONTRACTORS SHALL VISIT THE SITE AND BECOME FAMILIAR WITH ALL EXISTING CONDITIONS AFFECTING THEIR WORK. THEY SHALL BE RESPONSIBLE FOR ALL DIMENSIONS AND CONDITIONS ON THE JOB SITE AND SHALL REPORT ANY DISCREPANCIES TO THE ARCHITECT BEFORE PROCEEDING WITH ANY WORK IN THE AREA.

4. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ENSURING THAT THE WORK OF ALL TRADES AND SUBCONTRACTORS IS COORDINATED. ALL DRAWINGS ARE DIAGRAMMATIC IN CHARACTER AND THE ARRANGEMENT OF EQUIPMENT AND CONSTRUCTION SHALL BE DETERMINED BY THE ARCHITECT AND THE CONTRACTOR AS WORK PROGRESSES.

5. ALL INFORMATION SHOWN ON THE DRAWINGS IS BASED ON THE BEST AVAILABLE INFORMATION AND DATA AT THE TIME OF PREPARATION. THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS AND CONDITIONS IN THE FIELD AND REPORT ANY DISCREPANCIES TO THE ARCHITECT BEFORE PROCEEDING WITH THE WORK. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE CORRECTION OF ANY WORK THAT IS PERFORMED IMPROPERLY DUE TO FAILURE TO REPORT DISCREPANCIES.

6. THE CONTRACTOR SHALL COMPLY WITH ALL APPLICABLE LAWS, ORDINANCES, RULES, AND REGULATIONS OF AUTHORITIES HAVING JURISDICTION OVER THE WORK. IF ANY PROVISION OF THE CONTRACT DOCUMENTS VIOLATES ANY SUCH REQUIREMENT, THE CONTRACTOR SHALL NOTIFY THE ARCHITECT IN WRITING BEFORE PROCEEDING WITH THE AFFECTED WORK. ANY WORK PERFORMED CONTRARY TO THESE REQUIREMENTS SHALL BE CORRECTED AT THE CONTRACTOR'S EXPENSE.

7. THE CONTRACTOR SHALL OBTAIN AND PAY FOR ALL PERMITS, FEES, AND INSPECTIONS REQUIRED BY AUTHORITIES HAVING JURISDICTION, UNLESS OTHERWISE NOTED IN THE CONTRACT DOCUMENTS. COPIES OF ALL PERMITS AND APPROVALS SHALL BE DELIVERED TO THE ARCHITECT BEFORE COMMENCING THE WORK COVERED BY THEM.

8. THE CONTRACTOR SHALL PROVIDE AND MAINTAIN ADEQUATE TEMPORARY BRACING, SHORING, AND SUPPORTS AS REQUIRED TO ENSURE THE STABILITY OF THE STRUCTURE DURING CONSTRUCTION. SUCH MEASURES SHALL REMAIN IN PLACE UNTIL THE PERMANENT STRUCTURE IS CAPABLE OF SUPPORTING ALL LOADS WITHOUT ASSISTANCE.

9. THE CONTRACTOR SHALL PROTECT ADJACENT PROPERTY, UTILITIES, AND IMPROVEMENTS FROM DAMAGE CAUSED BY CONSTRUCTION OPERATIONS. ANY DAMAGE SHALL BE REPAIRED OR REPLACED AT THE CONTRACTOR'S EXPENSE.

10. THE CONTRACTOR SHALL MAINTAIN A CLEAN AND ORDERLY JOB SITE AND REMOVE DEBRIS AND SURPLUS MATERIALS REGULARLY. UPON COMPLETION OF THE WORK, ALL TEMPORARY FACILITIES, EXCESS MATERIALS, AND EQUIPMENT SHALL BE REMOVED FROM THE SITE.

11. THE CONTRACTOR SHALL COORDINATE THE WORK OF ALL TRADES AND SUBCONTRACTORS TO ENSURE THAT ALL PORTIONS OF THE WORK ARE PROPERLY SEQUENCED AND INSTALLED. THE CONTRACTOR SHALL REVIEW ALL SHOP DRAWINGS, SAMPLES, AND OTHER SUBMITTALS PRIOR TO THEIR TRANSMITTAL TO THE ARCHITECT FOR REVIEW.

12. THE CONTRACTOR SHALL PROVIDE AND MAINTAIN ALL NECESSARY SAFETY DEVICES, BARRICADES, AND WARNING SIGNS TO PROTECT WORKERS, THE PUBLIC, AND PROPERTY. THE CONTRACTOR SHALL COMPLY WITH ALL APPLICABLE OSHA AND OTHER SAFETY REGULATIONS.

STRUCTURAL AND MISCELLANEOUS STEEL

1. ALL STRUCTURAL AND MISCELLANEOUS STEEL SHALL BE FABRICATED AND ERECTED IN ACCORDANCE WITH AISC "SPECIFICATION FOR STRUCTURAL STEEL BUILDINGS" LATEST EDITION, UNLESS OTHERWISE NOTED.

2. ALL STRUCTURAL AND MISCELLANEOUS STEEL SHALL CONFORM TO THE REQUIREMENTS OF THE ASTM DESIGNATIONS LISTED BELOW UNLESS OTHERWISE NOTED:
   A. ANGLES AND PLATES: ASTM A36 ..... F_y = 36 KSI
   B. WIDE FLANGE SHAPES: ASTM A992 ..... F_y = 50 KSI
   C. HOLLOW STRUCTURAL SECTIONS (HSS): ASTM A500, GRADE B ..... F_y = 46 KSI
   D. PIPE: ASTM A53, GRADE B ..... F_y = 35 KSI
   E. ANCHOR RODS: ASTM F1554, GRADE 36 ..... F_y = 36 KSI

3. ALL STEEL SHALL BE FREE OF RUST, SCALE, GREASE, DIRT, AND OTHER FOREIGN MATTER BEFORE FABRICATION. SURFACES TO BE PAINTED SHALL BE PREPARED IN ACCORDANCE WITH SSPC-SP 2 OR SSPC-SP 3.

4. ALL WELDING SHALL BE PERFORMED BY WELDERS QUALIFIED IN ACCORDANCE WITH AWS D1.1. WELDING PROCEDURES SHALL BE SUBMITTED TO THE ARCHITECT FOR REVIEW IF REQUESTED.

5. ALL BOLTED CONNECTIONS SHALL BE MADE WITH ASTM A325 HIGH-STRENGTH BOLTS, UNLESS OTHERWISE NOTED. BOLTS SHALL BE TIGHTENED TO THE SNUG-TIGHT CONDITION AS DEFINED BY THE RCSC SPECIFICATION, UNLESS FULLY TENSIONED CONNECTIONS ARE REQUIRED BY THE DESIGN.

6. ALL STEEL EXPOSED TO WEATHER OR IN CONTACT WITH CONCRETE SHALL BE HOT-DIP GALVANIZED TO A MINIMUM COATING WEIGHT OF 2.0 OZ/SQ FT PER ASTM A123, UNLESS OTHERWISE NOTED.

7. ALL STEEL SHALL BE PROTECTED FROM CORROSION DURING TRANSPORTATION, STORAGE, AND ERECTION. DAMAGED GALVANIZED COATINGS SHALL BE REPAIRED WITH COLD GALVANIZING COMPOUND CONTAINING A MINIMUM OF 93% ZINC BY WEIGHT.

8. ALL STEEL SHALL BE CLEANED AND PAINTED WITH ONE SHOP COAT OF PRIMER PAINT, UNLESS OTHERWISE NOTED. PAINT SHALL BE APPLIED TO A DRY FILM THICKNESS OF NOT LESS THAN 2.0 MILS. SHOP PAINT SHALL NOT BE APPLIED TO SURFACES WITHIN 2 INCHES OF FIELD WELDS OR TO SURFACES TO BE EMBEDDED IN CONCRETE.

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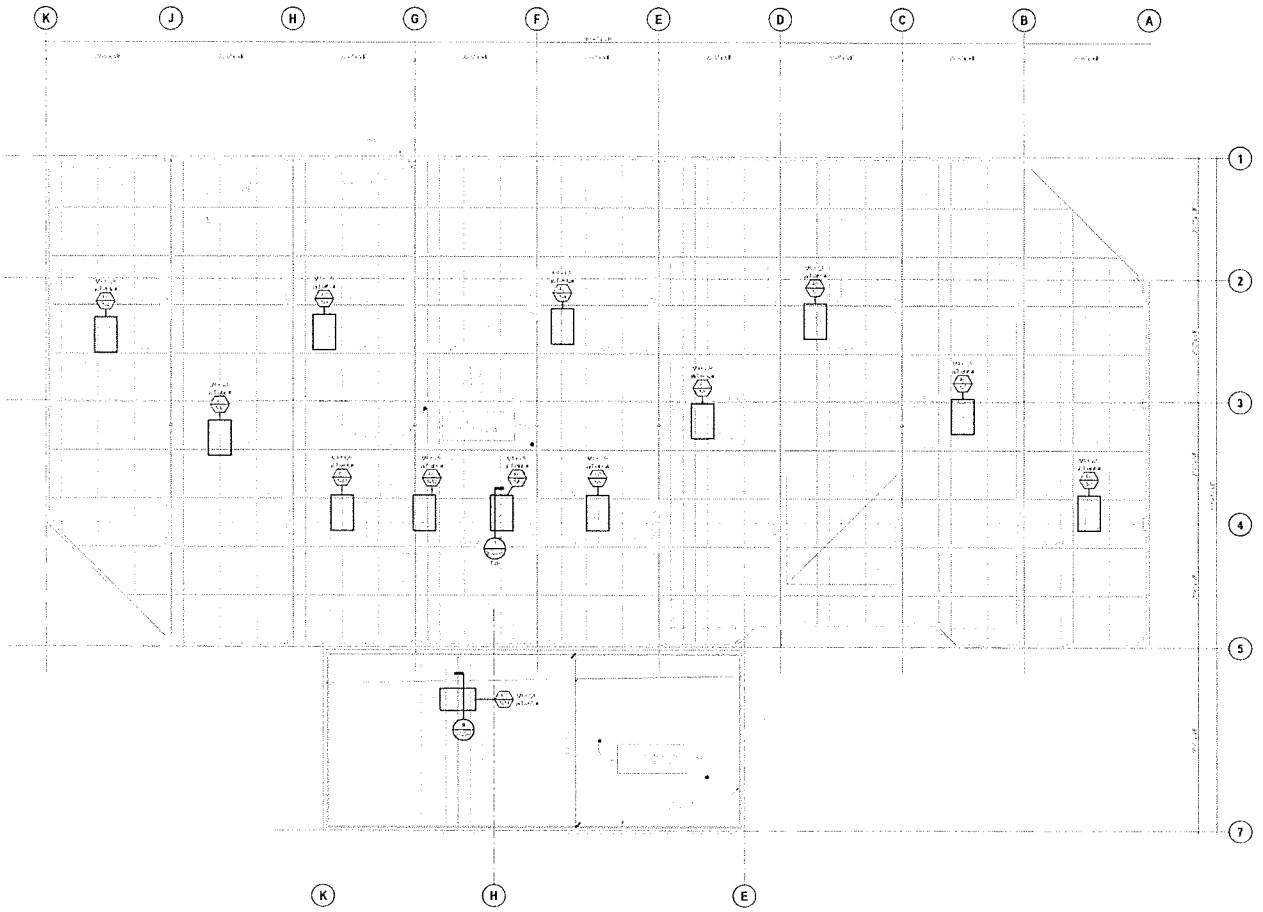
69. ALL STEEL SHALL BE CLEANED AND PAINTED WITH ONE SHOP COAT

FRAMING PLAN NOTES

1. SEE LEGEND ON PLANS SHEET S0.1 FOR ABBREVIATIONS AND SYMBOLS.
2. SEE DRAWING SET FOR ADDITIONAL INFORMATION AND DETAILS.
3. EXISTING CONDITIONS: VERIFY IN THE FIELD ALL EXISTING CONDITIONS, DIMENSIONS, AND ELEVATIONS PRIOR TO CONSTRUCTION. NOTIFY ARCHITECT/ENGINEER OF ANY DISCREPANCIES BETWEEN ACTUAL CONDITIONS AND THOSE SHOWN ON THE DRAWINGS. DO NOT PROCEED WITH WORK IN AREAS OF DISCREPANCY UNTIL RESOLVED.
4. DIMENSIONS: DO NOT SCALE DRAWINGS. USE FIGURED DIMENSIONS. REPORT ANY DISCREPANCIES IN DIMENSIONS OR CONDITIONS TO THE ARCHITECT/ENGINEER BEFORE PROCEEDING WITH WORK.
5. COORDINATION: REVIEW THE ENTIRE SET OF CONSTRUCTION DOCUMENTS (ARCHITECTURAL, STRUCTURAL, MEP, AND CIVIL) TO IDENTIFY AND RESOLVE CONFLICTS BETWEEN DISCIPLINES BEFORE CONSTRUCTION. REPORT ANY CONFLICTS OR OMISSIONS TO THE ARCHITECT/ENGINEER FOR RESOLUTION. DO NOT PROCEED WITH WORK IN AFFECTED AREAS UNTIL CONFLICTS ARE RESOLVED.
6. THE CONTRACTOR IS RESPONSIBLE FOR MEANS, METHODS, TECHNIQUES, SEQUENCES, AND PROCEDURES OF CONSTRUCTION. THE CONTRACTOR IS ALSO RESPONSIBLE FOR SAFETY PRECAUTIONS AND PROGRAMS IN CONNECTION WITH THE WORK.
7. MANUFACTURER'S INSTRUCTIONS: WHERE INSTALLATION REQUIREMENTS OF MANUFACTURER'S PRODUCTS ARE MORE STRINGENT THAN THE CONTRACT DOCUMENTS, THE MANUFACTURER'S INSTRUCTIONS SHALL GOVERN. DO NOT PROCEED WITH INSTALLATION IF THE CONTRACT DOCUMENTS APPEAR TO CONFLICT WITH MANUFACTURER'S INSTRUCTIONS. NOTIFY THE ARCHITECT/ENGINEER FOR RESOLUTION.



ROOF FRAMING PLAN

A S251-A

P2S ENG

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Consultant

MHP

Project Title

Santa Barbara HVAC and BAS
SANTA MARIA ADMIN
Betteravia Government
Administration Building:
511 Lakeside Pkwy,
Santa Maria, CA 93455

Owner

COUNTY OF SANTA BARBARA CALIFORNIA

Revisions

Number	Description	Date

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Drawn	J. Arciaga
Checked	K. Rantzsch
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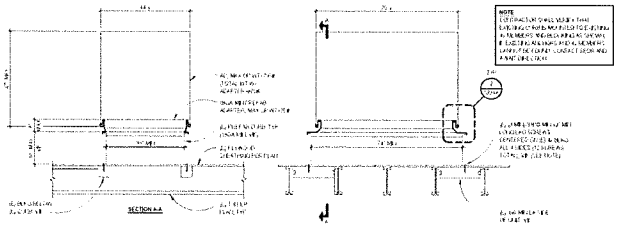
Santa Barbara Santa Maria Admin - Roof Framing Plan

Sheet Number

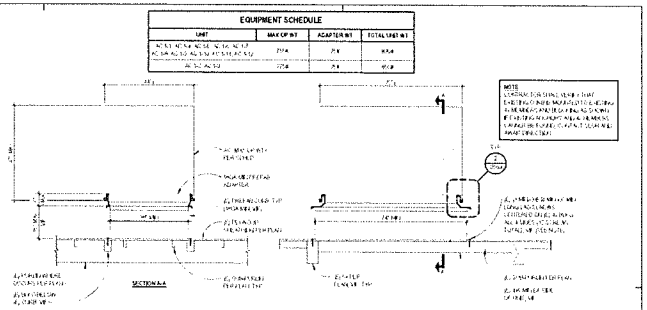
S251-A

P25140, 24-0235



AC UNIT (AC 1-13) WITH ADAPTER CURB ANCHORAGE

8 S700-A

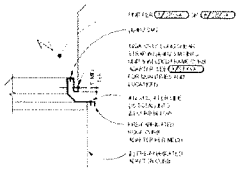


AC UNIT WITH ADAPTER CURB ANCHORAGE

1 S700-A

NOT USED

5 S700-A

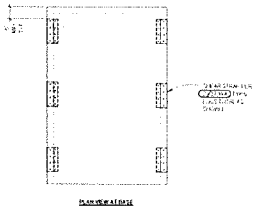


UNIT TO ADAPTOR CURB TO EXISTING PRE-FABRICATED ROOF CURB CONNECTION

2 S700-A

NOT USED

6 S700-A



PLAN VIEW OF SHEAR STRAP AT ADAPTER CURB

3 S700-A

NOT USED

7 S700-A

NOT USED

4 S700-A

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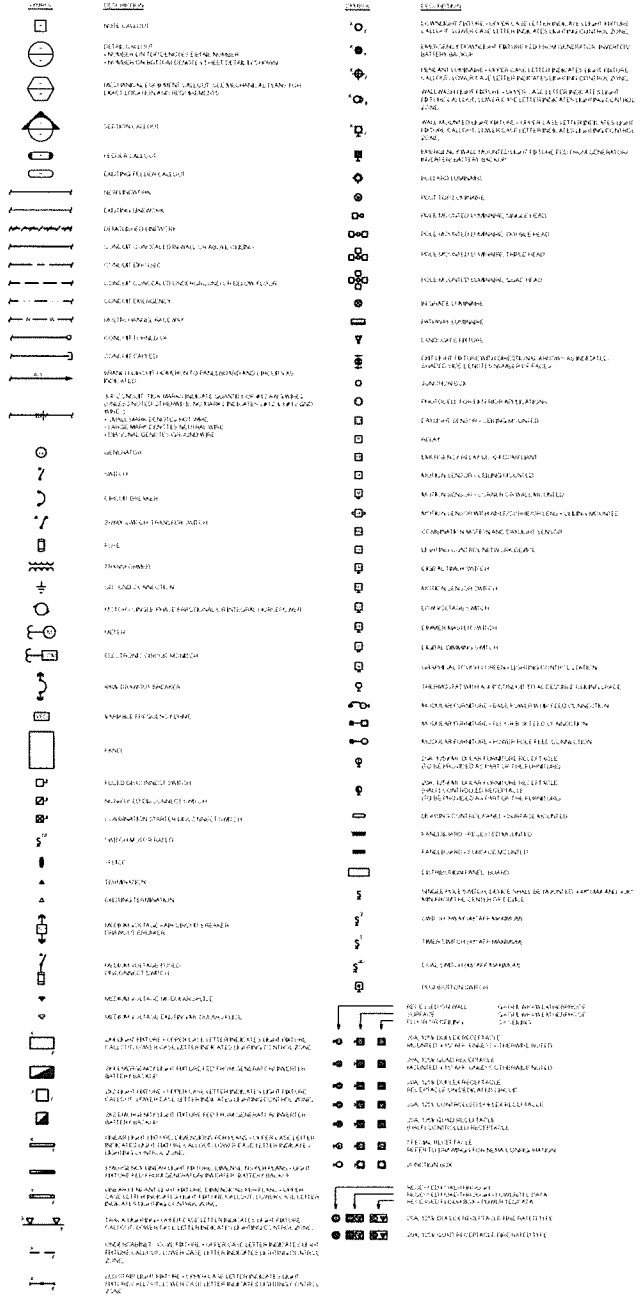
Santa Barbara Santa Maria Admin - Equipment Anchorage Details

Sheet Number

S700-A

P2S No. 24-0295

LEGEND



ABBREVIATIONS

ABBREVIATION	DESCRIPTION
TC	SINGLE CONDUCTOR
S	SOUTH
SR	SET
ALUM/AL	ALUMINUM
ABVE	ABOVE
ALT	ALTERNATE/ALTERATE
AF	AMPERE FRAME RATING
ARC	ARCHITECT'S/ENGINEER'S CLARIFICATION
ASF	ARCHITECT'S/ENGINEER'S FIELD CHANGE
AFF	ABOVE FINISHED FLOOR
AIC	AMPERE INTERRUPTING CAPACITY
AL	ALUMINUM
APPROX	APPROXIMATE
ARCH	ARCHITECT/ARCHITECTURAL
AS	AMPERE SWITCH RATING
ASSC	AMPERE TRIP CONFIGURATION
ATS	AUTOMATIC TRANSFER SWITCH
AUTO	AUTOMATIC
AVE	AVENUE
AWG	AMERICAN WIRE GAUGE
BAT	BATTERY
BEL	BELOW
BKBD	BACKBOARD
BKR	BREAKER
BLDG	BUILDING
BOT	BOTTOM
BSC	BASIC
C	CONDUIT
CB	CIRCUIT BREAKER
CCT	CIRCUIT
CKT	CIRCUIT
CLG	CEILING
CMU	CONCRETE MASONRY UNIT
CO	CONDUCTOR ONLY WITH NO WIRE
COL	COLUMN
CPT	COMPUTER/PROCESSOR TYPE
CUTT	CUTTING POWER THAN PLANNED
DN	DOWN/FEED DOWN
DWG	DRAWING
DWGS	DRAWINGS
EA	EACH
EC	ELECTRICAL CONTRACTOR
ELEV	ELEVATION
EM	EMERGENCY
EMH	ELECTRICAL MANHOLE
EMT	ELECTRICAL METALLIC TUBING
EPO	EMERGENCY POWER OFF
EPR	ETHYLENE PROPYLENE RUBBER
EQP#	EQUIPMENT
EX	EXISTING TO BE RELOCATED
EXP	EXISTING TO BE REMOVED AND REPLACED WITH NEW
EXPOSED	EXISTING
EXT	EXIT/COUNTER/EXTERIOR
FA	FIRE ALARM
FAS	FIRE ALARM SYSTEM
FDN	FOUNDATION
FEP	FIELD ENGINEERING PANEL
FIXT/FIX	FIXTURE
FLA	FULL LOAD AMPS
FLR	FLOOR
FUTURE	FUTURE/FUTURE
FT	FEET
FACP	FIRE ALARM CONTROL PANEL
FATP	FIRE ALARM TERMINAL CABINET
FBC	FLEXIBLE METAL CONDUIT
FC	FOOTCANDLE
FTG	FOOTING
GEN	GENERATOR
GFP	GROUND FAULT PROTECTION
GFR	GROUND FAULT RELAY
GND	GROUND
GRC	GALVANIZED RIGID CONDUIT
HP	HORSEPOWER
HT	HEIGHT
HTR	HEATER
HZ	HERTZ
IG	ISOLATED GROUND
IN	INCH
INT	INTERIOR
IRR	IRRADIATION
ISO	ISOLATED
KCMIL	THOUSAND CIRCULAR MILS
KV	KILOVOLT
KVA	KILOVOLT-AMPERES
KW	KILOWATT
KWH	KILOWATT-HOUR
LB	POUND
LTG	LIGHTING
LTR	LIGHTING TRACK RECEPTACLE
LV	LOW VOLTAGE
MAX	MAXIMUM
MCB	MAIN CIRCUIT BREAKER
MCC	MOTOR CONTROL CENTER
MDP	MAIN DISTRIBUTION PANEL
MECH	MECHANICAL
MFR	MANUFACTURER
MH	MANHOLE
MIN	MINIMUM
MISC	MISCELLANEOUS
MLO	MAIN LUGS ONLY
MTD	MOUNTED
MTR	MOTOR
N	NORTH
NEC	NATIONAL ELECTRICAL CODE
NF	NON-FUSED
NIC	NOT IN CONTRACT
NL	NIGHT LIGHT/LIGHTING
NO	NUMBER
NTS	NOT TO SCALE
OC	ON CENTER
OCPD	OVERCURRENT PROTECTIVE DEVICE
OH	OVERHEAD
OHD	OVERHEAD
OPP	OPPOSITE
PB	PUSHBUTTON
PCS	PIECES
PH	PHASE
PNL	PANEL
POC	POINT OF CONNECTION
PRES	PRESENT
PT	POTENTIAL
PVC	POLYVINYL CHLORIDE
RECEPT	RECEPTACLE
REINF	REINFORCED
REQ'D	REQUIRED
RMC	RIGID GALVANIZED STEEL
RMD	RIGID METAL CONDUIT
RMWP	RAIN TIGHT/WEATHERPROOF/WATERPROOF
RNG	RANGE
SCCR	SHORT CIRCUIT CURRENT RATING
SCH	SCHEDULE
SF	SQUARE FEET
SHT	SHEET
SIM	SIMILAR
SPACES	SPACES
STD	STANDARD
SWBD	SWITCHBOARD
SYMM	SYMMETRICAL
TEL	TELEPHONE
TEMP	TEMPERATURE
TERM	TERMINAL
TG	TELEPHONE/DATA GROUND
TOC	TOP OF CONCRETE
TOS	TOP OF STEEL
TSP	TWISTED SHIELDED PAIR
TVSS	TRANSIENT VOLTAGE SURGE SUPPRESSOR
TYP	TYPICAL
UG	UNDERGROUND
UNO	UNLESS NOTED/OTHERWISE NOTED
V	VOLTS
VA	VOLT-AMPERES
VIF	VERIFY IN FIELD
W	WATTS
WP	WEATHERPROOF
XFMR	TRANSFORMER
Y	WYE
Δ	DELTA

IN THE EVENT ABBREVIATIONS THAT ARE NOTED HEREON ARE USED INCORRECTLY, THE MEANING SHALL BE AS SPECIFIED AND/OR AS INDICATED BY STANDARD ABBREVIATIONS AND LISTED STANDARD INDUSTRY CONVENTIONS.

GENERAL NOTES

1. ALL WORK SHALL COMPLY WITH THE LATEST EDITION OF THE CALIFORNIA ELECTRICAL CODE AND ALL OTHER APPLICABLE LOCAL AND STATE CODES. WHERE THE CONSTRUCTION DOCUMENTS INDICATE MORE RESTRICTIVE REQUIREMENTS, THE CONSTRUCTION DOCUMENTS SHALL GOVERN BUT THE CONSTRUCTION DOCUMENTS SHALL NOT BE INTERPRETED AS AUTHORIZING ANY VIOLATION OF ANY CODE OR REGULATION.
2. ALL MATERIALS AND EQUIPMENT SHALL BE NEW AND SHALL BEAR THE LABEL OF APPROVAL OF UL AND SHALL BE INSTALLED IN THE MANNER CONFORMING TO THE NEC CODE AND APPLICABLE STANDARDS.
3. THE CONTRACTOR SHALL NOT REMOVE, OR TO OTHERWISE CAUSE OUTAGES AND / OR FUNCTIONAL MODIFICATIONS TO EXISTING FACILITIES WITHOUT PRIOR APPROVAL FROM THE ARCHITECT OR CONSTRUCTION ENGINEER.
4. MECHANICAL, ELECTRICAL AND PLUMBING EQUIPMENT AND/OR MATERIALS:

   ALL INSTRUMENTS, FITTINGS AND ELECTRICAL APPLIANCES SHALL BE LISTED AND INSTALLED TO THE DETAILS SHOWN ON THE APPROVED DRAWINGS AND WHERE NO DETAIL IS INDICATED, THE APPLICABLE CODE SHALL BE ADHERED TO. PRIOR TO INSTALLATION, THE CONTRACTOR SHALL SUBMIT SHOP DRAWINGS FOR APPROVAL OF EQUIPMENT AND MATERIALS TO BE USED TO ENSURE THAT THEY COMPLY WITH THE REQUIREMENTS.

   A. ALL PERMANENT EQUIPMENT AND COMPONENTS.

   B. TRANSFORMER OR VOLTAGE EQUIPMENT THAT IS PERMANENTLY ATTACHED (E.G. STAMPED WELDED TO THE BUILDING STRUCTURE) OR HAS A CEILING FACILITY (SEE LIGHTING).

   C. ANY MAJOR EQUIPMENT NOT SPECIFICALLY ON ITEM A ITEM B ABOVE THAT IS PERMANENTLY AND HOWEVER THAN ADEQUATELY NO MOVED TO BE ANCHORED WITH CONCRETE ANCHORS OR ATTACHMENTS.

   THE APPROVAL OF THE FOLLOWING MECHANICAL AND ELECTRICAL EQUIPMENT SHALL BE PERMANENTLY ATTACHED TO THE STRUCTURE, BUT NEED NOT BE DETAILED ON THE PLANS. THESE EQUIPMENTS INCLUDE ELEVATOR EQUIPMENT AND PARTS BETWEEN THE GOVERNMENT AND NON-DESTRUCTIVE TESTING AND EQUIPMENT.

   A. ALL EQUIPMENTS WEIGHING LESS THAN 100 POUNDS AND THAT ARE CAPABLE OF BEING LOCATED 6 FEET OR LESS AWAY FROM THE ADJACENT FLOOR OR OTHER LEVEL SURFACES SHALL NOT REQUIRE ANCHORAGE.

   B. ALL PARTS OF A WELDED PIPE SYSTEM OR PIPING WHICH CONNECTS TO DISTRIBUTED SYSTEMS LESS THAN 12 INCHES IN DIAMETER OR 100 POUNDS IN WEIGHT SHALL NOT REQUIRE BRACING OR ANCHORAGE.

   FOR THE SPECIFIC ELEMENTS THAT ARE NOTED AS BEING EXEMPT FROM THE ANCHORAGE REQUIREMENTS, THE INSTALLATION SHALL BE SUCH THAT THE REMOVAL OF THE STRUCTURAL ENGINEER'S APPROVED DRAWINGS ON THE PLANS SHALL NOT AFFECT THE CONSTRUCTION OF THE LIGHTING, MECHANICAL AND PLUMBING ELEMENTS AND EQUIPMENT THAT BEING ANCHORED IN ACCORDANCE WITH PRIOR APPROVED DRAWINGS.

   THE STRUCTURAL ENGINEER OF RECORD SHALL REVIEW THE ADEQUACY OF THE STRUCTURE TO SUPPORT THE MANDATED LOADS.

SHEET INDEX

SHEET	DESCRIPTION
E001-A	GENERAL NOTES, LEGEND, ABBREVIATIONS AND SHEET INDEX
E002-A	PANEL SCHEDULES - SANTA MARIA ADMIN
E003-A	ONE LINE DIAGRAM - SANTA MARIA ADMIN
E004-A	ROOF PLAN DETAILS - SANTA MARIA ADMIN
E005-A	SINGLE LINE DIAGRAM - SANTA MARIA ADMIN

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Consultant

Project Title

Santa Barbara HVAC and BAS

SANTA MARIA ADMIN
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511 Lakeside Pkwy,
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Owner

COUNTY OF SANTA BARBARA CALIFORNIA

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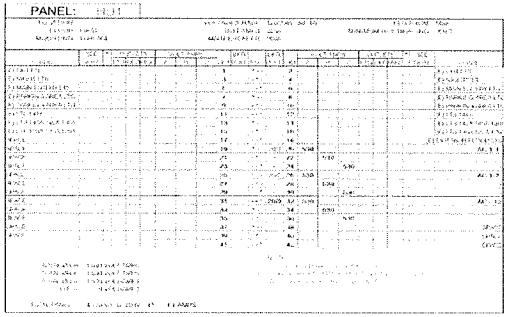
General Notes, Legend, Abbreviations And Sheet Index

Sheet Number

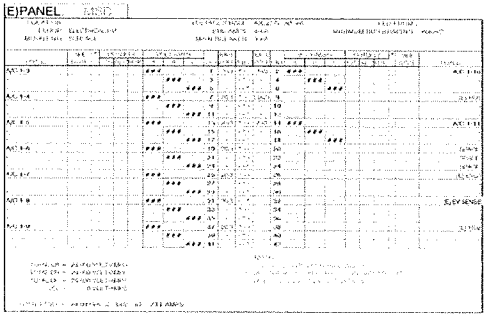
E001-A

P2S No. 24-0295

PANEL:



E)PANEL



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511 Lakeside Pkwy,
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COUNTY OF SANTA BARBARA CALIFORNIA

260 N San Antonio Rd, Santa Barbara, CA 93110

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Panel Schedule

Sheet Number

E002-A

P2S No. 24-0295

MECHANICAL EQUIPMENT ELECTRICAL CONNECTION												
MARK	DESCRIPTION	LOCATION	VOLTAGE	PHASE	HP	KW	MCA	MOCP	DISCONNECT	FUSE	MOTOR RATED TOGGLE SWITCH	EXISTING FEEDER
AC1-1	AIR CONDITIONING	ROOF	480	3	-	9.15	11	15	30A/3P	(3) 15A	-	3/4"C- 3#12 & 1#12 GND
AC1-2	AIR CONDITIONING	ROOF	480	3	-	10.8	13	15	30A/3P	(3) 15A	-	3/4"C- 3#12 & 1#12 GND
AC1-3	AIR CONDITIONING	ROOF	480	3	-	10.8	13	15	30A/3P	(3) 15A	-	3/4"C- 3#12 & 1#12 GND
AC1-4	AIR CONDITIONING	ROOF	480	3	-	9.15	11	15	30A/3P	(3) 15A	-	3/4"C- 3#12 & 1#12 GND
AC1-5	AIR CONDITIONING	ROOF	480	3	-	9.15	11	15	30A/3P	(3) 15A	-	3/4"C- 3#12 & 1#12 GND
AC1-6	AIR CONDITIONING	ROOF	480	3	-	9.15	11	15	30A/3P	(3) 15A	-	3/4"C- 3#12 & 1#12 GND
AC1-7	AIR CONDITIONING	ROOF	480	3	-	9.15	11	15	30A/3P	(3) 15A	-	3/4"C- 3#12 & 1#12 GND
AC1-8	AIR CONDITIONING	ROOF	480	3	-	9.15	11	15	30A/3P	(3) 15A	-	3/4"C- 3#12 & 1#12 GND
AC1-9	AIR CONDITIONING	ROOF	480	3	-	9.15	11	15	30A/3P	(3) 15A	-	3/4"C- 3#12 & 1#12 GND
AC1-10	AIR CONDITIONING	ROOF	480	3	-	9.15	11	15	30A/3P	(3) 15A	-	3/4"C- 3#12 & 1#12 GND
AC1-11	AIR CONDITIONING	ROOF	480	3	-	9.15	11	15	30A/3P	(3) 15A	-	3/4"C- 3#12 & 1#12 GND
AC1-12	AIR CONDITIONING	ROOF	480	3	-	9.15	11	15	30A/3P	(3) 15A	-	3/4"C- 3#12 & 1#12 GND
AC1-13	AIR CONDITIONING	ROOF	480	3	-	12.5	15	20	30A/3P	(3) 20A	-	3/4"C- 3#12 & 1#12 GND

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Mechanical Schedule

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E003-A

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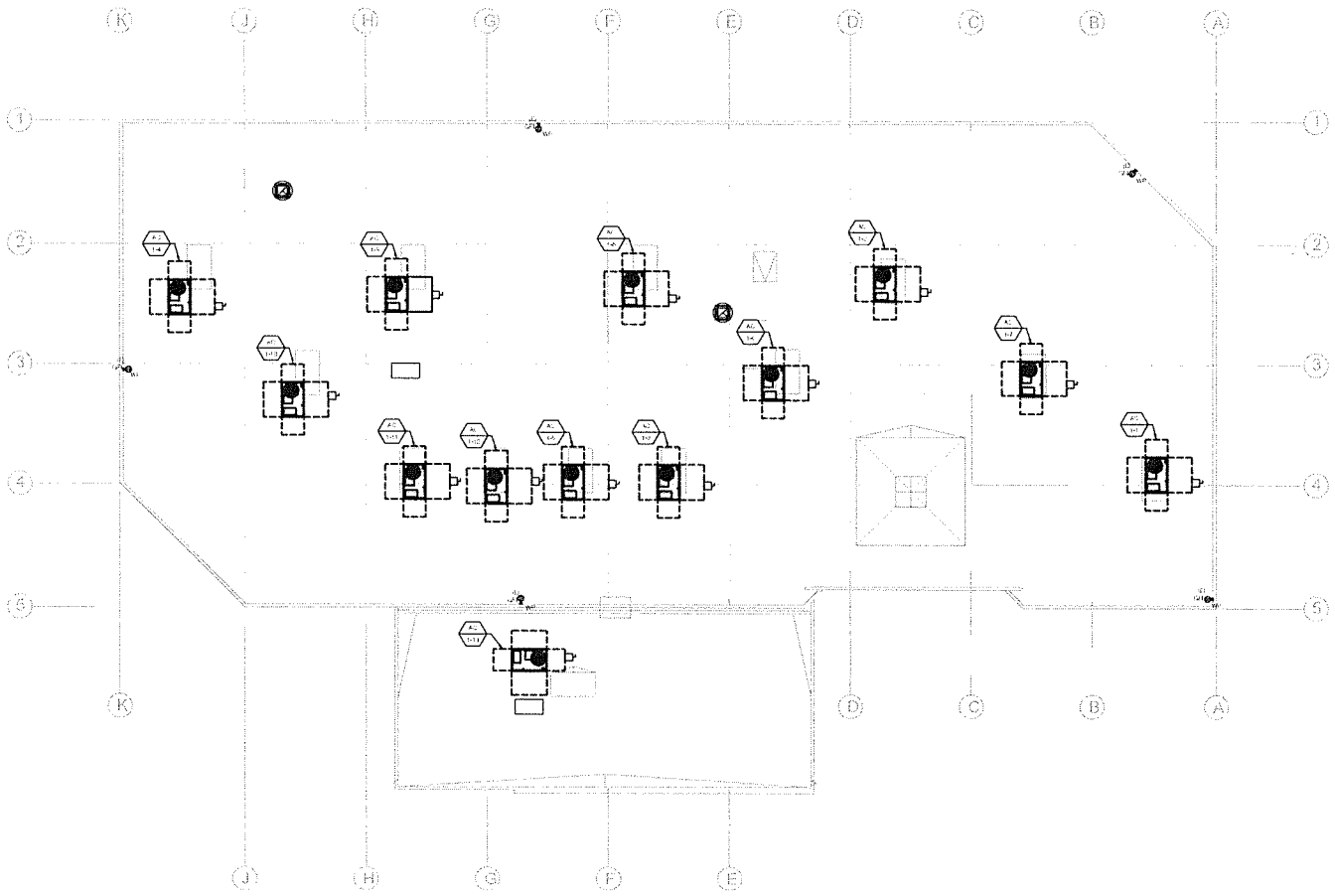
GENERAL NOTES



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Roof Power Plan

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E225-A

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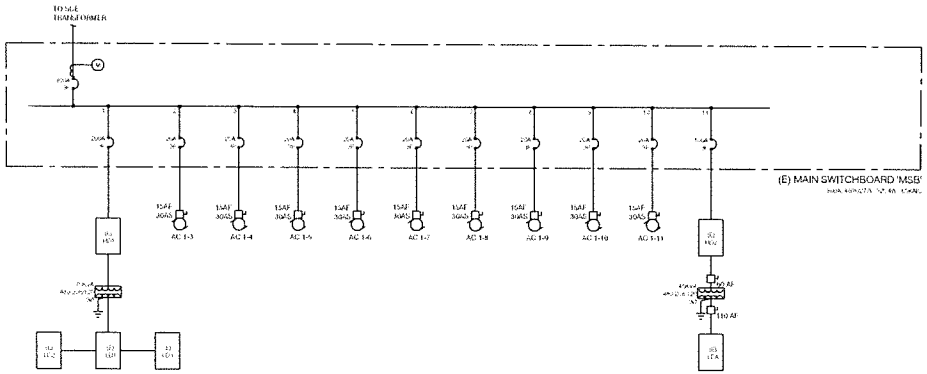

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Betteravia Government Administration Building:
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Santa Maria, CA 93455

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Single Line Diagram

Sheet Number
E501-A

P2S No. 24-0205

GENERAL LEGEND

SYMBOL	DESCRIPTION
	NOTE CALLOUT
	DETAIL CALLOUT • NUMBER ON TOP: DETAIL NUMBER • NUMBER ON BOTTOM: SHEET DETAIL IS SHOWN ON
	MECHANICAL EQUIPMENT CALLOUT - TYP. MECHANICAL PLANS. FIRST LETTER LOCATION AND NEXT TWO NOTE
	SECTION CALLOUT
	POINT OF CONNECTION
	POINT OF DISCONNECTION
	NEW LINEWORK
	EXISTING LINEWORK
	DEMOLITION LINEWORK
	DIRECTION OF FLOW CAPTION CABLE • "ACP" - FIRE ALARM CONTROL PANEL • "CSP" - FIRE SPRINKLER

DUCTWORK LEGEND

SYMBOL	DESCRIPTION
	SHEET METAL DUCT
	INSULATED SHEET METAL DUCT
	INTERNALLY INSULATED SHEET METAL DUCT CLEAN PACE LINING OR EQUIVALENT WITH LENGTHS AS SHOWN ON PLANS FOR ACOUSTIC PERFORMANCE.
	STANDARD ELBOW WITH TURNING VANES AND RADIUS
	HEATING COIL SECTION
	PLENUM SECTION
	MIXING BOX SECTION
	FLEXIBLE DUCT
	FLEXIBLE CONNECTION
	BACK DRAFT DAMPER
	FIRE DAMPER
	COMBINATION FIRE AND SMOKE DAMPER
	MOTORIZED DAMPER
	BALANCING DAMPER
	SUPPLY DIFFUSER, GRILLE AND REGISTER
	GRILLE, RETURN OR EXHAUST
	SUPPLY AIR DUCT SECTION
	RETURN AIR DUCT SECTION
	EXHAUST AIR DUCT SECTION
	UNDER CUT DUCT
	TRANSFER GRILLE SIZE AS SHOWN
	DOOR GRILLE OR LOUVER
	SINGLE DUCT VAV BOX WITH REHEAT COIL
	SINGLE DUCT VAV BOX WITHOUT REHEAT COIL
	FILTER
	HUMIDIFIER (STEAM GRID)
	LOUVER
	ACCESS DOOR OR PANEL - SIZE AS INDICATED ON PLANS
	STATIC PRESSURE CHANGE TAP
	TURNING VANE (SINGLE THICKNESS)

PIPING LEGEND

SYMBOL	DESCRIPTION
	NEW PIPING (USE STATED)
	EXISTING PIPING TO REMAIN
	EXISTING PIPING TO BE REMOVED
	EXISTING PIPING TO BE REMOVED
	TEE FACING AWAY FROM VIEWER
	TEE FACING TOWARD VIEWER
	PIPE CAP
	TRANSITION AS SHOWN
	TRANSITION SYMMETRIC
	EXPANSION JOINT (EQUIVALENT)
	PIPE GUIDE
	PIPE ANCHOR
	VALVE (USE STATED)
	DRAIN FUNNEL
	PUMP
	BALL VALVE
	BALL VALVE W/ ACTUATOR
	BUTTERFLY VALVE
	BUTTERFLY VALVE W/ ACTUATOR
	GATE VALVE
	GATE VALVE W/ ACTUATOR
	FLOW VALVE
	HOSE VALVE W/ ACTUATOR
	THREE-WAY VALVE
	THREE-WAY VALVE W/ ACTUATOR
	PRESSURE REDUCING VALVE
	CHECK VALVE, SWING
	SPECIALTY VALVE (PRV) AS NOTED
	MULTIPURPOSE VALVE
	FLOW MEASURING AND BALANCING VALVE
	HOSE BIBB W/ VALVE
	LOCKSHIELD MANUAL VALVE
	STRAINER
	PRESSURE REGULATOR
	STRAINER, Y-TYPE
	STRAINER WITH BLOW DOWN CONNECTION
	PRESSURE GAUGE WITH PETCOCK
	PRESSURE GAUGE WITH SNUBBER AND PETCOCK
	TEMPERATURE/PRESSURE PORT FOR CHILLED WATER
	THERMOMETER
	THERMOWELL
	FLOW METER
	FLOW SIMULATION AND FLOW METERING STATION
	HOSE BIBB, SILLCOCK
	VACUUM BREAKER
	AIR VENT, AUTOMATIC
	FLEXIBLE CONNECTION
	TEMPERATURE/PRESSURE / TEMPERATURE
	WATER HAMMER ARRESTOR
	STEAM TRAP
	ANGLE VALVE

CONTROL LEGEND

SYMBOL	DESCRIPTION
	LOCK PHYSICAL POINT
	TEMPERATURE
	SWITCH
	DYNAMIC INTERCONNECTION BETWEEN CONNECTION TO EXIST
	ELECTRONIC ACTUATED WATER PRESSURE REGULATOR
	ELECTRONIC ACTUATED VALVE
	ELECTRONIC MOTORIZED VALVE
	CABINET MOUNTED EQUIPMENT
	CONTROL BOX
	HEATING COIL
	WATER FLOW SWITCH
	ANTI-FREEZE THERMOSTAT FOR EXTERIOR COILS
	FIELD COATED WIRING
	FIELD JUMPER WIRING

ABBREVIATIONS

ABBREVIATION	DESCRIPTION
AAV	AUTOMATIC AIR VENT
ABV	ABOVE
ACC	ACCESSORY
ACU	AIR CONDITIONING UNIT
AD	ACCESS DOOR
AF	AIR FILTER
AFG	ABOVE FINISHED GRADE
AFF	ABOVE FINISHED FLOOR
AG	ABOVE GROUND
AGA	ABOVE GRADE ANCHOR
AHU	AIR HANDLING UNIT
AL	ALUMINUM
ALT	ALTERNATE
ANC	ANCHOR
APD	AIR PRESSURE DROP
APPROX	APPROXIMATE
ARCH	ARCHITECT
ASSY	ASSEMBLY
ATC	AUTOMATIC TEMPERATURE CONTROL
ATS	AUTOMATIC TRANSFER SWITCH
AUTO	AUTOMATIC
AVG	AVERAGE
BAS	BUILDING AUTOMATION SYSTEM
BFP	BACKFLOW PREVENTER
BHP	BRAKE HORSEPOWER
BLDG	BUILDING
BOB	BOTTOM OF BEAM
BOC	BOTTOM OF CURB
BOS	BOTTOM OF STEEL
BTU	BRITISH THERMAL UNIT
BTUH	BTU PER HOUR
C	CONDENSATE DRAIN
CAP	CAPACITY
CHWR	CHILLED WATER RETURN
CHWS	CHILLED WATER SUPPLY
CI	CAST IRON
CL	CENTER LINE
CFH	CUBIC FEET PER HOUR
CFM	CUBIC FEET PER MINUTE
CO	CLEANOUT
CU	CONDENSING UNIT
CV	CONSTANT VOLUME BOX
CWR	CONDENSER WATER RETURN
CWS	CONDENSER WATER SUPPLY
DWG	DRAWING
EA	EACH
EAT	ENTERING AIR TEMPERATURE
EC	ELECTRICAL CONTRACTOR
EFF	EFFICIENCY
EL	ELEVATION
EXP	EXPANSION, GRATE, TANK, JOINT
EWT	ENTERING WATER TEMPERATURE
F	DEGREES FAHRENHEIT
FD	FIRE DAMPER
FD	FINISH GRADE
FLA	FULL LOAD AMPS
FLR	FLOOR
FOB	FLAT ON BOTTOM
FOT	FLAT ON TOP
FPM	FEET PER MINUTE
FSD	FIRE/SMOKE DAMPER
FT	FEET OR FOOT
GA	GAUGE
GALV	GALVANIZED
GC	GENERAL CONTRACTOR
GPM	GALLONS PER MINUTE
HP	HORSE POWER
HD	HEAD
HWR	HEATING WATER RETURN
HWS	HEATING WATER SUPPLY
HP	HEAT PUMP
HP	HORSEPOWER

IN THE EVENT ABBREVIATIONS ARE NOT DEFINED HEREIN AND USED REFERENCE WILL BE MADE TO LATEST ASME Y14.38 STANDARD ABBREVIATIONS, AND IF NOT IN STANDARD INDUSTRY CONVENTION.

CONTROL ABBREVIATIONS

ABBREVIATION	DESCRIPTION
A	ALARM
ADM	ADMINISTRATION CLASSIFICATION
AI	ANALOG INPUT
AO	ANALOG OUTPUT
CB	CURRENT BIAS COIL
DI	DIGITAL INPUT
DO	DIGITAL OUTPUT
DP	DIFFERENTIAL PRESSURE
FS	FLOW SWITCH
FM	FLOW METER
HOA	HAND-OFF-AUTO
HP	HEAT PUMP
LA	LEVEL ALARM
MOD	MODULATING DAMPER
NC	NORMALLY CLOSED
NO	NORMALLY OPEN
PI	PNEUMATIC INDICATOR
PRT	PRESSURE TRANSMITTER
RH	RELATIVE HUMIDITY
S	STATUS
SC	SEQUENCE CONTROL
SI	SEQUENCE INDICATOR
SH	SET POINT
SS	STARTER/SOV
T	TEMPERATURE
TI	TEMPERATURE INDICATOR
UA	UNIT VENTILATOR
VI	VALVE INDICATOR
V-I-H	VARIABLE INCREMENT
W	WATT
WO	WITHOUT
WS	WET SIDE
WC	WATER COLUMN
WG	WATER GAUGE
WTD	WATER TREATMENT DEVICE
WT	WEIGHT

IN THE EVENT ABBREVIATIONS ARE NOT DEFINED HEREIN AND USED REFERENCE WILL BE MADE TO ANSI/ASHRAE STANDARD ABBREVIATIONS, AND IF NOT IN STANDARD INDUSTRY CONVENTION.

SHEET INDEX

SHEET	DESCRIPTION
M001-A	GENERAL NOTES, LEGEND, ABBREVIATIONS, AND SHEET INDEX
M002-A	EQUIPMENT SCHEDULES
M003-A	FIRST FLOOR PLAN DEMOLITION
M004-A	ROOF PLAN DEMOLITION
M005-A	FIRST FLOOR PLAN NEW WORK
M006-A	ROOF PLAN NEW WORK
M007-A	DETAILS
M008-A	DETAILS
M009-A	DETAILS
M010-A	DETAILS
M011-A	DETAILS
M012-A	DETAILS
M013-A	DETAILS
M014-A	DETAILS

PACKAGED AIR CONDITIONING UNIT

MARK	MANUFACTURER & MODEL	LOCATION	TYPE	SCHEDULE	SUPPLY FAN					COOLING COIL								HEATING		ELECTRICAL					REFRIGERANT		FILTERS				MINIMUM OUTDOOR AIR CFM SECTION	DESIGN OUTDOOR AIR CFM SECTION	DESIGN SUPPLY AIR CFM	REMARKS
					AIRFLOW (SCFM)	TSP (IN WG)	ESP (IN WG)	RPM	HP	MBH @ ENTERING/LEAVING AIR			GPM	VELOCITY	ENTERING AIR		LEAVING AIR																	
										TOTAL (MBH)	SENSIBLE (MBH)	AMBIENT (°F)	FLOW		(°) DB	(°) WB	(°) DB	(°) WB	TOTAL (MBH)	HEAT 2	VOLTS	PHASE	HERTZ	FLA	MCA	MOCP	TYPE	QUANTITY (LBS)	TYPE	FACE	MAX (IN WG)	EFFICIENCY				
AC1-1	TRANE WCAH060A1000	ROOF	Heat Pump / Electric Heat	-	1,200	1.750	1.00	974	0.42	Direct	37.96	23.6	95.0	11	13.4	80.0	67.0	56.95	57.45	19.73	6.7	460	3	60	22.5	32.0	15.0	R-454B	-	MERV 13	4	0.62 CFM/SQ.FT	15.0	300	1,200	
AC1-2	TRANE WCAH060A1000	ROOF	Heat Pump / Electric Heat	-	1,400	1.750	1.00	1,044	0.62	Direct	47.74	34.21	95.0	13	13.4	80.0	67.0	56.95	57.45	25.63	6.7	460	3	60	31.5	42.0	15.0	R-454B	-	MERV 13	4	0.62 CFM/SQ.FT	15.0	300	1,400	
AC1-3	TRANE WCAH060A1000	ROOF	Heat Pump / Electric Heat	-	1,500	1.750	1.00	1,069	0.70	Direct	47.74	34.21	95.0	13	13.4	80.0	67.0	56.95	57.45	25.63	6.7	460	3	60	31.5	42.0	15.0	R-454B	-	MERV 13	4	0.62 CFM/SQ.FT	15.0	300	1,500	
AC1-4	TRANE WCAH060A1000	ROOF	Heat Pump / Electric Heat	-	1,200	1.750	1.00	974	0.42	Direct	37.96	23.6	95.0	11	13.4	80.0	67.0	56.95	57.45	19.73	6.7	460	3	60	22.5	32.0	15.0	R-454B	-	MERV 13	4	0.62 CFM/SQ.FT	15.0	300	1,200	
AC1-5	TRANE WCAH060A1000	ROOF	Heat Pump / Electric Heat	-	1,200	1.750	1.00	974	0.42	Direct	37.96	23.6	95.0	11	13.4	80.0	67.0	56.95	57.45	19.73	6.7	460	3	60	22.5	32.0	15.0	R-454B	-	MERV 13	4	0.62 CFM/SQ.FT	15.0	300	1,200	
AC1-6	TRANE WCAH060A1000	ROOF	Heat Pump / Electric Heat	-	1,200	1.750	1.00	974	0.42	Direct	37.96	23.6	95.0	11	13.4	80.0	67.0	56.95	57.45	19.73	6.7	460	3	60	22.5	32.0	15.0	R-454B	-	MERV 13	4	0.62 CFM/SQ.FT	15.0	300	1,200	
AC1-7	TRANE WCAH060A1000	ROOF	Heat Pump / Electric Heat	-	1,200	1.750	1.00	974	0.42	Direct	37.96	23.6	95.0	11	13.4	80.0	67.0	56.95	57.45	19.73	6.7	460	3	60	22.5	32.0	15.0	R-454B	-	MERV 13	4	0.62 CFM/SQ.FT	15.0	300	1,200	
AC1-8	TRANE WCAH060A1000	ROOF	Heat Pump / Electric Heat	-	1,200	1.750	1.00	974	0.42	Direct	37.96	23.6	95.0	11	13.4	80.0	67.0	56.95	57.45	19.73	6.7	460	3	60	22.5	32.0	15.0	R-454B	-	MERV 13	4	0.62 CFM/SQ.FT	15.0	300	1,200	
AC1-9	TRANE WCAH060A1000	ROOF	Heat Pump / Electric Heat	-	1,200	1.750	1.00	974	0.42	Direct	37.96	23.6	95.0	11	13.4	80.0	67.0	56.95	57.45	19.73	6.7	460	3	60	22.5	32.0	15.0	R-454B	-	MERV 13	4	0.62 CFM/SQ.FT	15.0	300	1,200	
AC1-10	TRANE WCAH060A1000	ROOF	Heat Pump / Electric Heat	-	1,200	1.750	1.00	974	0.42	Direct	37.96	23.6	95.0	11	13.4	80.0	67.0	56.95	57.45	19.73	6.7	460	3	60	22.5	32.0	15.0	R-454B	-	MERV 13	4	0.62 CFM/SQ.FT	15.0	300	1,200	
AC1-11	TRANE WCAH060A1000	ROOF	Heat Pump / Electric Heat	-	1,200	1.750	1.00	974	0.42	Direct	37.96	23.6	95.0	11	13.4	80.0	67.0	56.95	57.45	19.73	6.7	460	3	60	22.5	32.0	15.0	R-454B	-	MERV 13	4	0.62 CFM/SQ.FT	15.0	300	1,200	
AC1-12	TRANE WCAH060A1000	ROOF	Heat Pump / Electric Heat	-	1,200	1.750	1.00	974	0.42	Direct	37.96	23.6	95.0	11	13.4	80.0	67.0	56.95	57.45	19.73	6.7	460	3	60	22.5	32.0	15.0	R-454B	-	MERV 13	4	0.62 CFM/SQ.FT	15.0	300	1,200	
AC1-13	TRANE WCAH060A1000	ROOF	Heat Pump / Electric Heat	-	1,200	1.750	1.00	974	0.42	Direct	37.96	23.6	95.0	11	13.4	80.0	67.0	56.95	57.45	19.73	6.7	460	3	60	22.5	32.0	15.0	R-454B	-	MERV 13	4	0.62 CFM/SQ.FT	15.0	300	1,200	
AC1-14	TRANE WCAH060A1000	ROOF	Heat Pump / Electric Heat	-	1,200	1.750	1.00	974	0.42	Direct	37.96	23.6	95.0	11	13.4	80.0	67.0	56.95	57.45	19.73	6.7	460	3	60	22.5	32.0	15.0	R-454B	-	MERV 13	4	0.62 CFM/SQ.FT	15.0	300	1,200	

1. PROVIDE 2-INCH MERV 13 FILTER RACK WITH MAGNETIC INSERT FRAME AND CHANGEABLE FILTER ACCESS PANEL AT DISCHARGE OF UNIT.
2. PROVIDE CONDENSATE DRAIN TRAP WITH MINIMUM 4" SEAL.
3. PROVIDE EXISTING UNIT TO BE DEMOLISHED AND DISPOSED OF PER LOCAL REGULATIONS. COORDINATE WITH OWNER FOR SALVAGE OF ANY EQUIPMENT.
4. PROVIDE NEW CONDENSATE DRAIN LINE FROM UNIT TO NEAREST ROOF DRAIN. COORDINATE WITH ARCHITECTURAL PLANS FOR ROOF PENETRATION.
5. UNIT SHALL BE CERTIFIED WITH A SPECIFIC NOTATION IN THE AHRI DIRECTORY OF CERTIFIED UNITS. THE UNIT SHALL BE INSTALLED PER THE MANUFACTURER'S INSTRUCTIONS TO ENSURE COMPLIANCE WITH THE ENERGY CONSERVATION STANDARDS. THE CONTRACTOR SHALL VERIFY THAT THE UNIT AND ITS INSTALLATION ARE IN COMPLIANCE WITH THE CURRENT CODE REQUIREMENTS. THE CONTRACTOR SHALL SUBMIT DOCUMENTATION AND ANY REQUIRED FIELD VERIFICATION REPORTS TO THE ARCHITECTURAL PLAN CHECKER PRIOR TO FINAL INSPECTION AND ISSUANCE OF A CERTIFICATE OF OCCUPANCY.
6. PROVIDE TAMPER-RESISTANT SCREWS FOR ALL ACCESS PANELS AND DISCONNECT SWITCH COVERS.

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Betteravia Government
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Owner

260 N San Antonio Rd, Santa Barbara, CA 93110

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Sheet Title

Equipment Schedules

Sheet Number

M002-A

P2S No. 24-0295

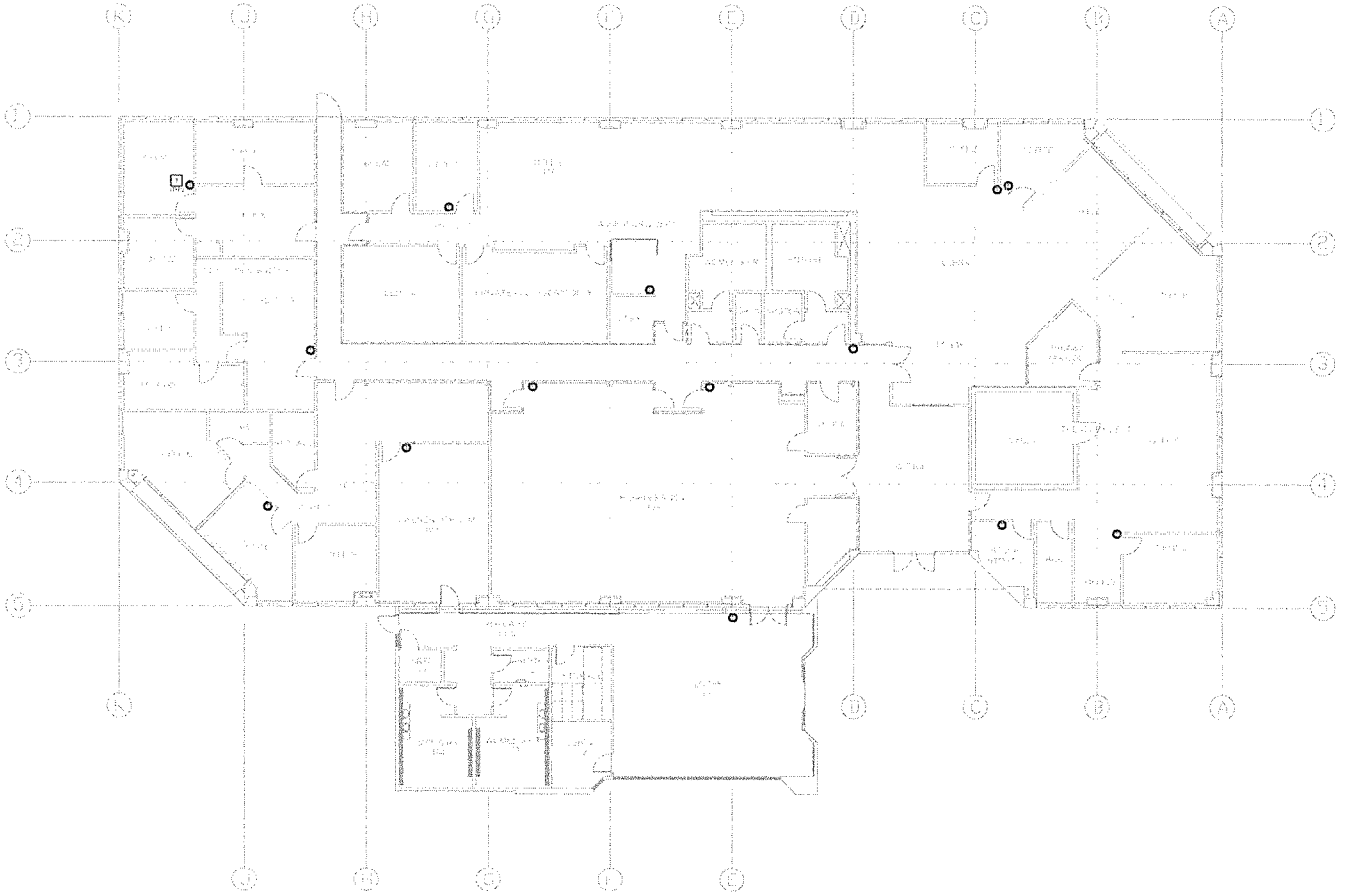
DEMO NOTES

1 [illegible]

GENERAL NOTES

A. [illegible]

B. [illegible]



1 SANTA MARIA ADMIN FIRST FLOOR DEMOLITION PLAN

1/8" = 1'-0"

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Sheet Title

First Floor Plan Demolition

Sheet Number

M221-A

P2S No. 24-0295

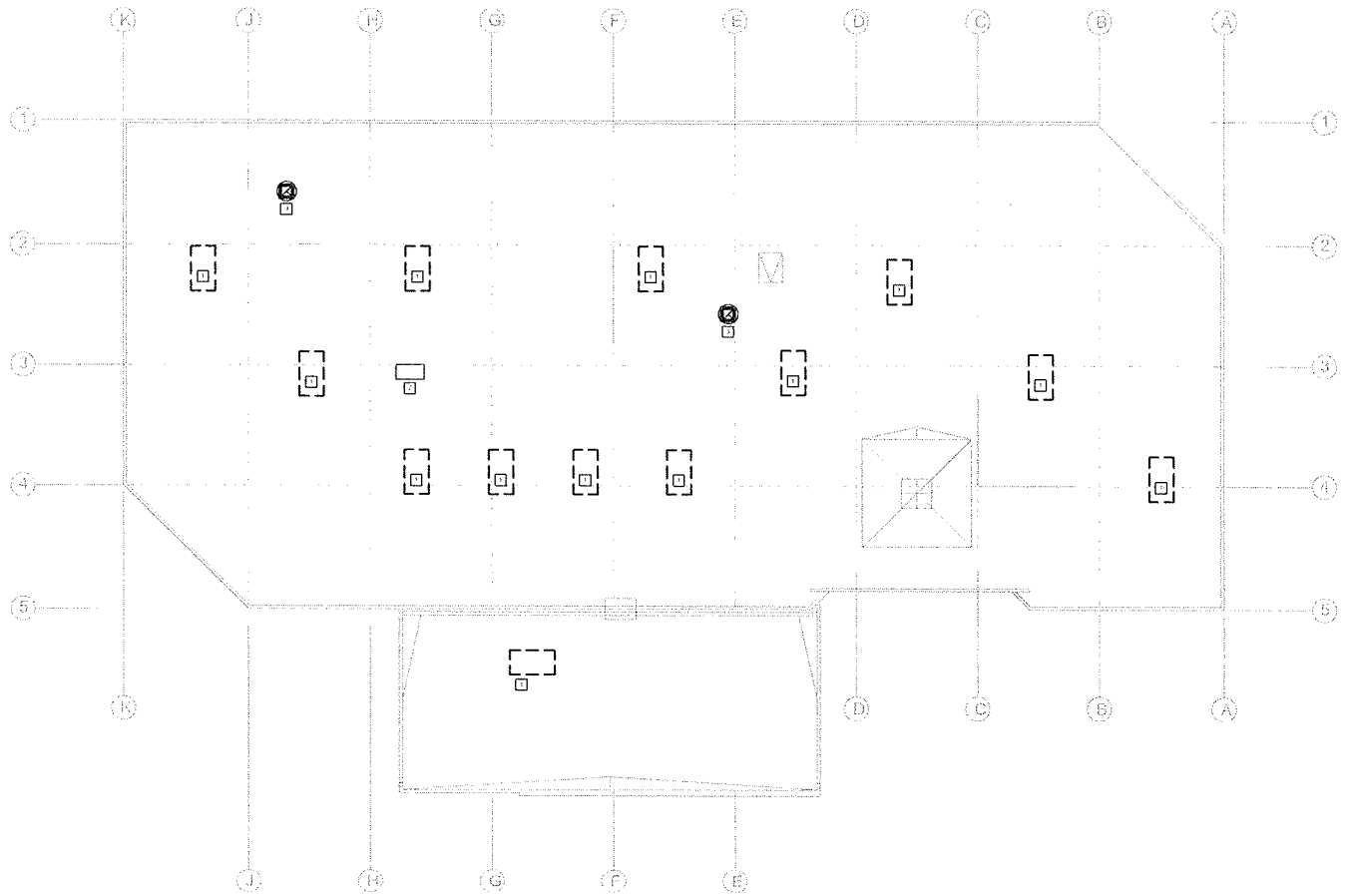
DEMO NOTES

1. DEMOLISH EXISTING ROOFTOP UNITS AND DEAD PAN ALL FROM THE DUCTWORK. EXISTING CURBS TO REMAIN. PROTECT EXISTING GAS PIPING, ETC. PREPARE FOR RECONNECTION TO NEW UNIT.
2. EXISTING MECHANICAL UNIT TO REMAIN.
3. EXISTING EXHAUST FAN AND ASSOCIATED DUCTWORK TO REMAIN. PROTECT EXISTING CURB IN PLACE TO PREPARE FOR NEW FAN AND CONNECTION TO NEW UNIT.

GENERAL NOTES

A. UNLESS OTHERWISE NOTED, ALL EXISTING ROOFING TO REMAIN.

B. UNLESS OTHERWISE NOTED, ALL EXISTING CURBS TO REMAIN.



1 SANTA MARIA ADMIN ROOF DEMOLITION PLAN
1/8" = 1'-0"

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Sheet Title
Roof Plan Demolition

Sheet Number
M231-A

P2S No. 24-0205

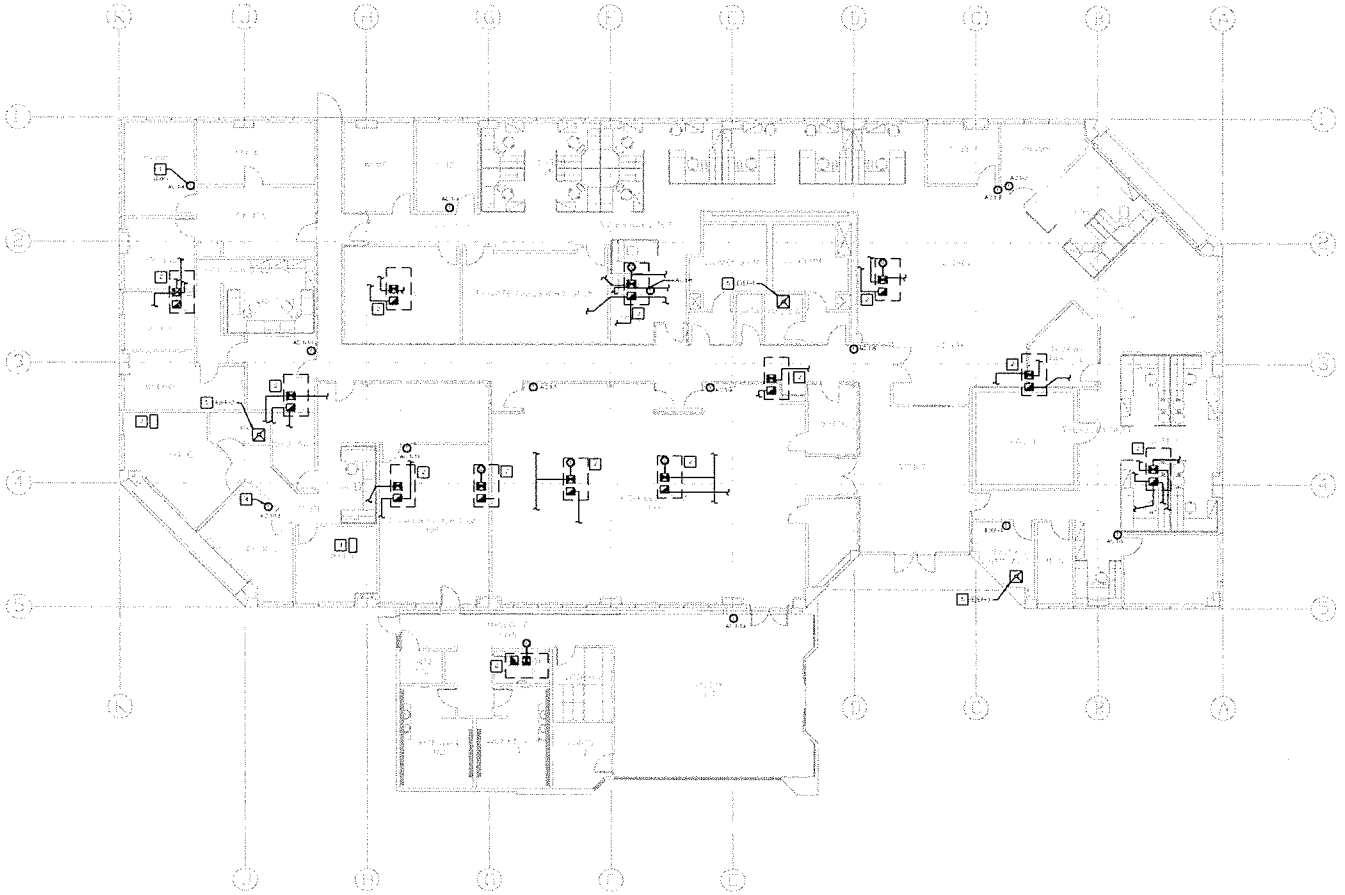
RENOVATION NOTES

1. REMOVE EXISTING [illegible]
2. DEMOLISH AIR DISTRIBUTION TO REMAIN PARTIALLY DOWN TO NEAREST BRANCH [illegible]
3. EXISTING ZONE DAMPER TO REMAIN
4. REPLACE THE THERMOSTAT AND POWER WIRE WITH THE NEW STAT. CONNECT THE NEW STAT TO THE DAMPER FOR LONG PERIODIC OPERATION
5. DEMOLISH EXHAUST FAN [illegible]
6. PROVIDE NEW SMOKE DETECTOR

GENERAL NOTES

A. UNLESS OTHERWISE NOTED, ALL EXISTING EQUIPMENT TO REMAIN

B. UNLESS OTHERWISE NOTED, ALL EXISTING DISTRIBUTION TO REMAIN



1 SANTA MARIA ADMIN FIRST FLOOR RENOVATION PLAN
1/8" = 1'-0"

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Sheet Title
First Floor Plan Renovation

Sheet Number
M241-A

P2S No. 24-0215

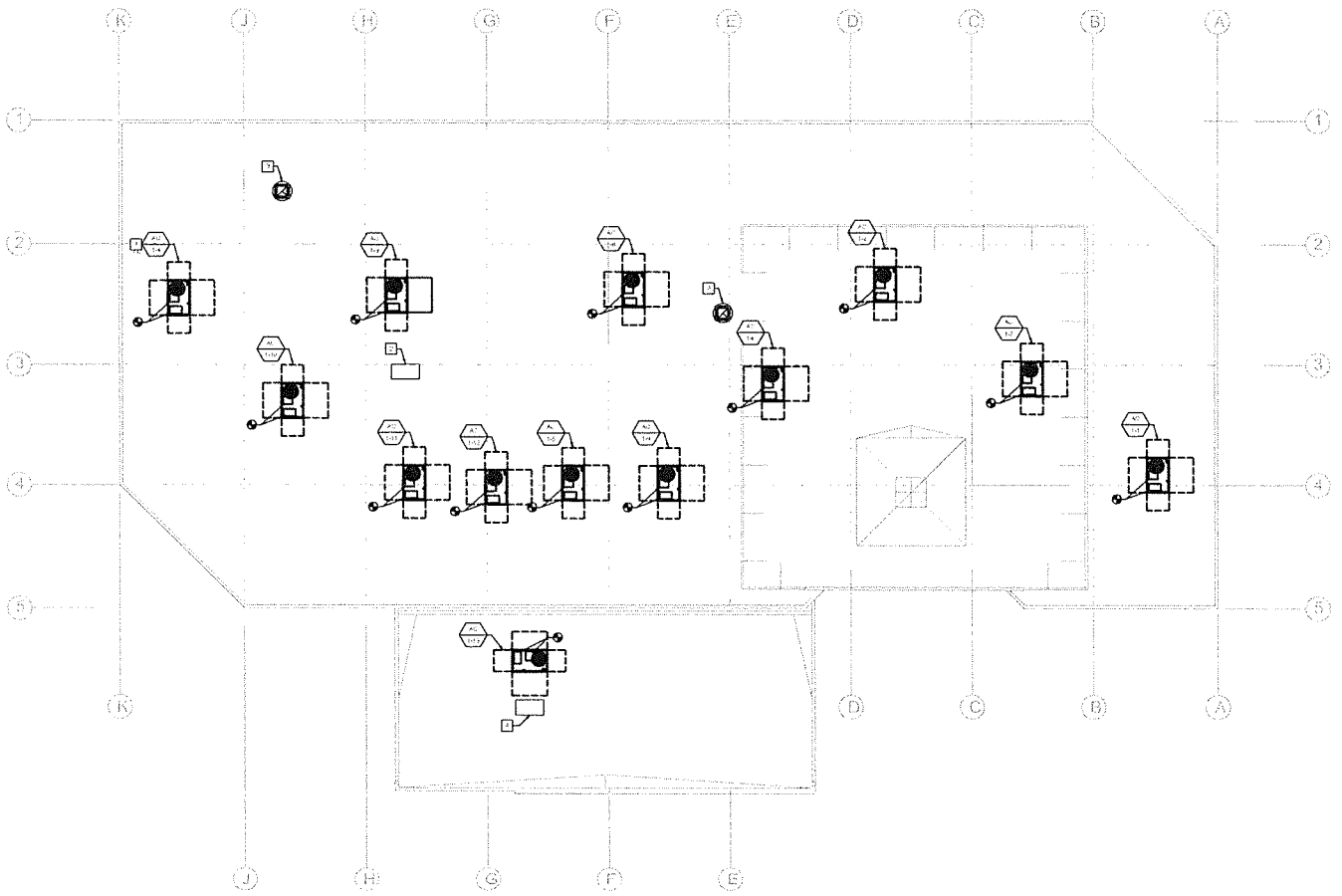
RENOVATION NOTES

1. REMOVE THE EXISTING UNIT AT LOCATION AS SHOWN. INSTALL THE ADAPTER CURB TO THE EXISTING CURB.
2. EXISTING RACK MANIFOLD TO REMAIN.
3. EXISTING EXHAUST FAN AND ARCHITECTURAL LOUVER TO REMAIN.
4. EXISTING ELECTRICAL EQUIPMENT TO REMAIN.

GENERAL NOTES

A. SEE EXTERIOR ELEVATIONS FOR ROOFTOP UNIT INSTALLATION DETAILS AND ALIGNMENT.

B. SEE EXTERIOR ELEVATIONS FOR EQUIPMENT SCREENING.



1 SANTA MARIA ADMIN ROOF RENOVATION PLAN
1/8" = 1'-0"

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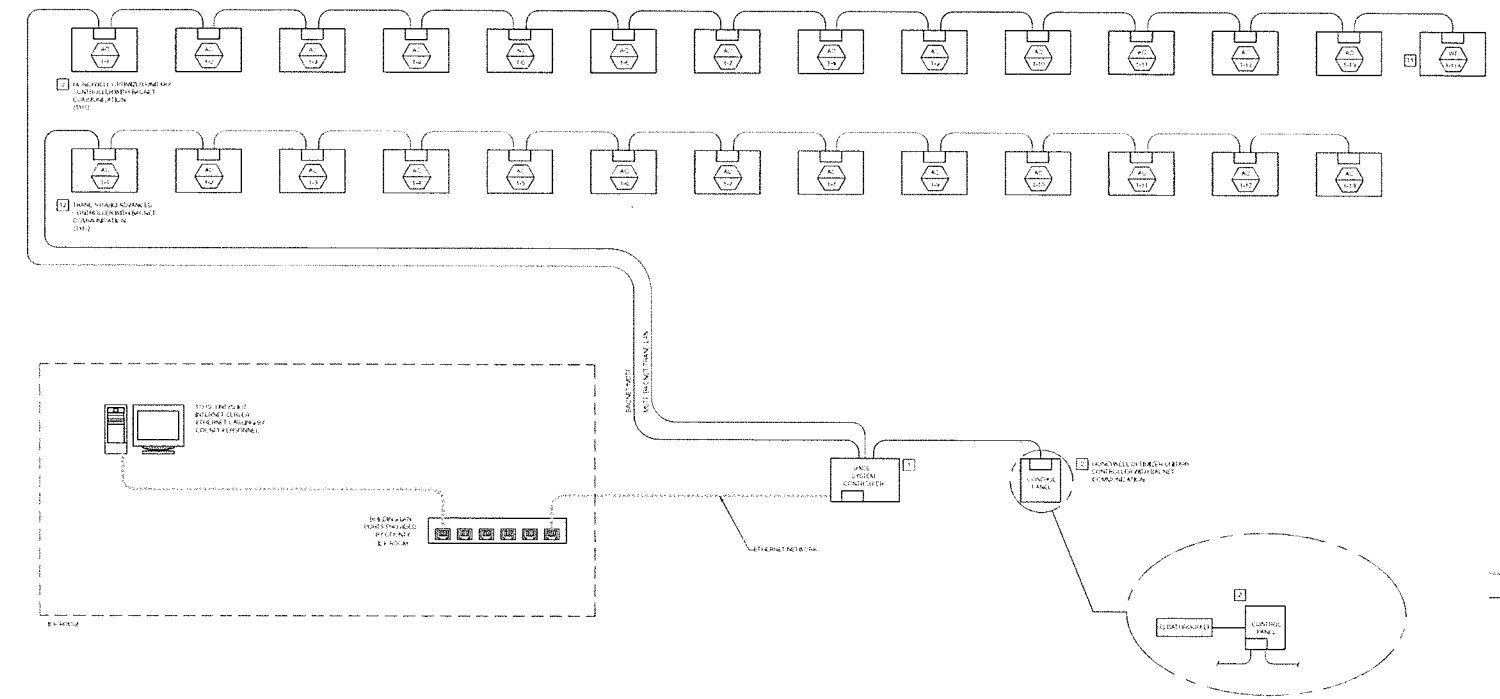
Sheet Title
Roof Plan Renovation

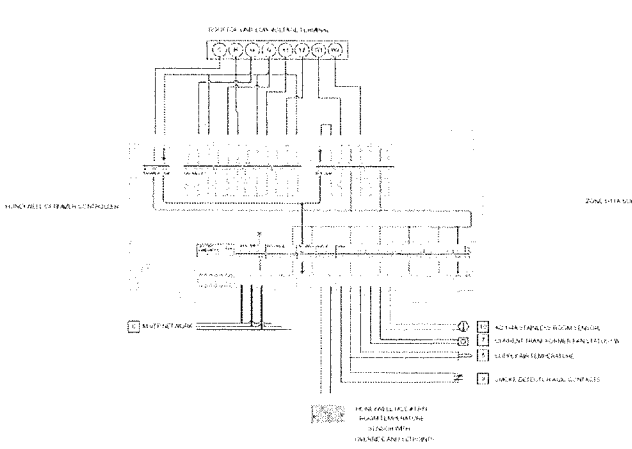
Sheet Number
M251-A

P2S No. 24-0295

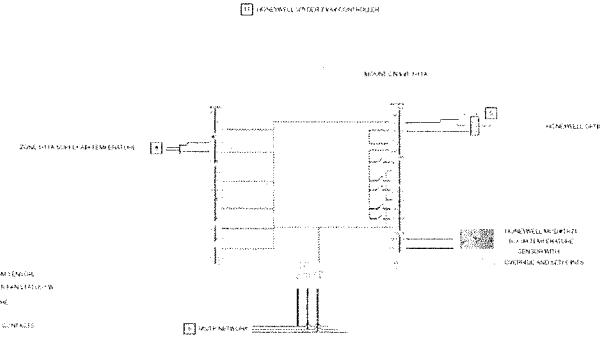


NOTES

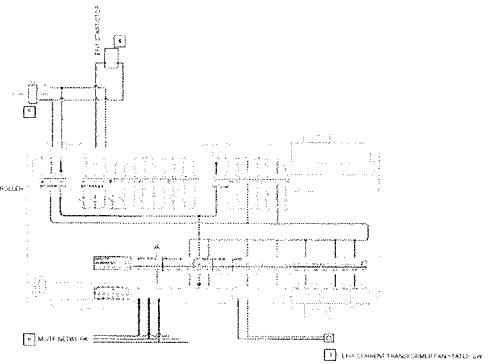
GENERAL NOTES



HEAT PUMP CONTROL WIRING AC-1 THRU AC-13 TYPICAL OF 13



VVT ZONE CONTROL-VVT 1-11A TYPICAL OF 1



EXHAUST FAN CONTROL WIRING EXH-1 TYPICAL OF 1

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Sheet Title

Network Architecture Diagram

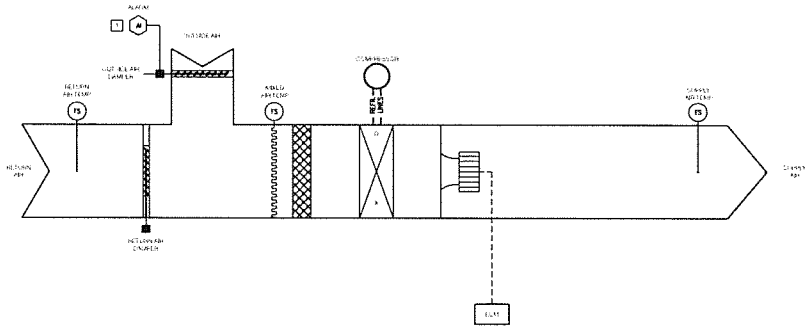
Sheet Number

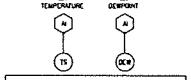
M501-A

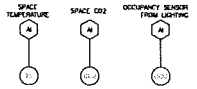
P2S No. 24-0295

NOTES

1. EXISTING INDUCTIVE CO2 SENSOR IN RETURN AIR DUCT TO BE REMOVED AND REPLACED WITH NEW WALL MOUNTED CO2 SENSOR. COORDINATE WITH CONTROLS CONTRACTOR.







1 PACKAGED AIR HANDLING UNIT AC 1-1 THRU AC 1-13
NO SCALE

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Sheet Title
Control Diagrams

Sheet Number
M502-A

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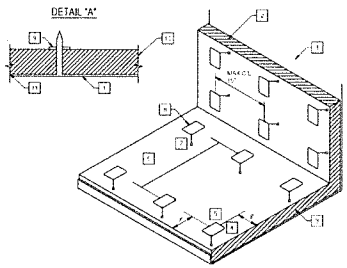
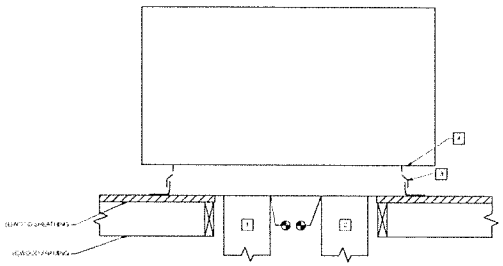


NOTES

1. DUCT
2. 1" THICK FIBERGLASS DUCT LINER
3. ALL ENDS OF LINER LOCATED WITHIN CASING
4. NO MUNG SHALL BE EXPOSED TO AIRSTREAM
5. TYPICAL DUCT SUPPORT SYSTEMS AND SPACED PER SMACNA DUCT DETAILS
6. COATED SURFACE OF INSULATION FACING TO BE TOWARD AIR
7. INSULATION NOT REQUIRED TO EXTEND BEHIND GRILLE
8. SEPARATE SHEET METAL LINING
9. ELASTOMERIC INSULATION LINING
10. WELDED STUD WELDED TO DUCT SURFACE PRIOR TO DUCT LINER INSTALLATION WITH CAPACITOR DISCHARGE
11. ADHESIVE OVER LOCKWASHER (TYP.)

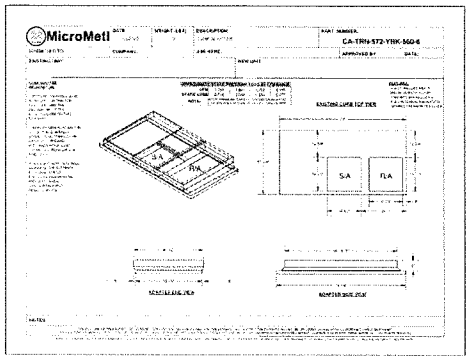
4 DUCT LINER
NO SCALE



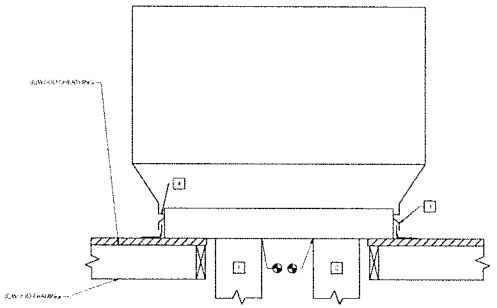
NOTES

1. EXISTING SUPPLY DUCT. CONNECT TO EXISTING AT FACTORY SUPPLIED TRANSITION WITH FLEX CONNECTION AS NEEDED.
2. EXISTING RETURN DUCT. CONNECT TO EXISTING AT FACTORY SUPPLIED TRANSITION WITH FLEX CONNECTION AS NEEDED.
3. EXISTING ROOF CONCRETE CURB.
4. INSTALL EXISTING CURB GASKET AND FLASHING TO CURB.

2 ROOFTOP UNIT INSTALLATION
NO SCALE



3 ADAPTOR KIT CA-TRN-572-YRK-560-6 (AC 1-1 THRU AC 1-13)
NO SCALE



NOTES

1. EXISTING SUPPLY DUCT. CONNECT TO ADAPTER. CONNECT TO CURB AND UNIT TRANSITION WITH FLEX CONNECTION AS NEEDED.
2. EXISTING RETURN DUCT. CONNECT TO ADAPTER. CONNECT TO CURB AND UNIT TRANSITION WITH FLEX CONNECTION AS NEEDED.
3. EXISTING ROOF CURB AND FLASHING.
4. ATTACH ADAPTER FLANGE TO EXISTING CURB WITH SCREWS FOR FACTORY ENGINEERED ADAPTER WITH CURB. REFER TO INSTALLATION ADAPTER CURB DETAILS.

1 ROOFTOP UNIT INSTALLATION W/ CURB ADAPTER
NO SCALE

P2S ENG
p2sinc.com
Consultant

Project Title
Santa Barbara HVAC and BAS
SANTA MARIA ADMIN
Betteravia Government
Administration Building
511 Lakeside Pkwy,
Santa Maria, CA 93455

Owner
COUNTY OF SANTA BARBARA CALIFORNIA
260 N San Antonio Rd, Santa Barbara, CA 93110

Revisions

Number	Description	Date
	ISSUED FOR BID	05/01/2025

Designed	A R
Drawn	A R
Checked	J L
Approved	-
Date	05/01/2025
Submittal	ISSUED FOR BID
Scale	No Scale

Sheet Title
Details

Sheet Number
M601-A

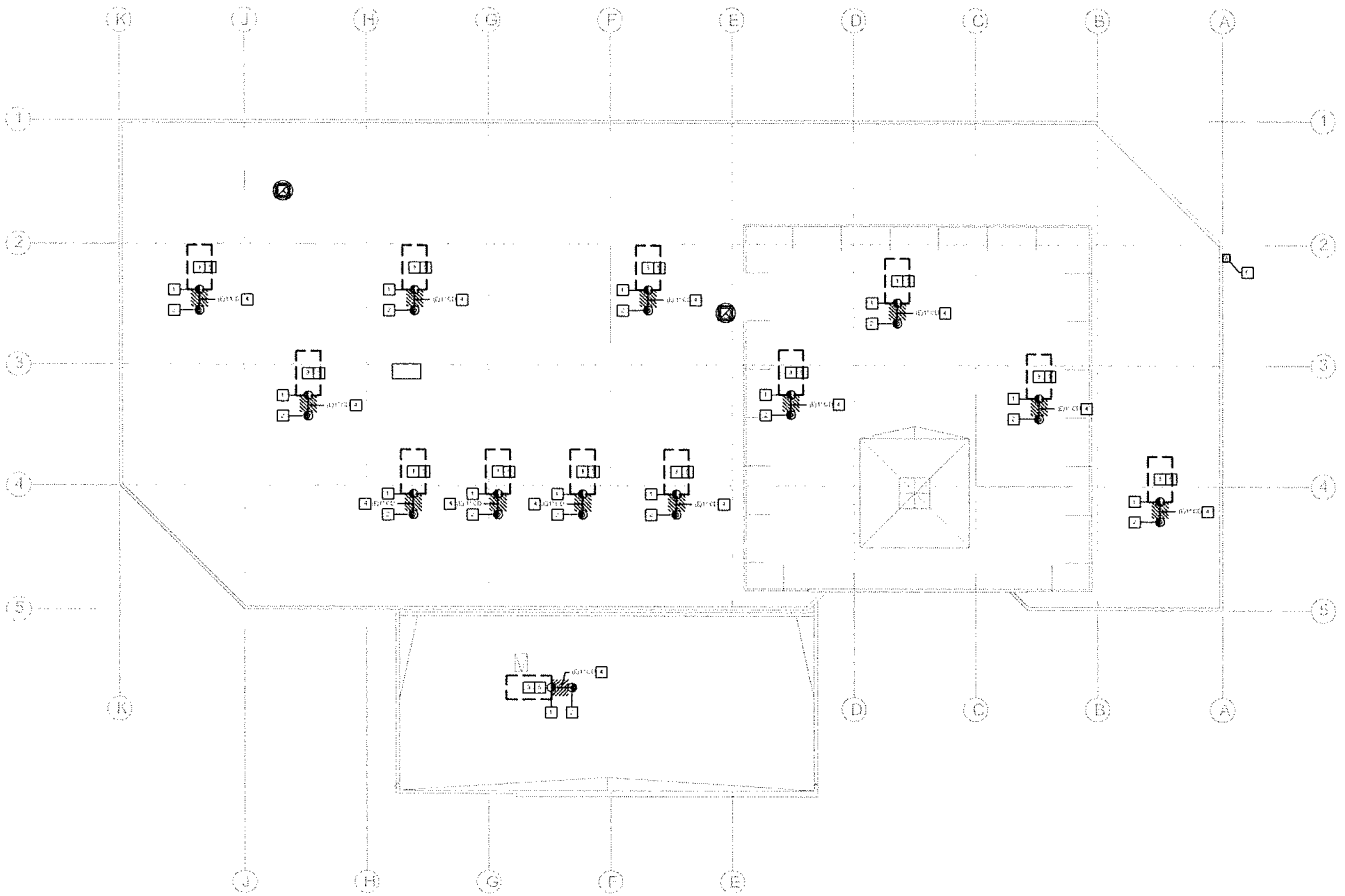
P2S No. 24-0295

DEMO NOTES

1. [illegible]
2. POINT OF DISCONNECTION OF EXISTING AIR CONDITIONING EQUIPMENT.
3. REMOVAL OF EQUIPMENT. REFER TO MECHANICAL SHEET M2.1 FOR SCOPE INFORMATION.
4. REMOVE AND CAP EXISTING CONDENSATE PIPING BACK TO POINT OF DISCONNECTION.
5. REMOVE EXISTING GAS PIPING BACK TO THE BUILDING GAS METER. CAP AND LEAVE ACTIVE EXISTING GAS METER IN PLACE.
6. [illegible]

GENERAL NOTES

A. EXISTING CONDENSATE PENETRATIONS THROUGH ROOF SHALL BE MAINTAINED FOR FUTURE RECONNECTION.



1 SANTA MARIA ADMIN ROOF DEMOLITION PLAN

1/8" = 1'-0"

P2S ENG

p2sinc.com

Consultant

Project Title

Santa Barbara HVAC and BAS
SANTA MARIA ADMIN
Betteravia Government
Administration Building:
511 Lakeside Pkwy,
Santa Maria, CA 93455

Owner

260 N San Antonio Rd. Santa Barbara, CA 93110

Revisions

Number	Description	Date
	ISSUED FOR BID	05.01.2025

Designed	A.R
Drawn	A.R
Checked	J.L
Approved	-
Date	05.01.2025
Submittal	ISSUED FOR BID
Scale	1/8" = 1'-0"

Sheet Title

Roof Plan Demolition

Sheet Number

MP231-A

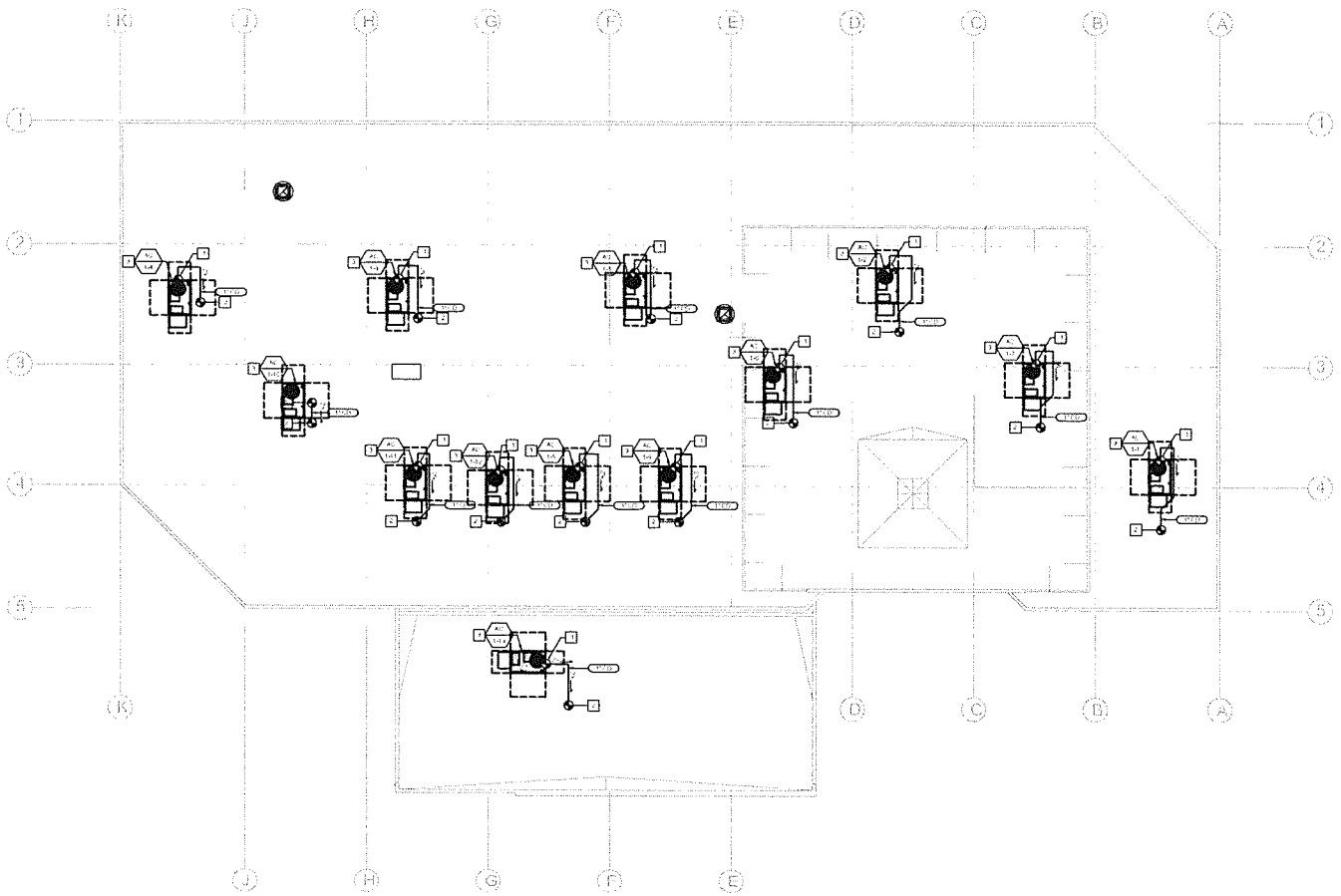
P2S No. 24-0295

RENOVATION NOTES

1. [illegible]
2. [illegible]
3. [illegible]

GENERAL NOTES

[illegible]



1 SANTA MARIA ADMIN ROOF RENOVATION PLAN
1/8" = 1'-0"

p2s ENG

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Consultant

Project Title
Santa Barbara HVAC and BAS
SANTA MARIA ADMIN
Betteravia Government Administration Building.
511 Lakeside Pkwy,
Santa Maria, CA 93455

Owner

260 N San Antonio Rd, Santa Barbara, CA 93110

Revisions

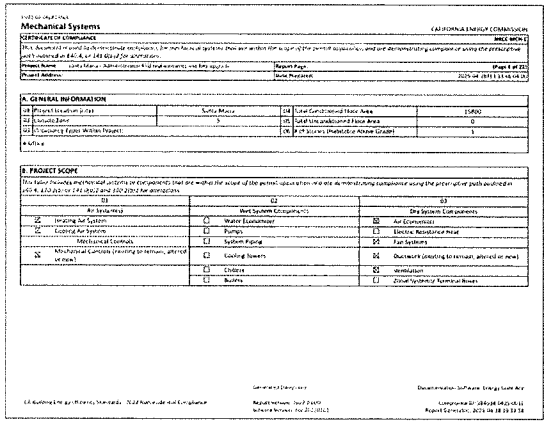
Number	Description	Date
	ISSUED FOR BID	05/01/2025

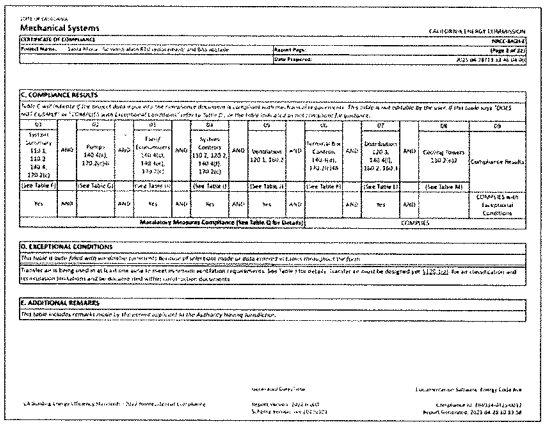
Designed	AR
Drawn	AR
Checked	JL
Approved	-
Date	05/01/2025
Submittal	ISSUED FOR BID
Scale	1/8"=1'-0"

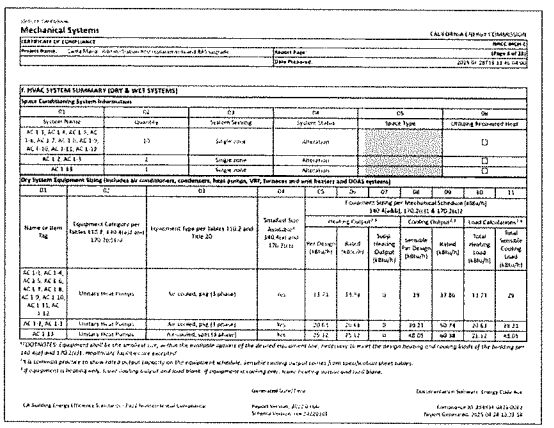
Sheet Title
Roof Plan Renovation

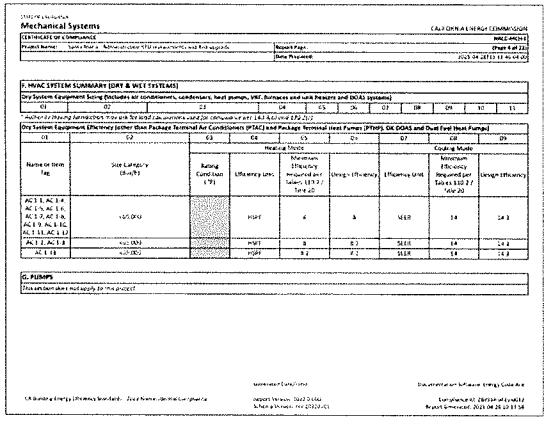
Sheet Number
MP251-A

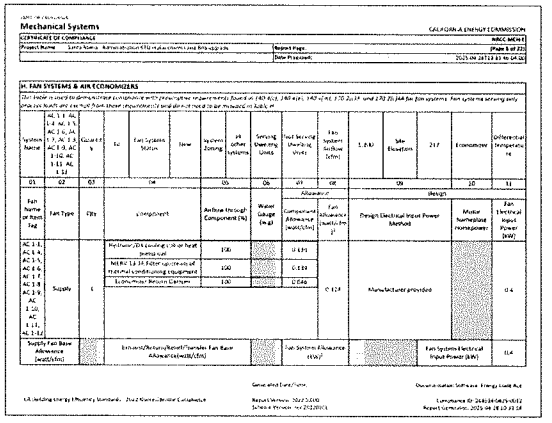
P2S No. 24-0295

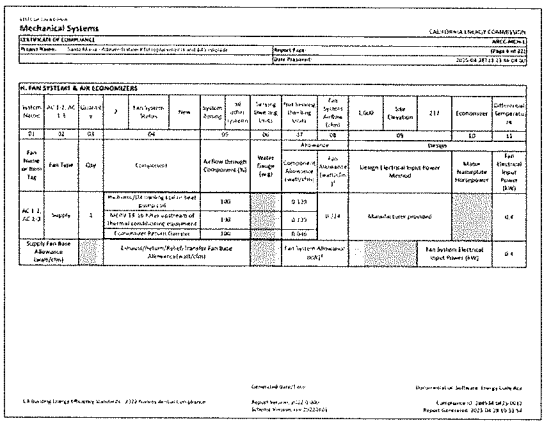

Mechanical Systems
CALIFORNIA ENERGY COMMISSION
CERTIFICATE OF COMPLIANCE
NRCC-MCH-E
A. GENERAL INFORMATION
B. PROJECT SCOPE
C. COMPLIANCE RESULTS
D. EXCEPTIONAL CONDITIONS
E. ADDITIONAL REMARKS

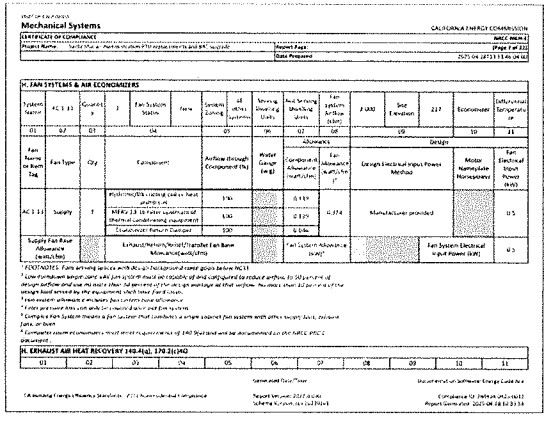

Mechanical Systems
CALIFORNIA ENERGY COMMISSION
CERTIFICATE OF COMPLIANCE
NRCC-MCH-E
C. COMPLIANCE RESULTS
D. EXCEPTIONAL CONDITIONS
E. ADDITIONAL REMARKS

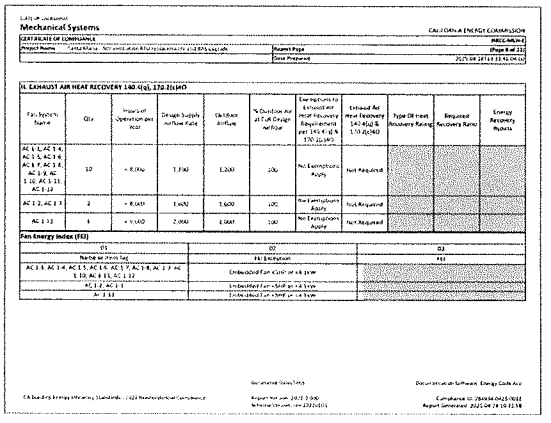

Mechanical Systems
CALIFORNIA ENERGY COMMISSION
CERTIFICATE OF COMPLIANCE
NRCC-MCH-E
F. HVAC SYSTEM SUMMARY (DRY & WET SYSTEMS)

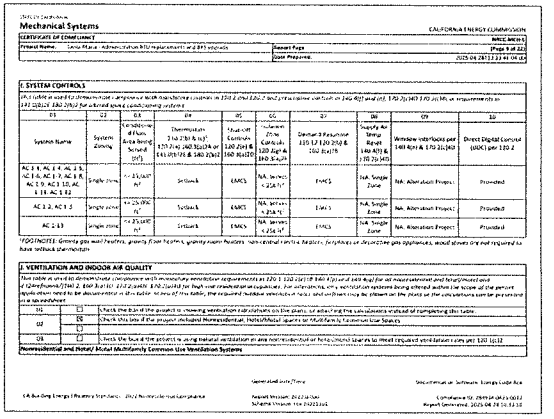

Mechanical Systems
CALIFORNIA ENERGY COMMISSION
CERTIFICATE OF COMPLIANCE
NRCC-MCH-E
F. HVAC SYSTEM SUMMARY (DRY & WET SYSTEMS)
G. PUMPS


Mechanical Systems
CALIFORNIA ENERGY COMMISSION
CERTIFICATE OF COMPLIANCE
NRCC-MCH-E
H. FAN SYSTEMS & AIR ECONOMIZERS


Mechanical Systems
CALIFORNIA ENERGY COMMISSION
CERTIFICATE OF COMPLIANCE
NRCC-MCH-E
H. FAN SYSTEMS & AIR ECONOMIZERS


Mechanical Systems
CALIFORNIA ENERGY COMMISSION
CERTIFICATE OF COMPLIANCE
NRCC-MCH-E
H. FAN SYSTEMS & AIR ECONOMIZERS
H. EXHAUST AIR HEAT RECOVERY 140.4(q), 170.2(i)4O


Mechanical Systems
CALIFORNIA ENERGY COMMISSION
CERTIFICATE OF COMPLIANCE
NRCC-MCH-E
H. EXHAUST AIR HEAT RECOVERY 140.4(q), 170.2(i)4O
Fan Energy Index (FEI)


Mechanical Systems
CALIFORNIA ENERGY COMMISSION
CERTIFICATE OF COMPLIANCE
NRCC-MCH-E
I. SYSTEM CONTROLS
J. VENTILATION AND INDOOR AIR QUALITY

p2s ENG
Integrated Solutions for Design of Sustainable Assets
p2sinc.com
Consultant

Project Title
Santa Barbara HVAC and BAS
SANTA MARIA ADMIN
Betteravia Government
Administration Building
511 Lakeside Pkwy,
Santa Maria, CA 93455

Owner

260 N San Antonio Rd. Santa Barbara, CA 93110

Revisions

Number	Description	Date
	ISSUED FOR BID	05/01/2025

Designed	AR
Drawn	AR
Checked	JL
Approved	-
Date	05/01/2025
Submittal	ISSUED FOR BID
Scale	No Scale

Sheet Title
Title 24 Compliance Forms

Sheet Number
M701-A

P2S No. 24-0295

Mechanical Systems

CALIFORNIA ENERGY COMMISSION

CERTIFICATE OF COMPLIANCE — NRCC-MCH-E

Project Name: Santa Maria - Administration #1(replacements and BAS upgrade) — Report Page: (Page 11 of 22)

Date Prepared: 2025-04-28T13:33:46-04:00

J. VENTILATION AND INDOOR AIR QUALITY

04		05			06			07
System Name	AC 1.1	System Design OA CFM Airflow[1]	865	System Design Transfer Air CFM	1735	Air Filtration per 120.1(c) 141.0(b)2 and 160.2(c)11[4] Provided		

08	09	10	11	12	13	14	15	16
Space Name or Item Tag	Mechanical Ventilation Required per 120.1(c)3[3] & 160.2(c)3					Exh. Vent. per 120.1(c)4 & 160.2(c)4		DCV or Sensor Controls per 120.1(c)3, 120.1(c)5, and 120.1(c)3[3] 160.2(c)3(G) 160.2(c)3(H) 160.2(c)3(I)
	Occupancy Type[2]	Conditioned Floor Area (ft²)	# of Showers/ heads/ toilets	# of people[2]	Required Min OA CFM	Required Exh CFM	Provided per Design CFM	
ROOM 105 (Open Office)	Office space	2415			268.75			DCV: Not required per 120.1(c)3[3] & 160.2(c)3(G)
								Occ Sensor: NA: Alteration
17	Total System Required Min OA CFM				268.75	18	Ventilation for this System Complies?	Yes

04		05			06			07
System Name	AC 1.2	System Design OA CFM Airflow[1]	360	System Design Transfer Air CFM	1436			Air Filtration per 120.1(c) 141.0(b)2 and 160.2(c)11[4] Provided

08	09	10	11	12	13	14	15	16
Space Name or Item Tag	Mechanical Ventilation Required per 120.1(c)3[3] & 160.2(c)3					Exh. Vent. per 120.1(c)4 & 160.2(c)4		DCV or Sensor Controls per 120.1(c)3, 120.1(c)5, and 120.1(c)3[3] 160.2(c)3(G) 160.2(c)3(I)
	Occupancy Type[2]	Conditioned Floor Area (ft²)	# of Showers/ heads/ toilets	# of people[2]	Required Min OA CFM	Required Exh CFM	Provided per Design CFM	
ROOM 119 (Open Office)	Office space	2470			165			DCV: Not required per 120.1(c)3[3] & 160.2(c)3(G)
								Occ Sensor: NA: Alteration
17	Total System Required Min OA CFM				165	18	Ventilation for this System Complies?	Yes

Generated Date/Time — Documentation Software: Energy Code Ace

CA Building Energy Efficiency Standards - 2022 Nonresidential Compliance — Report Version: 2022.0.000 — Schema Version: nrcc-mch-2022-e — Compliance ID: 284918-MCH-0012 — Report Generated: 2025-04-28 13:33:46

Mechanical Systems

CALIFORNIA ENERGY COMMISSION

CERTIFICATE OF COMPLIANCE — NRCC-MCH-E

Project Name: Santa Maria - Administration #1(replacements and BAS upgrade) — Report Page: (Page 12 of 22)

Date Prepared: 2025-04-28T13:33:46-04:00

J. VENTILATION AND INDOOR AIR QUALITY

04		05			06			07
System Name	AC 1.3	System Design OA CFM Airflow[1]	240	System Design Transfer Air CFM	1035			Air Filtration per 120.1(c) 141.0(b)2 and 160.2(c)11[4] Provided

08	09	10	11	12	13	14	15	16
Space Name or Item Tag	Mechanical Ventilation Required per 120.1(c)3[3] & 160.2(c)3					Exh. Vent. per 120.1(c)4 & 160.2(c)4		DCV or Sensor Controls per 120.1(c)3, 120.1(c)5, and 120.1(c)3[3] 160.2(c)3(G) 160.2(c)3(I)
	Occupancy Type[2]	Conditioned Floor Area (ft²)	# of Showers/ heads/ toilets	# of people[2]	Required Min OA CFM	Required Exh CFM	Provided per Design CFM	
Office 119 A, Corridor 121 A, Office 124 A, Breakroom 126 A, Office 127 A	Office space	2190			182			DCV: NA: Not required per 120.1(c)3[3] & 160.2(c)3(G)
								Occ Sensor: NA: Alteration
17	Total System Required Min OA CFM				182	18	Ventilation for this System Complies?	Yes

04		05			06			07
System Name	AC 1.4	System Design OA CFM Airflow[1]	225	System Design Transfer Air CFM	975			Air Filtration per 120.1(c) 141.0(b)2 and 160.2(c)11[4] Provided

08	09	10	11	12	13	14	15	16
Space Name or Item Tag	Mechanical Ventilation Required per 120.1(c)3[3] & 160.2(c)3					Exh. Vent. per 120.1(c)4 & 160.2(c)4		DCV or Sensor Controls per 120.1(c)3, 120.1(c)5, and 120.1(c)3[3] 160.2(c)3(G) 160.2(c)3(I)
	Occupancy Type[2]	Conditioned Floor Area (ft²)	# of Showers/ heads/ toilets	# of people[2]	Required Min OA CFM	Required Exh CFM	Provided per Design CFM	

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CA Building Energy Efficiency Standards - 2022 Nonresidential Compliance — Report Version: 2022.0.000 — Schema Version: nrcc-mch-2022-e — Compliance ID: 284918-MCH-0012 — Report Generated: 2025-04-28 13:33:46

Mechanical Systems

CALIFORNIA ENERGY COMMISSION

CERTIFICATE OF COMPLIANCE — NRCC-MCH-E

Project Name: Santa Maria - Administration #1(replacements and BAS upgrade) — Report Page: (Page 13 of 22)

Date Prepared: 2025-04-28T13:33:46-04:00

J. VENTILATION AND INDOOR AIR QUALITY

04		05			06			07
System Name	AC 1.5	System Design OA CFM Airflow[1]	620	System Design Transfer Air CFM	574			Air Filtration per 120.1(c) 141.0(b)2 and 160.2(c)11[4] Provided

08	09	10	11	12	13	14	15	16
Space Name or Item Tag	Mechanical Ventilation Required per 120.1(c)3[3] & 160.2(c)3					Exh. Vent. per 120.1(c)4 & 160.2(c)4		DCV or Sensor Controls per 120.1(c)3, 120.1(c)5, and 120.1(c)3[3] 160.2(c)3(G) 160.2(c)3(I)
	Occupancy Type[2]	Conditioned Floor Area (ft²)	# of Showers/ heads/ toilets	# of people[2]	Required Min OA CFM	Required Exh CFM	Provided per Design CFM	
ROOM 144 (Meeting Room)	Conference / meeting	1250			625			DCV: NA: Not required per 120.1(c)3[3] & 160.2(c)3(G)
								Occ Sensor: NA: Alteration
17	Total System Required Min OA CFM				625	18	Ventilation for this System Complies?	Yes

04		05			06			07
System Name	AC 1.6	System Design OA CFM Airflow[1]	480	System Design Transfer Air CFM	768			Air Filtration per 120.1(c) 141.0(b)2 and 160.2(c)11[4] Provided

08	09	10	11	12	13	14	15	16
Space Name or Item Tag	Mechanical Ventilation Required per 120.1(c)3[3] & 160.2(c)3					Exh. Vent. per 120.1(c)4 & 160.2(c)4		DCV or Sensor Controls per 120.1(c)3, 120.1(c)5, and 120.1(c)3[3] 160.2(c)3(G) 160.2(c)3(I)
	Occupancy Type[2]	Conditioned Floor Area (ft²)	# of Showers/ heads/ toilets	# of people[2]	Required Min OA CFM	Required Exh CFM	Provided per Design CFM	

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CA Building Energy Efficiency Standards - 2022 Nonresidential Compliance — Report Version: 2022.0.000 — Schema Version: nrcc-mch-2022-e — Compliance ID: 284918-MCH-0012 — Report Generated: 2025-04-28 13:33:46

Mechanical Systems

CALIFORNIA ENERGY COMMISSION

CERTIFICATE OF COMPLIANCE — NRCC-MCH-E

Project Name: Santa Maria - Administration #1(replacements and BAS upgrade) — Report Page: (Page 14 of 22)

Date Prepared: 2025-04-28T13:33:46-04:00

J. VENTILATION AND INDOOR AIR QUALITY

Corridor, Study Room 118 A, Storage 118 B, Corridor 119 A	Corridor	2560			154			DCV: NA: Not required per 120.1(c)3[3] & 160.2(c)3(G)
								Occ Sensor: NA: Alteration
17	Total System Required Min OA CFM				154	18	Ventilation for this System Complies?	Yes

04		05			06			07
System Name	AC 1.9	System Design OA CFM Airflow[1]	535	System Design Transfer Air CFM	963			Air Filtration per 120.1(c) 141.0(b)2 and 160.2(c)11[4] Provided

08	09	10	11	12	13	14	15	16
Space Name or Item Tag	Mechanical Ventilation Required per 120.1(c)3[3] & 160.2(c)3					Exh. Vent. per 120.1(c)4 & 160.2(c)4		DCV or Sensor Controls per 120.1(c)3, 120.1(c)5, and 120.1(c)3[3] 160.2(c)3(G) 160.2(c)3(I)
	Occupancy Type[2]	Conditioned Floor Area (ft²)	# of Showers/ heads/ toilets	# of people[2]	Required Min OA CFM	Required Exh CFM	Provided per Design CFM	
ROOM 144 (Meeting Room)	Conference / meeting	1065			532.5			DCV: NA: Not required per 120.1(c)3[3] & 160.2(c)3(G)
								Occ Sensor: NA: Alteration
17	Total System Required Min OA CFM				532.5	18	Ventilation for this System Complies?	Yes

04		05			06			07
System Name	AC 1.10	System Design OA CFM Airflow[1]	350	System Design Transfer Air CFM	1750			Air Filtration per 120.1(c) 141.0(b)2 and 160.2(c)11[4] Provided

08	09	10	11	12	13	14	15	16
Space Name or Item Tag	Mechanical Ventilation Required per 120.1(c)3[3] & 160.2(c)3					Exh. Vent. per 120.1(c)4 & 160.2(c)4		DCV or Sensor Controls per 120.1(c)3, 120.1(c)5, and 120.1(c)3[3] 160.2(c)3(G) 160.2(c)3(I)
	Occupancy Type[2]	Conditioned Floor Area (ft²)	# of Showers/ heads/ toilets	# of people[2]	Required Min OA CFM	Required Exh CFM	Provided per Design CFM	

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CA Building Energy Efficiency Standards - 2022 Nonresidential Compliance — Report Version: 2022.0.000 — Schema Version: nrcc-mch-2022-e — Compliance ID: 284918-MCH-0012 — Report Generated: 2025-04-28 13:33:46

Mechanical Systems

CALIFORNIA ENERGY COMMISSION

CERTIFICATE OF COMPLIANCE — NRCC-MCH-E

Project Name: Santa Maria - Administration #1(replacements and BAS upgrade) — Report Page: (Page 15 of 22)

Date Prepared: 2025-04-28T13:33:46-04:00

J. VENTILATION AND INDOOR AIR QUALITY

Reception area	Reception area	2510			149.5			DCV: NA: Not required per 120.1(c)3[3] & 160.2(c)3(G)
								Occ Sensor: NA: Alteration
17	Total System Required Min OA CFM				149.5	18	Ventilation for this System Complies?	Yes

04		05			06			07
System Name	AC 1.11	System Design OA CFM Airflow[1]	400	System Design Transfer Air CFM	922			Air Filtration per 120.1(c) 141.0(b)2 and 160.2(c)11[4] Provided

08	09	10	11	12	13	14	15	16
Space Name or Item Tag	Mechanical Ventilation Required per 120.1(c)3[3] & 160.2(c)3					Exh. Vent. per 120.1(c)4 & 160.2(c)4		DCV or Sensor Controls per 120.1(c)3, 120.1(c)5, and 120.1(c)3[3] 160.2(c)3(G) 160.2(c)3(I)
	Occupancy Type[2]	Conditioned Floor Area (ft²)	# of Showers/ heads/ toilets	# of people[2]	Required Min OA CFM	Required Exh CFM	Provided per Design CFM	
Conference Room, Office 140/139 A	Office space	1410			214.5			DCV: NA: Not required per 120.1(c)3[3] & 160.2(c)3(G)
								Occ Sensor: NA: Alteration
17	Total System Required Min OA CFM				214.5	18	Ventilation for this System Complies?	Yes

04		05			06			07
System Name	AC 1.12	System Design OA CFM Airflow[1]	671	System Design Transfer Air CFM	529			Air Filtration per 120.1(c) 141.0(b)2 and 160.2(c)11[4] Provided

08	09	10	11	12	13	14	15	16

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Mechanical Systems

CALIFORNIA ENERGY COMMISSION

CERTIFICATE OF COMPLIANCE — NRCC-MCH-E

Project Name: Santa Maria - Administration #1(replacements and BAS upgrade) — Report Page: (Page 16 of 22)

Date Prepared: 2025-04-28T13:33:46-04:00

J. VENTILATION AND INDOOR AIR QUALITY

Space Name or Item Tag	Mechanical Ventilation Required per 120.1(c)3[3] & 160.2(c)3					Exh. Vent. per 120.1(c)4 & 160.2(c)4		DCV or Sensor Controls per 120.1(c)3, 120.1(c)5, and 120.1(c)3[3] 160.2(c)3(G) 160.2(c)3(I)
	Occupancy Type[2]	Conditioned Floor Area (ft²)	# of Showers/ heads/ toilets	# of people[2]	Required Min OA CFM	Required Exh CFM	Provided per Design CFM	
ROOM 114 (Conference/ Meeting Room)	Conference/ meeting	1430			715			DCV: NA: Not required per 120.1(c)3[3] & 160.2(c)3(G)
								Occ Sensor: NA: Alteration
17	Total System Required Min OA CFM				715	18	Ventilation for this System Complies?	Yes

04		05			06			07
System Name	AC 1.13	System Design OA CFM Airflow[1]	532	System Design Transfer Air CFM	1496			Air Filtration per 120.1(c) 141.0(b)2 and 160.2(c)11[4] Provided

08	09	10	11	12	13	14	15	16
Space Name or Item Tag	Mechanical Ventilation Required per 120.1(c)3[3] & 160.2(c)3					Exh. Vent. per 120.1(c)4 & 160.2(c)4		DCV or Sensor Controls per 120.1(c)3, 120.1(c)5, and 120.1(c)3[3] 160.2(c)3(G) 160.2(c)3(I)
	Occupancy Type[2]	Conditioned Floor Area (ft²)	# of Showers/ heads/ toilets	# of people[2]	Required Min OA CFM	Required Exh CFM	Provided per Design CFM	
ROOM 116 (Meeting Area, 116 Kitchen, 116 Mothers Lactation Room)	Main Entry Lobby	960			480			DCV: NA: Not required per 120.1(c)3[3] & 160.2(c)3(G)
								Occ Sensor: NA: Alteration
17	Total System Required Min OA CFM				480	18	Ventilation for this System Complies?	Yes

[1] ASHRAE 62.1 System OA flow should be sum of max required zonal breathing zone outdoor airflows per the ventilation system.

[2] For ventilation requirements applicable to the following kitchen types per 140.9(c)2A: space conditioning (unless in shading), fans to supply air to designated space, supply only ventilation air to the cooking zone and balance to adjacent space, turndown some of designed ventilation by at least 50% during periods of no cooking, and energy recovery ventilation systems provided as exception to designated space.

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Mechanical Systems

CALIFORNIA ENERGY COMMISSION

CERTIFICATE OF COMPLIANCE — NRCC-MCH-E

Project Name: Santa Maria - Administration #1(replacements and BAS upgrade) — Report Page: (Page 17 of 22)

Date Prepared: 2025-04-28T13:33:46-04:00

J. VENTILATION AND INDOOR AIR QUALITY

[1] Exception 4 to Section 120.1(c)3 does not apply. Fume hoods shall meet code requirements unless preempted.

[2] Per Standards Tables 120.1-A and 120.1-B

[3] Per Section 120.1(c)4 and 160.2(c)4, the exhaust function of occupancy shall be determined in accordance with the California Building Code

[4] 120.1(c)11 Occupancy systems are required that are required by 140.1(c)1 Zone lighting occupancy sensing controls (i.e., shut-off or partial-ON/partial-OFF) for all indoor lighting, occupancy sensing controls for outdoor lighting, occupancy sensing controls for offices 250 ft² or smaller, multi-occupant rooms less than 1,000 ft², classrooms, conference rooms, restrooms, aisles and open areas in warehouses, library book stack aisles, corridors, stairwells, parking garages, and parking and wayfinding signs, unless exempted by 130.1(d)

K. TERMINAL BOX CONTROLS

This section does not apply to VAV systems.

L. DISTRIBUTION (DUCTWORK and PIPING)

This table is used to show compliance with Humidifier & Dry Evaporator requirements found in 120.2 and Humidifiers steam controls found in 120.4(j) for duct sealing

01	[ ]	Insulation shall be protected from damage, including that due to sunlight, moisture, equipment maintenance, and wind. Insulation exposed to weather shall be protected and/or a cover suitable for outdoor service. Insulation covering chilled water piping and refrigerant suction piping shall provide the retardant vapor shall have a Class I or Class II vapor retarder. All penetrations and joints of which shall be sealed.

Duct Leakage Testing

The answers to the questions below apply to the following duct systems: N/A

NRCI-MCH-01-E Compliance Statement: Duct leakage testing shall not exceed 6% per RA3.1.3 required for these systems?	No

M. COOLING TOWERS

This section does not apply to this project.

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Mechanical Systems

CALIFORNIA ENERGY COMMISSION

CERTIFICATE OF COMPLIANCE — NRCC-MCH-E

Project Name: Santa Maria - Administration #1(replacements and BAS upgrade) — Report Page: (Page 18 of 22)

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L. DISTRIBUTION (DUCTWORK and PIPING)

		Dwelling Units: Total duct leakage to outdoors system shall not exceed 3 cfm per 100 ft² of CFA or shall not exceed 6% per RA3.1.4 required for these systems?	
		Total leakage testing per CMC Sec 1604 803.9.2 required for these systems?	No

31	No	The supply of the systems includes only duct systems serving multiple zones
32	No	Duct system provides conditioned air to an occupiable space for a comfort scheme, or plenum space conditioning system
33	No	The space conditioning system serves less than 1,000 ft² of conditioned floor area
34	No	The combined surface area of the ducts is more than 25% of the total surface area of the entire duct system.
35	No	The scope of the project includes replacing an existing duct system, which is constructed, insulated or sealed with asbestos.
36	No	The scope of the project includes an existing duct system that is documented to have been previously sealed as confirmed through field verification and diagnostic testing in accordance with procedures in the Reference Nonresidential Appendix NA2
37	Yes	All ductwork and plenums, with pressure classification less than 3 inches w.g.
38	No	All ductwork is an extension of an existing duct system
39	No	Duct work serves an individual dwelling unit
40		[ ] A field verification and diagnostic Space Conditioning Duct Air Leak
41	N/A	Duct Insulation R-Value
42	Yes	Duct work Exciting To Remain
43	No	Duct System Connected to Altered Space Conditioning System

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Mechanical Systems

CALIFORNIA ENERGY COMMISSION

CERTIFICATE OF COMPLIANCE — NRCC-MCH-E

Project Name: Santa Maria - Administration #1(replacements and BAS upgrade) — Report Page: (Page 19 of 22)

Date Prepared: 2025-04-28T13:33:46-04:00

L. DISTRIBUTION (DUCTWORK and PIPING)

		Dwelling Units: Total duct leakage to outdoors system shall not exceed 3 cfm per 100 ft² of CFA or shall not exceed 6% per RA3.1.4 required for these systems?	
		Total leakage testing per CMC Sec 1604 803.9.2 required for these systems?	No

31	No	The supply of the systems includes only duct systems serving multiple zones
32	No	Duct system provides conditioned air to an occupiable space for a comfort scheme, or plenum space conditioning system
33	No	The space conditioning system serves less than 1,000 ft² of conditioned floor area
34	No	The combined surface area of the ducts is more than 25% of the total surface area of the entire duct system.
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37	Yes	All ductwork and plenums, with pressure classification less than 3 inches w.g.
38	No	All ductwork is an extension of an existing duct system
39	No	Duct work serves an individual dwelling unit
40		[ ] A field verification and diagnostic Space Conditioning Duct Air Leak
41	N/A	Duct Insulation R-Value
42	Yes	Duct work Exciting To Remain
43	No	Duct System Connected to Altered Space Conditioning System

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P2S ENG

Santa Barbara, CA Riverside, CA Irvine, CA Bakersfield, CA
San Diego, CA Los Angeles, CA Oxnard, CA
p2seng.com

Consultant

Project Title

Santa Barbara HVAC and BAS
SANTA MARIA ADMIN
Betteravia Government Administration Building:
511 Lakeside Pkwy,
Santa Maria, CA 93455

Owner

COUNTY OF SANTA BARBARA CALIFORNIA

260 N San Antonio Rd Santa Barbara, CA 93110

Revisions

Number	Description	Date
	ISSUED FOR BID	05/01/2025

Designed	AR
Drawn	AR
Checked	JL
Approved	-
Date	05/01/2025
Submittal	ISSUED FOR BID
Scale	No Scale

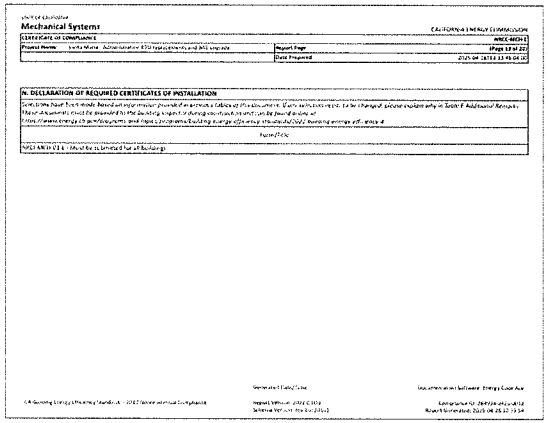
Sheet Title

Title 24 Compliance Forms

Sheet Number

M702-A

P2S No. 24-0295



Mechanical Systems

CALIFORNIA ENERGY COMMISSION

CERTIFICATE OF COMPLIANCE — NRCC-MCH-E

Project Name: Santa Maria - Administrative RTU Replacements and BAS Upgrade	Report Page: (Page 19 of 22)
	Date Prepared: 2025-04-28T12:33:46-04:00

N. DECLARATION OF REQUIRED CERTIFICATES OF INSTALLATION

Select one box from each group to indicate the certificates of installation that are required for this project. If any selection needs to be changed, please explain why in Table F Additional Remarks. Other documents must be provided by the building designer during construction and uploaded as part of the https://www.energy.ca.gov/programs-and-topics/programs/building-energy-efficiency-standards/2022-building-energy-efficiency-st

Form/Title	
NRCI-MCH-03-E - Must be Selected for all Buildings	

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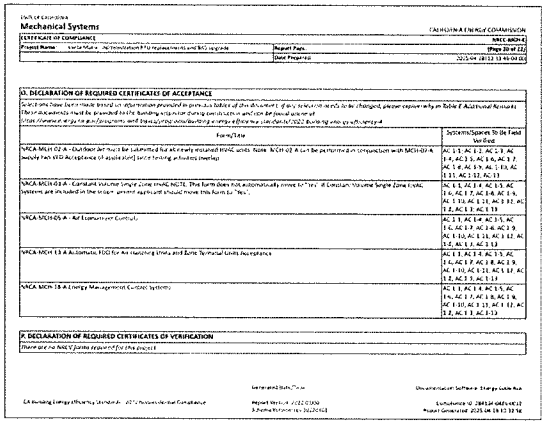

Mechanical Systems

CALIFORNIA ENERGY COMMISSION

CERTIFICATE OF COMPLIANCE — NRCC-MCH-E

Project Name: Santa Maria - Administrative RTU Replacements and BAS Upgrade	Report Page: (Page 20 of 22)
	Date Prepared: 2025-04-28T12:33:46-04:00

O. DECLARATION OF REQUIRED CERTIFICATES OF ACCEPTANCE

Select one box from each group to indicate the certificates of acceptance that are required for this project. If any selection needs to be changed, please explain why in Table F Additional Remarks. Other documents must be provided by the building designer during construction and uploaded as part of the https://www.energy.ca.gov/programs-and-topics/programs/building-energy-efficiency-standards/2022-building-energy-efficiency-st

Form/Title	Systems/Spaces to Be Field Verified
NRCA-MCH-02-A – Outdoor air must be submitted for all newly installed HVAC units. Note: NCH-02-A can be permitted in conjunction with MCH-03-A (weekly tech site acceptance of applicable field testing activities overlap)	AC 1-3, AC 1-2, AC-3, 7, AC 1-4, AC 1-3, AC 1-6, AC 1-7, AC 1-8, AC 1-9, AC 1-11, AC 1-12, AC 1-13
NRCA-MCH-03-A - Constant Volume Single Zone HVAC NOTE: This form does not automatically move to "Yes" if Constant Volume Single Zone HVAC Systems are included in the scope - permit applicant should move this form to "Yes".	AC 1-1, AC 1-4, AC 1-5, AC 1-6, AC 1-7, AC 1-8, AC 1-9, AC 1-11, AC 1-12, AC 1-13
NRCA-MCH-05-A – Air Economizer Controls	AC 1-1, AC 1-4, AC 1-5, AC 1-6, AC 1-7, AC 1-8, AC 1-9, AC 1-11, AC 1-12, AC 1-13
NRCA-MCH-13-A Automatic FDD for Air Handling Units and Zone Terminal Units Acceptance	AC 1-1, AC 1-4, AC 1-5, AC 1-6, AC 1-7, AC 1-8, AC 1-9, AC 1-10, AC 1-11, AC 1-12, AC 1-13
NRCA-MCH-18-A Energy Management (Critical Systems)	AC 1-1, AC 1-4, AC 1-5, AC 1-6, AC 1-7, AC 1-8, AC 1-9, AC 1-10, AC 1-11, AC 1-12, AC 1-13

P. DECLARATION OF REQUIRED CERTIFICATES OF VERIFICATION

There are no NRCV forms required for this project

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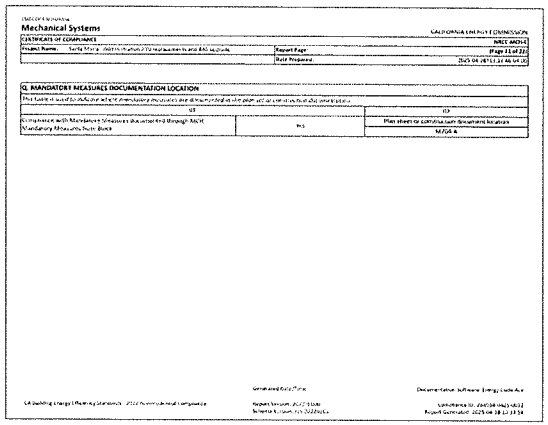


Mechanical Systems

CALIFORNIA ENERGY COMMISSION

CERTIFICATE OF COMPLIANCE — NRCC-MCH-E

Project Name: Santa Maria - Administrative RTU Replacements and BAS Upgrade	Report Page: (Page 21 of 22)
	Date Prepared: 2025-04-28T12:33:46-04:00

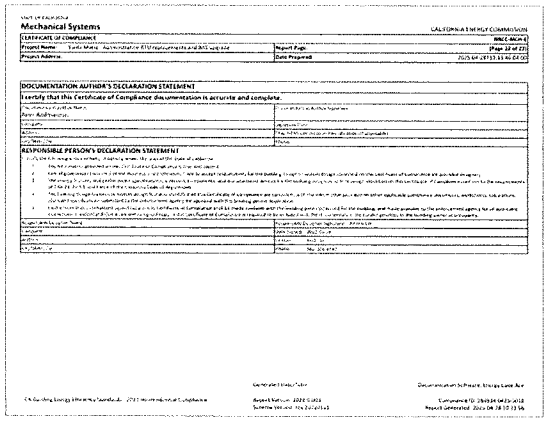
Q. MANDATORY MEASURES DOCUMENTATION LOCATION

This table will indicate where mandatory measures are documented on the plans and in specifications for the construction project.

		ID
Compliance with Mandatory Measures documented through NRCI	Yes	Plan sheets or construction documents location
Mandatory Measures from Book		M703-A

Generated Date/Time: Documentation Software: Energy Code Ace

CA Building Energy Efficiency Standards - 2022 Nonresidential Compliance — Report Version: 2022.0.000 — Schema Version: rev.2022.0.a3 — Compliance ID: 286934-04-25-v0.12 — Report Generated: 2025-04-28 12:33:54



Mechanical Systems

CALIFORNIA ENERGY COMMISSION

CERTIFICATE OF COMPLIANCE — NRCC-MCH-E

Project Name: Santa Maria - Administrative RTU Replacements and BAS Upgrade	Report Page: (Page 22 of 22)
Project Address:	Date Prepared: 2025-04-28T12:33:46-04:00

DOCUMENTATION AUTHOR'S DECLARATION STATEMENT

I certify that this Certificate of Compliance documentation is accurate and complete.

Documentation Author Name:	Documentation Author Signature:
Company:	Signature Date:
Address:	City, State, Zip:
Phone:	

RESPONSIBLE PERSON'S DECLARATION STATEMENT

I certify the following under penalty of perjury, under the laws of the State of California:

1. The information provided on this Certificate of Compliance is true and correct.
2. I am responsible for the building design as specified on this Certificate of Compliance.
3. The building design features and specifications incorporated into the building are consistent with the information provided on other applicable compliance documents, worksheets, calculations, plans and specifications submitted to the enforcement agency for approval with this building permit application.
4. The building design conforms to all applicable mandatory requirements.
5. I will ensure that a certificate of installation will be made available to the enforcement agency for all applicable measures listed in the Certificate of Compliance.
6. I will ensure that a certificate of verification will be made available to the enforcement agency for all applicable measures listed in the Certificate of Compliance.

Responsible Person's Name:	Responsible Person's Signature:
Company:	Signature Date:
Address:	
City, State, Zip:	Phone:

Generated Date/Time: Documentation Software: Energy Code Ace

CA Building Energy Efficiency Standards - 2022 Nonresidential Compliance — Report Version: 2022.0.000 — Schema Version: rev.2022.0.a3 — Compliance ID: 286934-04-25-v0.12 — Report Generated: 2025-04-28 12:33:54

P2S ENG

Engineering | Energy | Lighting
Code Design | Consulting

p2sinc.com

Consultant

Project Title

Santa Barbara HVAC and BAS
SANTA MARIA ADMIN
Betteravia Government
Administration Building:
511 Lakeside Pkwy,
Santa Maria, CA 93455

Owner

COUNTY OF SANTA BARBARA CALIFORNIA

260 N San Antonio Rd, Santa Barbara, CA 93110

Revisions

Number	Description	Date
	ISSUED FOR BID	05/01/2025

Designed	A R
Drawn	A R
Checked	J L
Approved	-
Date	05/01/2025
Submittal	ISSUED FOR BID
Scale	No Scale

Sheet Title

Title 24 Compliance Forms

Sheet Number

M703-A

P2S No. 24-0295

Space Conditioning Mandatory Measures:

110.1 CERTIFICATION BY MANUFACTURERS
UNIT SPACE CONDITIONING EQUIPMENT (VRF) SHALL ONLY BE INSTALLED IF CERTIFIED TO THE ENERGY COMMISSION TO MEET ALL APPLICABLE §110.2 REQUIREMENTS

§110.2(a) SPACE CONDITIONING EQUIPMENT EFFICIENCY
EQUIPMENT SHALL MEET APPLICABLE EFFICIENCY REQUIREMENTS IN TABLE 110.2-A THROUGH TABLE 110.2-N

§110.2(b) HEAT PUMPS WITH SUPPLEMENTARY ELECTRIC RESISTANCE HEAT
HEAT PUMPS WITH SUPPLEMENTARY ELECTRIC RESISTANCE HEATERS SHALL HAVE CONTROLS THAT PREVENT SUPPLEMENTARY HEATER OPERATION WHEN THE HEATING LOAD CAN BE MET BY THE HEAT PUMP ALONE EXCEPT DURING TEMPERATURE (OR COMPRESSION HEATING) SHALL BE HIGHER THAN THAT FOR SUPPLEMENTARY HEATING. EVEN DURING TEMPERATURE (OR COMPRESSION HEATING) SHALL BE HIGHER THAN THAT FOR SUPPLEMENTARY HEATING

§110.2(c) SETBACK THERMOSTATS
ALL HEATING OR COOLING SYSTEMS NOT CONTROLLED BY A CENTRAL ENERGY MANAGEMENT CONTROL SYSTEM (EMCS) SHALL HAVE A SETBACK THERMOSTAT WITH CLOCK MECHANISM THAT ALLOWS THE BUILDING OCCUPANT TO PROGRAM THE TEMPERATURE SETPOINTS FOR AT LEAST FOUR PERIODS WITHIN 24 HOURS

§110.5 PILOT LIGHTS PROHIBITED FOR NATURAL GAS EQUIPMENT
PILOT LIGHTS ARE PROHIBITED ON NATURAL GAS FAN TYPE CENTRAL FURNACES, POOL HEATERS, SPA HEATERS, AND FIREPLACES

§110.6(a) INSULATION CERTIFICATION
INSTALLED INSULATION SHALL BE CERTIFIED BY THE DEPARTMENT OF CONSUMER AFFAIRS PER TITLE 24, PART 12, CHAPTERS 12-13, ARTICLE 3 "STANDARDS FOR INSULATING MATERIAL"

§110.6(b) UREA FORMALDEHYDE INSULATION
UREA FORMALDEHYDE INSULATION SHALL NOT BE INSTALLED UNLESS IN EXTERIOR NON WALLS WITH A FOAM SKIN THICK PLASTIC POLYETHYLENE VAPOR RETARDER OR EQUIVALENT PLASTIC SHEATHING MATERIAL BEING INSTALLED BETWEEN THE UREA FORMALDEHYDE FOAM INSULATION AND THE INTERIOR SPACE

§110.8(a) INSULATING MATERIAL
ALL INSULATING MATERIALS SHALL BE INSTALLED IN COMPLIANCE WITH THE FLAME SPREAD RATING AND SMOKE DENSITY REQUIREMENTS OF THE CALIFORNIA BUILDING CODE.

§110.8(d) DUCTS
IF INSULATION IS INSTALLED ON AN EXISTING SPACE CONDITIONING DUCT IT SHALL COMPLY WITH SECTION 604 OF THE EMC.

§120.1(a) GENERAL VENTILATION AND INDOOR AIR QUALITY REQUIREMENTS
ALL OCCUPABLE SPACES IN HOTEL/MOTEL AND NONRESIDENTIAL BUILDINGS OTHER THAN HEALTHCARE SHALL COMPLY WITH APPLICABLE REQUIREMENTS OF §120.1(b) THROUGH (g). THE REQUIRED OUTDOOR AIR VENTILATION RATE AND AIR DISTRIBUTION SYSTEM DESIGN SHALL BE CLEARLY IDENTIFIED ON THE PLANS.

Space Conditioning Mandatory Measures:

120.1(b) NONRESIDENTIAL AND HOTEL/MOTEL BUILDINGS ALL OCCUPIABLE SPACES SHALL MEET THE FOLLOWING 120.1(b)1 AIR FILTRATION REQUIREMENTS, AND EITHER §120.1(b)2 NATURAL VENTILATION, OR §120.1(b)3 MECHANICAL VENTILATION.
A. THE FOLLOWING SYSTEM TYPES SHALL BE PROVIDED WITH AIR FILTERS TO CLEAN OUTSIDE AND RETURN AIR PRIOR TO INTRODUCTION INTO OCCUPIED SPACES
a. NEWLY INSTALLED MECHANICAL SPACE CONDITIONING SYSTEMS THAT USE FORCED AIR DUCTS >300 FT CONN TO SUPPLY AIR TO AN OCCUPIABLE SPACE
b. MECHANICAL SUPPLY ONLY VENTILATION SYSTEMS THAT PROVIDE OUTSIDE AIR TO AN OCCUPIABLE SPACE
c. THE SUPPLY SIDE OF MECHANICAL BALANCED VENTILATION SYSTEMS, INCLUDING HEAT RECOVERY VENTILATION SYSTEMS AND ENERGY RECOVERY VENTILATION SYSTEMS, THAT PROVIDE OUTSIDE AIR TO AN OCCUPIABLE SPACE.
B. AIR FILTERS SHALL HAVE EFFICIENCY >= MERV 13 WHEN TESTED PER ASHRAE STANDARD 52.2 OR A PARTICLE SIZE EFFICIENCY RATING PER 120.1(b)1B.
C. SYSTEM AIR FILTERS SHALL BE EITHER
a. NOMINAL 2 INCH MINIMUM DEPTH, OR
b. NOMINAL 1 INCH MINIMUM DEPTH, IF SIZED PER EQUATION 120.1-A BASED ON A MAXIMUM FACE VELOCITY OF 350 FT/MIN

§120.1(c)2 NATURAL VENTILATION
NATURALLY VENTILATED SPACES SHALL BE DESIGNED IN ACCORDANCE WITH 120.1(c)2A THROUGH 120.1(c)2E AND INCLUDE A MECHANICAL VENTILATION SYSTEMS DESIGNED IN ACCORDANCE WITH 120.1(c)3

§120.1(c)3 MECHANICAL VENTILATION
OCCUPIABLE SPACES SHALL BE VENTILATED WITH A MECHANICAL VENTILATION SYSTEM CAPABLE OF PROVIDING AN OUTDOOR AIRFLOW RATE (V) >13 CFM/ZONE NO LESS THAN EQUATION 120.1-B

§120.1(d) TIMES OF OCCUPANCY
MINIMUM OUTDOOR AIR RATE SHALL BE MET AT TIMES WHEN THE SPACE IS USUALLY OCCUPIED IN ACCORDANCE WITH §120.1(c)

§120.1(e)1 PRE-OCCUPANCY
THE LESSER OF THE MINIMUM RATE OF OUTDOOR AIR REQUIRED BY SECTION 120.1(c) OR THREE COMPLETE AIR CHANGES SHALL BE SUPPLIED TO THE ENTIRE BUILDING DURING THE 1 HOUR PERIOD IMMEDIATELY BEFORE THE BUILDING IS NORMALLY OCCUPIED

§120.1(e)2 REQUIRED DEMAND CONTROL VENTILATION
DCV CONTROLS ARE REQUIRED FOR A SPACE WITH A DESIGN OCCUPANCY DENSITY >= 25 PEOPLE/1,000 FT2 ▲ THE SYSTEM SERVING THE SPACE HAS ONE OR MORE OF THE FOLLOWING:
- AN AIR ECONOMIZER
- MODULATING OUTSIDE AIR CONTROL
- DESIGN OUTDOOR AIRFLOW RATE > 1,000 CFM

§120.1(f) DESIGN AND CONTROL REQUIREMENTS FOR QUANTITIES OF OUTDOOR AIR
§120.1(f)1 ALL MECHANICAL VENTILATION AND SPACE CONDITIONING SYSTEMS SHALL BE DESIGNED WITH AND HAVE INSTALLED DUCTWORK, DAMPERS, AND CONTROLS TO ALLOW OA RATES TO BE OPERATED AT NO LESS THAN THE LARGER OF: 120.1(c)3 MINIMUMS OR THE RATE REQUIRED FOR MAKE UP OF EXHAUST SYSTEMS FOR AN EXHAUST OR COVERED PROCESS, CONTROL OF ODORS, OR CONTAMINANT REMOVAL IN A SPACE.
§120.1(f)3 MEASURED OR RATED OF CONSTANT VOLUME SYSTEMS SHALL BE TESTED FOR AND THE INSTALLED TO OPERATE WITHIN 10% OF THE DESIGN MINIMUM OUTSIDE AIR RATE.

§120.1(g) AIR CLASSIFICATION AND RECIRCULATION LIMITATIONS
AIR CLASSIFICATION AND RECIRCULATION LIMITATIONS OF AIR SHALL BE BASED ON TABLE 120.1-A OR TABLE 170.1-C, AND IN ACCORDANCE WITH 120.1(g)1 THROUGH 4

Space Conditioning Mandatory Measures:

§120.4(a) THERMOSTAT CONTROLS
HEATING AND COOLING SUPPLY TO EACH SPACE CONDITIONING ZONE OR DWELLING UNIT SHALL BE CONTROLLED BY AN INDIVIDUAL THERMOSTATIC CONTROL THAT RESPONDS TO TEMPERATURE IN THE ZONE AND MEETS §120.2(a) REQUIREMENTS

§120.2(b) ZONAL THERMOSTAT CONTROLS
§120.2-A2 THERMOSTATIC CONTROLS FOR ALL SINGLE ZONE AIR CONDITIONERS AND HEAT PUMPS SHALL COMPLY WITH THE REQUIREMENTS OF §110.2(c) AND §110.12(a) AND, IF EQUIPPED WITH DDC TO THE ZONE LEVEL WITH THE AUTOMATIC DEMAND SHED CONTROLS OF §110.12(c)

§120.2(d) HEAT PUMP CONTROLS
ALL HEAT PUMPS WITH SUPPLEMENTAL ELECTRIC RESISTANCE HEATERS SHALL BE INSTALLED WITH CONTROLS THAT MEET §110.2(b) REQUIREMENTS

§120.2(e)1 AUTOMATIC SHUT-OFF FOR SPACE-CONDITIONING SYSTEMS
EACH SPACE-CONDITIONING SYSTEM SHALL BE INSTALLED WITH ONE OF THE FOLLOWING CONTROLS CAPABLE OF AUTOMATICALLY SHUTTING OFF THE SYSTEM DURING PERIODS OF NONUSE:
- AUTOMATIC TIME SWITCH CONTROL PER 120.9, WITH ACCESSIBLE MANUAL OVERRIDE ALLOWING SYSTEM OPERATION FOR UP TO 4 HOURS, OR
- AN OCCUPANCY SENSOR, OR
- A 4 HOUR TIMER THAT CAN BE MANUALLY OPERATED

§120.2(e)2 AUTOMATIC RESTART FOR SPACE-CONDITIONING SYSTEMS
EACH SPACE CONDITIONING SYSTEM SHALL BE INSTALLED WITH CONTROLS THAT SHALL AUTOMATICALLY RESTART AND TEMPORARILY OPERATE THE SYSTEM AS REQUIRED TO MAINTAIN
- §120.2(e)2A A SETBACK HEATING THERMOSTAT SETPOINT IF THE SYSTEM PROVIDES MECHANICAL HEATING, AND
- §120.2(e)2B A SETUP COOLING THERMOSTAT SETPOINT IF THE SYSTEM PROVIDES MECHANICAL COOLING

§120.2(f) DAMPERS FOR AIR SUPPLY AND EXHAUST EQUIPMENT
OUTDOOR AIR SUPPLY AND EXHAUST EQUIPMENTS SHALL BE INSTALLED WITH DAMPERS, THAT AUTOMATICALLY CLOSE UPON FAN SHUTDOWN

Space Conditioning Mandatory Measures:

§120.5(a) AUTOMATIC DEMAND SHED CONTROLS
SHALL MEET REQUIREMENTS IN §110.12

§110.12(a) DEMAND RESPONSIVE (DR) CONTROL REQUIREMENTS:
1. EITHER CERTIFIED OPENADR 2.0A, OPENADR 2.0B VIRTUAL END NODE EVENT, OR CERTIFIED BY THE MANUFACTURER AS BEING CAPABLE OF RESPONDING TO A DR SIGNAL FROM A CERTIFIED OPENADR 2.0B VIRTUAL END NODE BY AUTOMATICALLY IMPLEMENTING THE CONTROL FUNCTIONS REQUESTED BY THE VIRTUAL END NODE FOR THE EQUIPMENT IT CONTROLS
2. CAPABLE OF COMMUNICATING USING WI-FI, ZIGBEE, BLUETOOTH, ETHERNET, AND/OR HARD WIRED
3. AND INCORPORATE AND USE ADDITIONAL PROTOCOLS BEYOND THOSE SPECIFIED IN §110.12(a)1 AND 2.
4. SHALL CONTINUE TO PERFORM ALL OTHER CONTROL FUNCTIONS PROVIDED BY THE CONTROL WHEN COMMUNICATIONS ARE DISABLED
5. THE MANUFACTURER SHALL COMPLY WITH REFERENCE JOINT APPENDIX JA10(c)

§110.12(b) NONRESIDENTIAL HVAC SYSTEMS WITH DDC TO THE ZONE LEVEL SHALL BE PROGRAMMED TO ALLOW CENTRALIZED DEMAND SHED FOR NON CRITICAL ZONES. CONTROLS SHALL BE CAPABLE OF:
1. REMOTELY INCREASING THE OPERATING COOLING TEMPERATURE SETPOINTS BY 4 DEGREES OR MORE IN ALL NON CRITICAL ZONES ON SIGNAL FROM A CENTRALIZED CONTACT OR SOFTWARE POINT WITHIN AN EMCS
2. REMOTELY DECREASING THE OPERATING HEATING TEMPERATURE SETPOINTS BY 4 DEGREES OR MORE IN ALL NON CRITICAL ZONES ON SIGNAL FROM A CENTRALIZED CONTACT OR SOFTWARE POINT WITHIN AN EMCS
3. REMOTELY RESETTING THE TEMPERATURE WALK NON-CRITICAL ZONES TO ORIGINAL OPERATING LEVELS ON SIGNAL FROM A CENTRALIZED CONTACT OR SOFTWARE POINT WITHIN AN EMCS
4. PROVIDING AN ADJUSTABLE RATE OF CHANGE FOR THE TEMPERATURE INCREASE, DECREASE, AND RESET
5. THE FOLLOWING EXEMPTIONS:
   A. DISABLED BY AUTHORIZED FACILITY OPERATORS
   B. MANUAL CONTROL BY AUTHORIZED FACILITY OPERATORS
   C. UPON RECEIPT OF A DR SIGNAL, SPACE CONDITIONING SYSTEMS SHALL CONDUCT A CENTRALIZED DEMAND SHED, AS SPECIFIED IN §110.12(b)1 AND 2 to §110.12, FOR NON CRITICAL ZONES DURING THE DR PERIOD

Space Conditioning Mandatory Measures:

§120.2(i) ECONOMIZER FAULT DETECTION AND DIAGNOSTICS (FDD)
ALL NEW MECHANICALLY COOLED DIRECT EXPANSION UNITS WITH AN AIR HANDLER MECHANICAL COOLING CAPACITY GREATER THAN 33,000 BTU/HR AND AN INSTALLED AIR ECONOMIZER SHALL INCLUDE A STATIC ALONE ON INTEGRATED FDD SYSTEM IN ACCORDANCE WITH THE FOLLOWING
1. TEMPERATURE SENSORS SHALL BE PERMANENTLY INSTALLED TO MONITOR SYSTEM OPERATION: OUTSIDE AIR, SUPPLY AIR, AND WHEN REQUIRED FOR DIFFERENTIAL ECONOMIZER OPERATION, A RETURN AIR SENSOR.
2. TEMPERATURE SENSORS SHALL HAVE AN ACCURACY OF +/- 2°F OVER THE RANGE OF 40 °F TO 80 °F.
3. CONTROLLER SHALL HAVE THE CAPABILITY OF DISPLAYING THE VALUE OF EACH SENSOR AND
4. PROVIDE SYSTEM STATUS BY INDICATING, FREE COOLING AVAILABLE, ECONOMIZER ENABLED, COMPRESSOR ENABLED, HEATING ENABLED (IF AVAILABLE), MIXED AIR LOW LIMIT, CMLL ACTIVE.
5. CONTROLLER SHALL ALLOW MANUAL INITIATION OF EACH OPERATING MODE SO THAT THE OPERATION OF COOLING SYSTEMS, ECONOMIZERS, FANS, AND HEATING SYSTEMS CAN BE VERIFIED. TESTED AND VERIFIED
6. FAULTS SHALL BE REPORTED IN ONE OF THE FOLLOWING WAYS
   - REPORTED TO AN EMCS REGULARLY ATTENDED BY FACILITY STAFF
   - ANNUNCIATED LOCALLY ON THE UNIT OR MORE ZONE THERMOSTATS, OR A DEVICE WITHIN 5 FT OF ZONE THERMOSTAT(S), CLEARLY VISIBLE, AT EYE LEVEL, AND WITH INSTRUCTIONS TO CONTACT APPROPRIATE BUILDING STAFF OR AN HVAC TECHNICIAN (IN BUILDINGS WITH MULTIPLE TENANT). ANNUNCIATION SHALL EITHER BE WITHIN PROPERTY MANAGEMENT OFFICES OR IN A COMMON SPACE ACCESSIBLE BY THE PROPERTY OR BUILDING MANAGER
   - REPORTED TO A FAULT MANAGEMENT APPLICATION WHICH AUTOMATICALLY PROVIDES NOTIFICATION OF THE FAULT TO REMOTE HVAC SERVICE PROVIDER
7. THE FDD SHALL DETECT AIR TEMPERATURE SENSOR FAILURE/FAULT, FAILURE TO ECONOMIZE, ECONOMIZING WHEN NOT ADVISED, DAMPERS NOT MODULATING, AND EXCESSIVE OUTDOOR AIR
8. THE FDD SYSTEM SHALL BE CERTIFIED BY THE ENERGY COMMISSION AS MEETING REQUIREMENTS OF 120.2(i)1 THROUGH 120.2(i)7 IN ACCORDANCE WITH §110.0 AND JOINT APPENDIX JA6.

§120.2(j) DIRECT DIGITAL CONTROLS (DDC)
DDC TO THE ZONE SHALL BE PROVIDED AS SPECIFIED BY TABLE 120.2-A. THE DDC SYSTEM SHALL MEET CUMTOL LOGIC REQUIREMENTS OF 120.2(j)1 THU 12(j)4 AND §110.12(b) AND BE CAPABLE OF ALL OF THE FOLLOWING
1. MONITORING ZONE AND SYSTEM DEMAND FOR FAN PRESSURE, PUMP PRESSURE, HEATING AND COOLING
2. TRANSFERRING ZONE AND SYSTEM DEMAND INFORMATION FROM ZONES TO AIR DISTRIBUTION SYSTEM CONTROLLERS AND FROM AIR DISTRIBUTION SYSTEMS TO HEATING AND COOLING PLANT CONTROLLERS
3. AUTOMATICALLY DETECTING THE ZONES AND SYSTEMS THAT MAY BE EXCESSIVELY DRIVING THE RESET LOGIC AND GENERATE AN ALARM OR OTHER INDICATION TO THE SYSTEM OPERATOR
4. READILY ALLOW OPERATOR REMOVAL OF ZONE(S) FROM THE RESET ALGORITHM
5. FOR NEW BUILDINGS, TRENDING AND GRAPHICALLY DISPLAYING INPUT AND OUTPUT POINTS
6. RESETTING HEATING AND COOLING SETPOINTS IN ALL NON CRITICAL ZONES UPON RECEIPT OF A SIGNAL FROM A CENTRALIZED CONTACT OR SOFTWARE POINT AS DESCRIBED IN §110.12(b)1

Space Conditioning Mandatory Measures:

§120.4(b) OPTIMUM START/STOP CONTROLS
SPACE CONDITIONING SYSTEMS WITH DDC TO THE ZONE SHALL HAVE OPTIMUM START/STOP CONTROLS. CONTROL ALGORITHM SHALL, AS A MINIMUM, BE A FUNCTION OF THE DIFFERENCE BETWEEN SPACE TEMPERATURE AND OCCUPIED SETPOINT, OUTDOOR AIR TEMP, AND AMOUNT OF TIME PRIOR TO SCHEDULED OCCUPANCY

§6.3.5 RADIANT FLOOR SLAB SYSTEMS SHALL INCORPORATE FLOOR TEMPERATURE INTO THE OPTIMUM START ALGORITHM

§120.4 AIR DISTRIBUTION SYSTEM DUCTS AND PLENUMS
PORTIONS OF SUPPLY AND RETURN AIR DUCTS CONVEYING HEATED OR COOLED AIR LOCATED IN ONE OR MORE OF THE FOLLOWING SPACES SHALL BE INSULATED TO A MINIMUM INSTALLED LEVEL OF R-8
- OUTDOORS
- IN A SPACE BETWEEN THE ROOF AND AN INSULATING CEILING
- IN A SPACE DIRECTLY UNDER A ROOF WITH VENTS OR OPENINGS TO THE OUTSIDE OR UNCONDITIONED SPACES
- UNCONDITIONED SPACES, SUCH AS UNVENTILATED CRAWL SPACE

PORTIONS OF SUPPLY AIR DUCTS THAT ARE NOT IN ONE OF THESE SPACES, INCLUDING DUCTS BURIED IN CONCRETE SLAB, SHALL BE INSULATED TO A MINIMUM INSTALLED LEVEL OF R-4.2 (OR ANY HIGHER LEVEL REQUIRED BY CMC 605.0), OR BE ENCLOSED IN DIRECTLY CONDITIONED SPACE.

Space Conditioning Mandatory Measures:

§120.4(c) DUCT AND PLENUM MATERIALS
§120.4(c)1 FACTORY FABRICATED DUCT SYSTEMS MUST:
- COMPLY WITH UL 181 FOR DUCTS AND DUCT MATERIALS AND BE LABELED AS COMPLYING WITH UL 181
- ARE PRESSURE SENSITIVE TAPES, HEAT ACTIVATED TAPES, AND MASTICS USED IN MANUFACTURE OF RIGID FIBERGLASS DUCTS SHALL COMPLY WITH UL 181 AND UL 181A
- ALL PRESSURE SENSITIVE TAPES, AND MASTICS USED IN MANUFACTURE OF FLEXIBLE DUCTS SHALL COMPLY WITH UL 181 AND UL 181B
- JOINTS AND SEAMS SHALL NOT BE SEALED WITH CLOTH BACK RUBBER ADHESIVE DUCT TAPE UNLESS COMBINED WITH MASTICS AND DRAWBANDS

FIELD FABRICATED DUCT SYSTEMS
- FACTORY MADE RIGID FIBERGLASS AND FLEXIBLE DUCTS FOR FIELD FABRICATED DUCT SYSTEMS SHALL COMPLY WITH UL 181. ALL CLOSURE SYSTEMS, INCLUDING PRESSURE SENSITIVE TAPES, HEAT ACTIVATED TAPES, MASTICS, AND AEROSOL SEALANTS, SHALL MEET THE APPLICABLE REQUIREMENTS OF UL 181, UL 181A AND UL 181B
- MASTIC SEALANTS SHALL
  - COMPLY WITH APPLICABLE REQUIREMENTS OF UL 181, UL 181A, AND UL 181B AND BE NONTOXIC AND WATER RESISTANT
  - PASS ASTM C731 AND D2202, IF USED IN BUILDING INTERIOR
  - PASS ASTM C731, C732, AND D2202, IF USED ON EXTERIOR
  - SEALANTS AND RESINS SHALL BE RATED FOR EXTERIOR USE.
- PRESSURE SENSITIVE TAPES SHALL COMPLY WITH APPLICABLE REQUIREMENTS IN UL 181, UL 181A, AND UL 181B
- JOINTS AND SEAMS SHALL NOT BE SEALED WITH CLOTH BACK RUBBER ADHESIVE DUCT TAPES UNLESS COMBINED WITH MASTICS AND DRAWBANDS.
- DRAWBANDS USED WITH FLEXIBLE DUCTS SHALL:
  - BE EITHER STAINLESS STEEL WORM-DRIVE HOSE CLAMPS OR UV RESISTANT NYLON DUCT TIES
  - HAVE A MINIMUM TENSILE STRENGTH RATING OF 150 LBS
  - BE TIGHTENED AS RECOMMENDED BY THE MANUFACTURER
- AEROSOL SEALANT CLOSURES SHALL:
  - MEET REQUIREMENTS OF UL 723 AND BE APPLIED ACCORDING TO MANUFACTURER'S SPECIFICATIONS
  - TAPES OR MASTICS USED IN COMBINATION WITH AEROSOL SEALING SHALL COMPLY WITH APPLICABLE REQUIREMENTS OF UL 181, UL 181A, AND UL 181B. ASTM C731, C732 AND D2202

§120.4(c)
ALL DUCT INSULATION PRODUCTS INSTALLED TO MEET THIS REQUIREMENT MUST INCLUDE LABELS (MAX INTERVALS OF 3 FT) SHOWING THERMAL RESISTANCE (R-VALUE) FOR THE DUCT INSULATION ITSELF BASED ON TESTS IN §120.4(c)1 AND INSTALLED THICKNESS DETERMINED BY §120.4(d)1E

§120.4(c)
INSULATED FLEXIBLE DUCT PRODUCTS INSTALLED TO MEET THIS REQUIREMENT MUST INCLUDE LABELS (MAX INTERVALS OF 3 FT) SHOWING THERMAL RESISTANCE (R-VALUE) FOR THE DUCT INSULATION ITSELF BASED ON TESTS IN §120.4(c)1 AND INSTALLED THICKNESS DETERMINED BY §120.4(d)1E

Space Conditioning Mandatory Measures:

§120.4(f) PROTECTION OF INSULATION
INSULATION SHALL BE PROTECTED FROM DAMAGE BY SUNLIGHT, MOISTURE, EQUIPMENT MAINTENANCE AND WIND. CELLULAR FOAM INSULATION SHALL BE PROTECTED, OR BE PAINTED WITH A WATER RETARDANT COATING THAT PROVIDES SHIELDING FROM SOLAR RADIATION

P2S ENG
p2sinc.com

Consultant

Project Title
Santa Barbara HVAC and BAS
SANTA MARIA ADMIN
Betteravia Government Administration Building.
511 Lakeside Pkwy,
Santa Maria, CA 93455

Owner

260 N San Antonio Rd, Santa Barbara, CA 93110

Revisions		
Number	Description	Date
	ISSUED FOR BID	05/01/2025

Designed	AR
Drawn	AR
Checked	JL
Approved	-
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Submittal	ISSUED FOR BID
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SPECIFICATIONS

Docusign Envelope ID: 17CE9CA1-680B-446D-A24A-6403D2AC0C25

Santa Barbara HVAC and BAS

Santa Barbara County Project #23008

P2S PROJECT: 24-0295

Bid Specifications

28 May 2025

P2S
5000 East Spring Street
Eighth Floor
Long Beach, CA

A LEGENCE Company

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SECTION 01 11 00 - SUMMARY OF WORK

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Project information.
2. Work covered by Contract Documents.
3. Work performed by Owner.
4. Work under Owner's separate contracts.
5. Owner-furnished/Contractor-installed (OFCI) products.
6. Owner-furnished/Owner-installed (OFOI) products. 7.Contractor-furnished/Owner-installed (CFOI) products. 8.Contractor's use of site and premises.
7. Coordination with occupants.
8. Work restrictions.
9. Specification and Drawing conventions.
10. Miscellaneous provisions.

B. Related Requirements:

1. Section 015000 "Temporary Facilities and Controls" for limitations and procedures governing temporary use of Owner's facilities.
2. Section 017300 "Execution" for coordination of Owner-installed products.

1.2 DEFINITIONS

A. Work Package: A group of specifications, drawings, and schedules prepared by the design team to describe a portion of the Project Work for pricing, permitting, and construction.

1.3 PROJECT INFORMATION

A. Project Identification: BWell Tecolote House Renovation

1. Project Location: 310 Camino Del Remedio, Santa Barbara CA, 93110.

B. Owner: County of Santa Barbara, General Services, Capital Projects

1. Owner's Project Manager / County Designated Representative (PM/CDR): Lou Gibilisco lgibilisco@countyofsb.org

C. Architect: studio 2G Architects.

1. Architect's Representative: Laura Gough laura@studio-2g.com, Ashley Mayou ashley@studio-2g.com

D. CI. Construction Manager / County Designated Representative (CM/CDR): Lou Gibilisco lgibilisco@countyofsb.org

1. Construction Manager / County Designated Representative (CM/ CDR) :Lou Gibilisco lgibilisco@countyofsb.org
2. Construction Manager (CM/CDR) has been engaged for this Project to serve as an advisor to Owner and provide assistance in administering the Contract for construction between Owner and Contractor, according to a separate contract between Owner and Construction Manager.
   a. Construction Manager (CM/CDR)also serves as Project coordinator, as defined in Section 011200 "Multiple Contract Summary."
3. Construction Manager for this Project is Project's constructor. The terms "Construction Manager (CM)" "County Designated Representative (CDR)" and "Constructor" and Project Manager (PM) are synonymous.

E. CII. Project Coordinator for Multiple Contracts: Owner shall serve as Project coordinator.

F. CIII. Web-Based Project Software: Project software will be used for purposes of managing communication and documents during the construction stage.

1. See Section 013100 "Project Management and Coordination." for requirements for using web-based Project software.

1.4 WORK COVERED BY CONTRACT DOCUMENTS

A. The Work of Project is defined by the Contract Documents and includes, but is not limited to, the following:

1. The project includes the renovation of tecolote house, a board and care facility for people requiring residential **Behavioral health support,** and other Work indicated in the Contract Documents.

B. Type of Contract:

1. Project will be constructed under a single prime contract.

1.5 WORK PERFORMED BY OWNER

A. Cooperate fully with Owner, so work may be carried out smoothly, without interfering with or delaying Work under this Contract or work by Owner. Coordinate the Work of this Contract with work performed by Owner.

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1.6 OWNER-FURNISHED/CONTRACTOR-INSTALLED (OFCI) PRODUCTS

A. Owner's Responsibilities: Owner will furnish products indicated and perform the following, as applicable:

1. Provide to Contractor Owner-reviewed Product Data, Shop Drawings, and Samples.
2. Provide for delivery of Owner-furnished products to Project site.
3. Upon delivery, inspect, with Contractor present, delivered items.
   a. If Owner-furnished products are damaged, defective, or missing, arrange for replacement.
4. Obtain manufacturer's inspections, service, and warranties.
5. Inform Contractor of earliest available delivery date for Owner-furnished products.

B. Contractor's Responsibilities: The Work includes the following, as applicable:

1. Designate delivery dates of Owner-furnished products in Contractor's construction schedule, utilizing Owner-furnished earliest available delivery dates.
2. Review Owner-reviewed Product Data, Shop Drawings, and Samples, noting discrepancies and other issues in providing for Owner-furnished products in the Work.
3. Receive, unload, handle, store, protect, and install Owner-furnished products.
4. Make building services connections for Owner-furnished products.
5. Protect Owner-furnished products from damage during storage, handling, and installation and prior to Substantial Completion.
6. Repair or replace Owner-furnished products damaged following receipt.

C. Owner-Furnished/Contractor-Installed (OFCI) Products:

1. Refer to Sections 01 64 00 and 01 64 00 A.

1.7 OWNER-FURNISHED/OWNER-INSTALLED (OFOI) PRODUCTS

A. The Owner will furnish and install products indicated.

B. Owner-Furnished/Owner-Installed (OFOI) Products:

1. Furniture and Equipment not listed in the Construction Documents.
2. Audio/ Visual Equipment.
3. Network Communication Equipment.

1.8 CONTRACTOR'S USE OF SITE AND PREMISES

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

B. 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.

C. Condition of Existing Grounds: Maintain portions of existing grounds, landscaping, and hardscaping affected by construction operations throughout construction period. Repair damage caused by construction operations.

1.9 WORK RESTRICTIONS

A. Comply with restrictions on construction operations.

1. Comply with limitations on use of public streets, work on public streets, rights of way, and other requirements of authorities having jurisdiction.

B. On-Site Work Hours: Limit work to between 8:00 a.m. to 5:00 PM p.m., Monday through Friday, unless otherwise indicated. Work hours may be modified to meet Project requirements if approved by Owner and authorities having jurisdiction.

1. Weekend Hours: As approved by Owner. Sundays and Legal Holidays are prohibited.
2. Early Morning Hours: As approved by Owner.
3. Work in Existing Building: as approved by Owner.
4. Hours for Utility Shutdowns: as approved by Owner.
5. Hours for Core Drilling As approved by Owner.

C. On-Site Workday Restrictions: Do not perform work on-site during work black-out days indicated in Document 003113 "Preliminary Schedules."

D. 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 for temporary utility services according to requirements indicated:

1. Notify Construction Manage not less than two days in advance of proposed utility interruptions.
2. Obtain Construction Manager's written permission before proceeding with utility interruptions.

E. Noise, Vibration, Dust, and Odors: Coordinate operations that may result in high levels of noise and vibration, dust, odors, or other disruption to Owner occupancy with Owner.

1. Notify Construction Manager not less than [two] days in advance of proposed disruptive operations.
2. Obtain Construction Manager's written permission before proceeding with disruptive operations.

F. Smoking and Controlled Substance Restrictions: Use of tobacco products and other controlled substances on Project site is prohibited.

G. Employee Identification: Contractor to provide identification tags for Contractor personnel working on Project site. Require personnel to use identification tags at all times.

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H. Employee Screening: Comply with Owner's requirements for drug and background screening of Contractor personnel working on Project site.

1. Maintain list of approved screened personnel with Owner's representative.

1.10 SPECIFICATION AND DRAWING CONVENTIONS

A. 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. 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.
2. Text Color: Text used in the Specifications, including units of measure, manufacturer and product names, and other text may appear in multiple colors or underlined as part of a hyperlink; no emphasis is implied by text with these characteristics.
3. Hypertext: Text used in the Specifications may contain hyperlinks. Hyperlinks may allow for access to linked information that is not residing in the Specifications. Unless otherwise indicated, linked information is not part of the Contract Documents.
4. Specification requirements are to be performed by Contractor unless specifically stated otherwise.

B. Division 00 Contracting Requirements: General provisions of the Contract, including General and Supplementary Conditions, apply to all Sections of the Specifications.

C. Division 01 General Requirements: Requirements of Sections in Division 01 apply to the Work of all Sections in the Specifications.

D. 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 Specifications Sections.
2. Abbreviations: Materials and products are identified by abbreviations scheduled on Drawings.
3. Keynoting: Materials and products are identified by reference keynotes referencing Specification Section numbers found in this Project Manual.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION 01 10 00

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SECTION 01 12 20 - WORK RESTRICTIONS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Construction Drawings, Technical Specifications, Addenda, and general provisions of the Contract, including Contract General Conditions and Special Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 CONTRACTOR'S USE OF PREMISES AND SITE, GENERAL

A. CONTRACTOR's Use of Premises and Site, General: Refer to Specifications Section 00 71 00, General Conditions.

1. CONTRACTOR shall always perform Work to impose no hardship on the COUNTY OF SANTA BARBARA nor cause unreasonable delays or hindrance thereto.
2. Construction activities shall be scheduled to minimize disruption to the COUNTY OF SANTA BARBARA users.
3. CONTRACTOR may not interrupt any utilities without prior written permission from the COUNTY OF SANTA BARBARA.

1.3 USE OF PREMISES

A. Use of Site: Limit use of premises to work in areas indicated. Do not disturb portions of site beyond areas in which the Work is indicated.

1. Limits: Confine constructions operations to Project Area indicated on the Drawings. Use of other areas shall be only with the approval of COUNTY OF SANTA BARBARA. Confine constructions operations to Perimeter of Work Area shown on the approved drawings.
2. There may be isolated items that are outside the limits indicated, such as irrigation line connections, site light pole relocations, plant or grading adjustments, utility extensions, and similar items. The scope of items beyond the general limit indicated have been specifically indicated and are to be performed within the scope of the Project.

1.4 CONTRACTOR'S USE OF PROJECT AREA

A. Location of Work: The Work shall be accomplished within areas indicated on Drawings as Project Area or, if not indicated, to areas as directed by COUNTY OF SANTA BARBARA. Use of other areas, including parking areas, shall be subject to approval by COUNTY OF SANTA BARBARA. Refer to Section 01 55 00 Access and Staging for additional requirements.

1. CONTRACTOR shall not unreasonably encumber the site with materials or equipment.
2. CONTRACTOR shall assume full responsibility for protection and safekeeping of products stored on the premises.

B. COUNTY OF SANTA BARBARA or CONTRACTORS performing work under separate contracts for COUNTY OF SANTA BARBARA. Temporary closures or restrictions of use of public thoroughfares, necessary to accomplish the Work, shall be made only as approved in advance by public safety and parking authorities having jurisdiction, as directed in writing by the COUNTY OF SANTA BARBARA.

C. CONTRACTOR's Use of the Project Area: Unless otherwise specified or indicated on the Drawings, during the construction period the CONTRACTOR shall have full use of the designated Project Area for construction operations, including use of the site. CONTRACTOR'S use of Project Area shall be limited only by COUNTY OF SANTA BARBARA right to perform construction operations with its own forces or to employ separate CONTRACTORS on portions of the Project in accordance with the Contract General Conditions.

D. Protection of Existing Improvements and Facilities: CONTRACTOR shall protect property adjacent to the Project Area and all existing improvements and facilities within the Project Area, including paving and landscaping indicated to remain.

1. All existing improvements and facilities, except those specifically indicated for removal or reconstruction, shall be protected with temporary barriers, enclosures, and passageways. Refer to additional requirements specified in Section 01 56 00 - Temporary Barriers and Enclosures.
2. After completion of Work, existing improvements and facilities shall be restored to original condition and location. Project Area shall be cleaned and restored to acceptable condition, identical to or better than the condition prior to start of Work.
3. Should existing improvements and facilities be damaged or soiled beyond renovation or repair, new products shall be provided by CONTRACTOR equivalent to existing products, as directed by COUNTY OF SANTA BARBARA.
4. Project Area Access: Limit access to site to indicated routes and access points as indicated. If routes and access points are not indicated, access shall be as approved and as directed by COUNTY OF SANTA BARBARA.
5. Access to and egress from Project Area shall be in strict conformance to prearranged routes approved by COUNTY OF SANTA BARBARA, with the understanding that curtailment of construction traffic or revision of access routes may be required on short notice if COUNTY OF SANTA BARBARA's operations mandate such changes because of excessive noise or problems of safety, service, or supply.
6. Driveways and Entrances: Keep driveways and entrances serving premises clear and available to service 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.
    b. Schedule deliveries to minimize space and time requirements for storage of materials and equipment on-site.

E. Emergency Access: Provide pathways, drives, gates, directional signage and other provisions as required by authorities having jurisdiction for emergency access to Project Area and adjoining campus facilities.

F. Emergency Egress: Maintain all pathways, drives, gates, and other means of egress during construction as required by public safety authorities having jurisdiction.

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1.5 WORK HOURS AND UTILITY RESTRICTIONS

A. CONTRACTOR's Work Hours: Work hours shall be from 8:00 am to 5:00 pm Monday through Friday, any exceptions or changes must be requested in writing at least two working days in advance and approved by the COUNTY OF SANTA BARBARA. Work on other days and at other hours shall be only with written approval of COUNTY OF SANTA BARBARA.

1. If it becomes necessary to perform Work on weekends and holidays, to meet milestone and final completion dates, Work shall be performed at no change in Contract Amount unless authorized by written Change Order or Field Instruction.
2. No grading on weekends or holidays unless approved in writing by COUNTY OF SANTA BARBARA.

B. Utility Outages and Shutdown: Schedule utility outages and shutdowns of adjacent COUNTY OF SANTA BARBARA occupied facilities, if necessary and applicable, to dates acceptable to and approved by COUNTY OF SANTA BARBARA. Time and duration of outages and shutdowns shall not hinder normal activities except as authorized in writing by COUNTY OF SANTA BARBARA.

1. Provide fourteen (14) calendar days written notice to COUNTY OF SANTA BARBARA of all utility outages and shutdowns. Describe Work to be performed, which utilities will be interrupted and time and duration of interruption.
2. CONTRACTOR shall provide temporary utilities to occupied facilities and adjacent properties when utilities to these facilities must be interrupted for more than two hours, unless otherwise directed by COUNTY OF SANTA BARBARA.
3. Any damage to the existing utility systems caused by the CONTRACTOR, shall be repaired by the CONTRACTOR immediately. If CONTRACTOR is unable to repair the damage in a timely manner, and COUNTY OF SANTA BARBARA personnel are available to fix the damage, the CONTRACTOR will be charged by the COUNTY OF SANTA BARBARA based on the time and material spent to fix the damage. The CONTRACTOR shall be responsible for all consequences resulting from the damage.
4. Refer also to requirements for temporary utilities specified in Section 01 50 00, Construction Facilities and Temporary Controls.

1.6 NOISE AND VIBRATION RESTRICTIONS

A. Noise Restrictions: Construction noise shall not exceed levels defined in local and state noise ordinances. Coordinate construction activities that may exceed levels permitted in local and state ordinances with the COUNTY OF SANTA BARBARA before proceeding with the Work.

B. Vibration Restrictions: Do not perform activities that cause vibrations in adjacent occupied structures, including structures above and below location where Work is performed. If vibrations transmit through site, perform Work at times approved by COUNTY OF SANTA BARBARA.

1.7 COUNTY OF SANTA BARBARA'S USE OF SITE AND PREMISES

A. COUNTY OF SANTA BARBARA's Use of Site and Premises: COUNTY OF SANTA BARBARA reserves the right to occupy and to place and install equipment in completed or partially completed areas of buildings and site. Such placing of equipment and partial occupancy shall not constitute acceptance of the total Work.

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1. Partial COUNTY OF SANTA BARBARA Occupancy: COUNTY OF SANTA BARBARA reserves the right to occupy and to place and install equipment in completed areas of building/site provided such occupancy does not interfere with completion of the Work. Such placement of equipment and partial occupancy shall not constitute acceptance of the total Work.
2. COUNTY OF SANTA BARBARA will issue a written contract Change Order for each specific portion of the Work to be occupied before Final Completion to release the CONTRACTOR of insurance obligations and any special conditions of the partial occupancy.
3. Before partial COUNTY OF SANTA BARBARA occupancy, mechanical, fire life safety and electrical systems shall be fully operational and required tests and inspections shall be successfully completed. Unless otherwise agreed, COUNTY OF SANTA BARBARA will provide operation and maintenance of mechanical, fire life safety and electrical systems in portions of the building used by COUNTY OF SANTA BARBARA. Unless otherwise agreed in writing by the COUNTY OF SANTA BARBARA, warranty periods shall not begin until date established by Notice of Completion filed at Contract closeout.
4. Upon occupancy, COUNTY OF SANTA BARBARA will assume responsibility for maintenance and custodial service for occupied portions of building.
5. Allow vendors and service providers access through site with reasonable notice.

1.8 TRACKING CONTROL

A. Refer to Contract Documents for Erosion Control.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION 01 12 20

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SECTION 01 15 20 - APPLICATIONS FOR PAYMENT

PART 1 - GENERAL

1.1 RELATED REQUIREMENTS

A. Drawings and General Provisions of Contract, including General Conditions and Division 01 Specification Sections, apply to the Work of this Section.

1.2 DESCRIPTION

A. Submit Applications for Payment to COUNTY OF SANTA BARBARA in accordance with the schedule established by Conditions of the Contract and Agreement Between Owner and Contractor.

B. If there is any inconsistency in this document with the provisions in the general conditions and the special conditions that the contractor shall comply with related to changes and/or requests for changes (e.g., "payments," "schedule of values"), those provisions in the general conditions and the special conditions shall take precedence.

1.3 RELATED WORK

A. Lump Sum Price: Agreement Between Owner and Contractor.

B. Progress Payments, Retainages and Final Payment.

C. Special Conditions.

D. Construction Schedule: Section 01 32 13.

E. Schedule of Values: Section 01 29 73.

F. Contract Close-out: Section 01 77 00.

1.4 FORMS

A. Application for each progress payment shall be prepared using the COUNTY OF SANTA BARBARA Forms or other Forms approved by COUNTY OF SANTA BARBARA.

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1.5 SUBMITTAL PROCEDURE

A. The Contractor shall furnish three (3) copies of an itemized breakdown of the contract cost in detail, (Schedule of Values) immediately after the contract is awarded. Each major subcontract is to be identified, rather than just a breakdown by CSI division.

B. Application for Payment and payments shall be delayed when project is not in compliance with permits, or any related instructions given by COUNTY OF SANTA BARBARA. Lack of Project Cleanliness may also delay payment. Weekly broom cleaning required for interior renovations.

C. Before submitting the first Application for Payment, the Contractor shall submit for approval to the COUNTY OF SANTA BARBARA a detailed Schedule of Values of the work. This schedule, once approved by the COUNTY OF SANTA BARBARA, shall be used as a basis for reviewing the Contractor's Applications for Payment.

D. The Contractor starts the monthly payment process by preparing an Application for Payment on the approved form. The Contractor must itemize the application using the Schedule of Values, as modified by fully executed Change Orders.

E. The Contractor shall submit a preliminary "pencil copy" of their payment application request to the COUNTY OF SANTA BARBARA five (5) days before the payment application submittal due date. The Contractor and COUNTY OF SANTA BARBARA shall review the pencil copy and agree to any changes to the pay application.

F. Monthly payment applications shall include documentation showing compliance with CALGreen Construction Waste Management Requirements as may be applicable.

G. COUNTY OF SANTA BARBARA will review the application and authorize payments to the Contractor monthly. The Contractor will be paid 95% of the value of labor and material completed or delivered to the site. Retainage in the amount of 5% will be held on the work completed to date.

H. When the work is found to be complete, including all punch list items, the Contractor shall submit a final application for payment.

I. COUNTY OF SANTA BARBARA shall sign and/or initial all copies of each Application for Payment in the appropriate areas and recommend payment to the COUNTY OF SANTA BARBARA.

J. COUNTY OF SANTA BARBARA shall issue payment to the Contractor in accordance with the approved application amount.

K. All Applications for Payment shall include the following:

1. Statement of Construction progress basis for the Contractor and all Subcontractors and supporting documentation as requested by the COUNTY OF SANTABARBARA.
2. COUNTY OF SANTA BARBARA shall certify that the application is correct and check the accuracy of the percentage of work complete for each line item, the arithmetic for the entire application, including the cost breakdown of the Contract Sum and the provision of items listed in the General Conditions.
3. The Contractor shall submit payroll information in compliance with Contract Documents.

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4. The Contractor shall incorporate all agreed correction(s) and submit the pay application on the due date for approval.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

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SECTION 01 21 00 - ALLOWANCES

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes administrative and procedural requirements governing allowances.

B. Types of allowances include the following:

1. Lump-sum allowances. 2.Unit-cost allowances. 3.Quantity allowances.
2. Contingency allowances.
3. Testing and inspecting allowances.

C. Related Requirements:

1. Section 012200 "Unit Prices" for procedures for using unit prices, including adjustment of quantity allowances when applicable.
2. Section 012600 "Contract Modification Procedures" for procedures for submitting and handling Change Orders.
3. Section 014000 "Quality Requirements" for procedures governing the use of allowances for field testing by an independent testing agency.

1.2 DEFINITIONS

A. Allowance: A quantity of work or dollar amount included in the Contract, established in lieu of additional requirements, used 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.

1.3 SELECTION AND PURCHASE

A. At the earliest practical date after award of the Contract, advise COUNTY of the date when final selection, or purchase and delivery, of each product or system described by an allowance must be completed by the COUNTY OF SANTA BARBARA to avoid delaying the Work.

B. At COUNTY'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.

1.4 ACTION SUBMITTALS

A. Submit proposals for purchase of products or systems included in allowances in the form specified for Change Orders.

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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 LUMP-SUM ALLOWANCES

A. Allowance shall include cost to Contractor of specific products and materials ordered by COUNTY OF SANTA BARBARA or selected by (CM/CDR) and/or Architect under allowance and shall include taxes, freight, and delivery to Project site.

B. Unless otherwise indicated, Contractor's costs for receiving and handling at Project site, labor, installation, overhead and profit, and similar costs related to products and materials ordered by COUNTY OF SANTA BARBARA or selected by (CM/CDR) and/or Architect under allowance shall be included as part of the Contract Sum and not part of the allowance.

C. Unused Materials: Return unused materials purchased under an allowance to manufacturer or supplier for credit to COUNTY OF SANTA BARBARA, after installation has been completed and accepted.

1. If requested by (CM/CDR) and/or Architect, retain, and prepare unused material for storage by COUNTY OF SANTA BARBARA. Deliver unused material to COUNTY OF SANTA BARBARA's storage space as directed.

1.7 UNIT-COST ALLOWANCES

A. Allowance shall include cost to Contractor of specific products and materials ordered by COUNTY OF SANTA BARBARA or selected by (CM/CDR) and/ or Architect under allowance and shall include taxes, freight, and delivery to Project site.

B. Unless otherwise indicated, Contractor's costs for receiving and handling at Project site, labor, installation, overhead and profit, and similar costs related to products and materials ordered by COUNTY OF SANTA BARBARA or selected by (CM/CDR) and/or Architect under allowance shall be included as part of the Contract Sum and not part of the allowance.

C. Unused Materials: Return unused materials purchased under an allowance to manufacturer or supplier for credit to COUNTY OF SANTA BARBARA, after installation has been completed and accepted.

1. If requested by (CM/CDR) and/or Architect, retain and prepare unused material for storage by COUNTY OF SANTA BARBARA. Deliver unused material to COUNTY OF SANTA BARBARA's storage space as directed.

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1.8 QUANTITY ALLOWANCES

A. Allowance shall include cost to Contractor of specific products and materials ordered by COUNTY OF SANTA BARBARA or selected by (CM/CDR) and/or Architect under allowance and shall include taxes, freight, and delivery to Project site.

B. Unless otherwise indicated, Contractor's costs for receiving and handling at Project site, labor, installation, overhead and profit, and similar costs related to products and materials ordered by COUNTY OF SANTA BARBARA or selected by (CM/CDR) and/or Architect under allowance shall be included as part of the Contract Sum and not part of the allowance.

C. Unused Materials: Return unused materials purchased under an allowance to manufacturer or supplier for credit to COUNTY OF SANTA BARBARA, after installation has been completed and accepted.

1. If requested by (CM/CDR) and/or Architect, retain and prepare unused material for storage by COUNTY OF SANTA BARBARA. Deliver unused material to COUNTY OF SANTA BARBARA's storage space as directed.

1.9 CONTINGENCY ALLOWANCES

A. Use the contingency allowance only as directed by (CM/CDR) and/or Architect for COUNTY OF SANTA BARBARA's purposes and only by Change Orders that indicate amounts to be charged to the allowance.

B. Contractor's overhead, profit, and related costs for products and equipment ordered by COUNTY OF SANTA BARBARA under the contingency allowance are included in the allowance and are not part of the Contract Sum. These costs

C. 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.

E. At Project closeout, credit unused amounts remaining in the contingency allowance to COUNTY OF SANTA BARBARA by Change Order.

1.10 TESTING AND INSPECTING ALLOWANCES

A. Testing and inspecting allowances include the cost of engaging testing agencies, actual tests and inspections, and reporting results.

B. The allowance does not include incidental labor required to assist the testing agency or costs for retesting if previous tests and inspections result in failure. The cost for incidental labor to assist the testing agency shall be included in the Contract Sum.

C. Costs of testing and inspection services not specifically required by the Contract Documents are Contractor responsibilities and are not included in the allowance.

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D. At Project closeout, credit unused amounts remaining in the testing and inspecting allowance to COUNTY OF SANTA BARBARA by Change Order.

1.11 ADJUSTMENT OF ALLOWANCES

A. Allowance Adjustment: To adjust allowance amounts, prepare a Change Order proposal 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, required maintenance materials, 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 markups.
3. Submit substantiation of a change in scope of Work, if any, claimed in Change Orders related to unit-cost allowances.
4. COUNTY OF SANTA BARBARA reserves the right to establish the quantity of work-in-place by independent quantity survey, measure, or count.

B. Submit claims for increased costs due to a change in the 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.

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3.3 SCHEDULE OF ALLOWANCES

A. Allowance No. 1: Contingency Allowance: Include a contingency allowance of $100,000.00 for use according to COUNTY OF SANTA BARBARA's written instructions.

B. Allowance No. 2: Testing and Inspection Allowance: Include the sum of at least $30,000.00 to cover costs for Cultural Resources Consultant, soils, compaction, concrete testing (including slump & breaks), structural observations, epoxy, rebar tests, roofing, waterproofing and special inspections to be provided by a licensed third-party inspector and/or testing agency/lab, as specified on Plans, all Specifications, including Section 014523, 014527 and in Section 033000 "Cast-in-Place Concrete.

END OF SECTION 01 21 00

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SECTION 01 23 00 - ALTERNATES

PART 1 - SUMMARY

A. Section includes administrative and procedural requirements for alternates.

1.2 DEFINITIONS

A. Alternate: An amount proposed by bidders and stated on the Bid Form for certain work defined in the bidding requirements that may be added to or deducted from the base bid amount if the Owner decides to accept a corresponding change either in the amount of construction to be completed or in the products, materials, equipment, systems, or installation methods described in the Contract Documents.

1. Alternates described in this Section are part of the Work only if enumerated in the Agreement.
2. The cost or credit for each alternate is the net addition to or deduction from the Contract Sum to incorporate alternates into the Work. No other adjustments are made to the Contract Sum.

1.3 PROCEDURES

A. Coordination: Revise or adjust affected adjacent work as necessary to completely integrate work of the alternate into Project.

1. Include as part of each alternate, miscellaneous devices, accessory objects, and similar items incidental to or required for a complete installation whether or not indicated as part of alternate.

B. Execute accepted alternates under the same conditions as other work of the Contract.

C. Schedule: A schedule of alternates is included at the end of this Section. Specification Sections referenced in schedule contain requirements for materials necessary to achieve the work described under each alternate.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION

3.1 SCHEDULE OF ALTERNATES

A. Alternate No. 1

1. Base Bid: No Privacy Wall provided at the new Patio.
2. Alternate: (N) CMU Privacy Wall at Patio

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B. Alternate No. 2

1. Base Bid: Restroom slab to remain as existing with no new floor drain. No new medical hose supply box. No new tile walls throughout, gypsum to match other restrooms.
2. Alternate: Wet Room - Slope floor to drain, waterproofing of entire room with non- slip ceramic tile, (N) medical hose supply box for wash down. Refer to plan set for more information.

END OF SECTION 01 23 00

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SECTION 01 25 00 - SUBSTITUTION PROCEDURES

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes administrative and procedural requirements for substitutions.

B. Related Requirements:

1. Section 012100 "Allowances" for products selected under an allowance.
2. Section 012300 "Alternates" for products selected under an alternate.
3. Section 016000 "Product Requirements" for requirements for submitting comparable product submittals for products by listed manufacturers.

1.2 DEFINITIONS

A. Substitutions: Changes in products, materials, equipment, and methods of construction from those required by the Contract Documents.

1. Substitutions 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. Substitutions for Convenience: Changes proposed by Contractor or Owner that are not required to meet other Project requirements but may offer advantage to Contractor or Owner.

1.3 ACTION SUBMITTALS

A. Substitution Requests: Submit documentation identifying product or fabrication or installation method to be replaced. Include Specification Section number and title and Drawing numbers and titles.

1. Substitution Request Form: Use form acceptable to or provided by Architect, (CM/CDR) and/or COUNTY OF SANTA BARBARA.
2. Documentation: Show compliance with requirements for substitutions and the following, as applicable:
   a. Statement indicating why specified product or fabrication or installation method cannot be provided, if applicable.
   b. Coordination of information, including a list of changes or revisions
   c. needed to other parts of the Work and to construction performed by Owner and separate contractors that will be necessary to accommodate proposed substitution.
   d. Detailed comparison of significant qualities of proposed substitutions 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.

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e. Product Data, including drawings and descriptions of products and fabrication and installation procedures.
f. Samples, where applicable or requested.
g. Certificates and qualification data, where applicable or requested.
h. List of similar installations for completed projects, with project names and addresses as well as names and addresses of architects and owners.
i. Material test reports from a qualified testing agency, indicating and interpreting test results for compliance with requirements indicated.
j. Research reports evidencing compliance with building code in effect for Project, from ICC-ES.
k. Detailed comparison of Contractor's construction schedule using proposed substitutions 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.
l. Cost information, including a proposal of change, if any, in the Contract Sum.
m. 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.
n. 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.

3. Architect's Action: If necessary, Architect will request additional information or documentation for evaluation within seven calendar days of receipt of a request for substitution. Architect will notify Contractor through Construction Manager (CM/CDR) acceptance or rejection of proposed substitution within 15 calendar days of receipt of request, or seven calendar days of receipt of additional information or documentation, whichever is later.
   a. Forms of Acceptance: Change Order, Construction Change Directive, or Architect's Supplemental Instructions for minor changes in the Work.
   b. Use product specified if Architect and/or CM/CDR does not issue a decision on useof a proposed substitution within time allocated.

1.4 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.

1.5 PROCEDURES

A. Coordination: Revise or adjust affected work as necessary to integrate work of the approved substitutions.

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1.6 SUBSTITUTIONS

A. Substitutions for Cause: Submit requests for substitution immediately on discovery of need for change, but not later than 15 calendar days prior to time required for preparation and review of related submittals.

1. Conditions: COUNTY OF SANTA BARBARA will consider Contractor's request for substitution 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:
   a. Requested substitution is consistent with the Contract Documents and will produce indicated results.
   b. Requested substitution provides sustainable design characteristics that specified product provided for compliance with LEED requirements.
   c. Requested substitution provides sustainable design characteristics that specified product provided for compliance with IgCC requirements.
   d. Requested substitution provides sustainable design characteristics that specified product provided for compliance with ASHRAE 189.1 requirements.
   e. Requested substitution provides sustainable design characteristics that specified product provided for compliance with Green Globes requirements.
   f. Substitution request is fully documented and properly submitted.
   g. Requested substitution will not adversely affect Contractor's construction schedule.
   h. Requested substitution has received necessary approvals of authorities having jurisdiction.
   i. Requested substitution is compatible with other portions of the
   j. Work.
   k. Requested substitution has been coordinated with other portions of the Work.
   l. Requested substitution provides specified warranty.
   m. 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:

1. Not allowed unless approved by the COUNTY OF SANTA BARBARA (CM/ CDR).
2. Architect will consider requests for substitution if received within [30] calendar days after the Notice to Proceed. Requests received after that time may be considered or rejected at discretion of OWNER.
   a. Conditions: Architect/COUNTY OF SANTA BARBARA (CM/CDR) will consider Contractor's request for substitution 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) Requested substitution offers Owner a substantial advantage in cost, time, energy conservation, or other considerations,
      2) after deducting additional responsibilities Owner must assume. Owner's additional responsibilities may include compensation to Architect for redesign and evaluation services, increased cost of other construction by Owner, and similar considerations.
      3) Requested substitution does not require extensive revisions to the Contract Documents.
      4) Requested substitution is consistent with the Contract Documents and will produce indicated results.
      5) Requested substitution provides sustainable design characteristics that specified product provided for compliance with LEED requirements.

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6) Requested substitution provides sustainable design characteristics that specified product provided for compliance with IgCC requirements.
7) Requested substitution provides sustainable design characteristics that specified product provided for compliance with ASHRAE 189.1 requirements.
8) Requested substitution provides sustainable design characteristics that specified product provided for compliance with Green Globes requirements.
9) Substitution request is fully documented and properly submitted.
10) Requested substitution will not adversely affect Contractor's
11) construction schedule.
12) Requested substitution has received necessary approvals of authorities having jurisdiction.
13) Requested substitution is compatible with other portions ofthe Work.
14) Requested substitution has been coordinated with other portions of the Work.
15) Requested substitution provides specified warranty.
16) 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.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION 01 25 00

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SECTION 01 26 00 - CONTRACT MODIFICATION PROCEDURES

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes administrative and procedural requirements for handling and processing Contract modifications.

B. Related Requirements:

1. Section 012500 "Substitution Procedures" for administrative procedures for handling requests for substitutions made after the Contract award.
2. Section 013100 "Project Management and Coordination" for requirements for forms for contract modifications provided as part of web-based Project management software.

1.2 MINOR CHANGES IN THE WORK

A. Architect will issue through Construction Manager/ supplemental instructions authorizing minor changes in the Work, not involving adjustment to the Contract Sum or the Contract Time, on form approved by COUNTY OF SANTA BARBARA.

1.3 PROPOSAL REQUESTS

A. Owner-Initiated Proposal Requests: Construction Manager 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. Work Change Proposal Requests issued by Construction Manager are not instructions either to stop work in progress or to execute the proposed change.
2. Within 14 calendar days, after receipt of Proposal Request, submit a quotation estimating cost adjustments to the Contract Sum and the Contract Time necessary to execute the change.
   a. 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.
   b. Indicate applicable taxes, delivery charges, equipment rental, and amounts of trade discounts.
   c. Include costs of labor and supervision directly attributable to the change.
   d. 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.
   e. Quotation Form: Use forms provided or approved by Owner.

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B. Contractor-Initiated Proposals: If latent or changed conditions require modifications to the Contract, Contractor may initiate a claim by submitting a request for a change to Construction Manager.

1. 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.
2. 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.
3. Indicate applicable taxes, delivery charges, equipment rental, and amounts of trade discounts.
4. Include costs of labor and supervision directly attributable to the change.
5. 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.
6. Comply with requirements in Section 012500 "Substitution Procedures" if the proposed change requires substitution of one product or system for product or system specified.
7. Proposal Request Form: Use form provided or approved by Owner..

1.4 ADMINISTRATIVE CHANGE ORDERS

A. Allowance Adjustment: See Section 012100 "Allowances" for administrative procedures for preparation of Change Order Proposal for adjusting the Contract Sum to reflect actual costs of allowances.

B. Unit-Price Adjustment: See Section 012200 "Unit Prices" for administrative procedures for preparation of Change Order Proposal for adjusting the Contract Sum to reflect measured scope of unit-price work.

1.5 CHANGE ORDER PROCEDURES

A. On Owner's approval of a Work Change Proposal Request, Construction Manager will issue a Change Order for signatures of Owner and Contractor on form approved by Owner .

1.6 CONSTRUCTION CHANGE DIRECTIVE

A. Construction Change Directive: Construction Manager may issue a Construction Change Directive form provided or approved by Owner. 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. Documentation: Maintain detailed records on a time and material basis of work required by the Construction Change Directive.

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1. After completion of change, submit an itemized account and supporting data necessary to substantiate cost and time adjustments to the Contract.

1.7 WORK CHANGE DIRECTIVE

A. Work Change Directive: Construction Manager may issue a Work Change Directive on form approved or provided by Owner . Work Change Directive instructs Contractor to proceed with a change in the Work, for subsequent inclusion in a Change Order.

1. Work 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. Documentation: Maintain detailed records on a time and material basis of work required by the Work Change Directive.

1. After completion of change, submit an itemized account and supporting data necessary to substantiate cost and time adjustments to the Contract.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION 01 26 00

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SECTION 01 26 13 - REQUEST FOR CLARIFICATION (RFC)

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Construction Drawings, Technical Specifications, Addenda, and general provisions of the Contract, including Contract General Conditions and Supplementary General Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SECTION INCLUDES

A. Procedures for submitting requests for clarification (RFC).

B. Limitations on use of RFC to obtain clarification and clarification.

1.3 RELATED SECTIONS

A. Section 01 31 13 - Coordination: Requirements for organizing and coordinating the Work.

B. Section 01 33 00 - Submittals Procedures: Restriction on use of submittals for changes in materials, products, equipment and systems.

C. Section 01 63 00 - Product Substitution Procedures: Procedures for requesting substitutions of materials, products, equipment, and systems.

D. Section 01 31 26 – Electronic Communications Protocol.

1.4 DEFINITIONS

A. Request for Clarification: A document submitted by the CONTRACTOR requesting clarification of a portion of the Contract Documents, hereinafter referred to as an RFC.

1.5 CONTRACTOR'S RFCS

A. CONTRACTOR'S RFCs: Should CONTRACTOR be unable to determine from the Contract Documents the exact material, process, or system to be installed; or when the elements of construction are required to occupy the same space (interference); or when an item of Work is described differently at more than one place in the Contract Documents; the CONTRACTOR shall request through the CM/CDR that the ARCHITECT/ENGINEER make a clarification of the requirements of the Contract Documents to resolve such matters. CONTRACTOR shall comply with procedures specified herein to make Requests for Clarification (RFCs).

B. Submission of RFCs: RFCs shall be prepared and submitted on a form provided in the Electronic Project Management system.

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1. Requests for clarification not submitted by means of the EPM will not be reviewed or logged. The COUNTY OF SANTA BARBARA CM/CDR or ARCHITECT/ENGINEER will only review requests for clarification or clarification received directly in the required written form submitted by means of the EPM system.
2. Forms if prepared by hand will not be reviewed.
3. Each RFC shall be given a discrete, consecutive number.
4. Each page of the RFC and each attachment to the RFC shall bear the COUNTY OF SANTA BARBARA project name, project number, date, RFC number and a descriptive title.
5. CONTRACTOR shall sign all RFCs attesting to good faith effort to determine from the Contract Documents the information requested for clarification. Frivolous RFCs shall be subject to reimbursement from CONTRACTOR to COUNTY OF SANTA BARBARA for fees charged by ARCHITECT, ARCHITECT's consultants and other design professionals engaged by the COUNTY OF SANTA BARBARA.

C. Subcontractor-Initiated and Supplier-Initiated RFCs: RFCs from Subcontractors and material suppliers shall be submitted through, be reviewed by and be attached to an RFC prepared, signed and submitted by CONTRACTOR. RFCs submitted directly by Subcontractors or material suppliers will be returned unanswered to the CONTRACTOR.

1. CONTRACTOR shall review all Subcontractors and supplier-initiated RFCs and take actions to resolve issues of coordination, sequencing and layout of the Work.
2. RFCs submitted to request clarification of issues related to means, methods, techniques and sequences of construction or for establishing trade jurisdictions and scopes of subcontracts will be returned without clarification. Such issues are solely the CONTRACTOR's responsibility.
3. CONTRACTOR shall be responsible for delays resulting from the necessity to resubmit an RFC due to insufficient or incorrect information presented in the RFC.

D. CI. Requested Information: Immediately on discovery of the need for additional clarification of the Contract Documents, CONTRACTOR shall prepare and submit an RFC in the form specified. CONTRACTOR shall carefully study the Contract Documents, to ensure that information sufficient for interpretation of requirements of the Contract Documents is not shown. RFCs that request interpretation of requirements clearly indicated in the Contract Documents will be returned without clarification.

1. In all cases in which RFCs are issued to request clarification of issues related to means, methods, techniques and sequences of construction, for example, pipe and duct routing, clearances, specific locations of Work shown diagrammatically, apparent interferences and similar items, the CONTRACTOR shall furnish all information required for the ARCHITECT or COUNTY OF SANTA BARBARA CM/CDR to analyze and/or understand the circumstances causing the RFC and prepare a clarification or direction as to how the CONTRACTOR shall proceed.
2. If information included with this type RFC by the CONTRACTOR is insufficient, the RFC will be returned unanswered.

E. CII. Unacceptable Uses for RFCs: RFCs shall not be used to request the following:

1. Approval of submittals (use procedure specified in Section 01 33 00 - Submittals Procedures)
2. Approval of substitutions (refer to Section 01 63 00 - Product Substitution Procedures)
3. Changes that entail change in Contract Time and Contract Sum (comply with provisions of the Contract General Conditions, as discussed in detail during pre-construction meeting)

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4. Different methods of performing Work than those indicated in the Contract Drawings and Specifications (comply with provisions of the Contract General Conditions).

F. Disputed Requirements: In the event the CONTRACTOR believes that a clarification by the COUNTY OF SANTA BARBARA Representative results in additional cost or time, CONTRACTOR shall comply with Article 5 of the Contract General Conditions.

G. RFC Log: A log for recording information about RFC status and responses will be provided in the EPM system. CONTRACTOR shall maintain and continuously update the RFC log in the EPM. Make corrections in the log as directed by the COUNTY OF SANTA BARBARA

H. Review Time: The amount of time necessary for and appropriate review and response to a RFC will vary. ARCHITECT will review each RFC, determine action required, and respond. Allow fourteen (14) Calendar days for ARCHITECT'S response for each RFC. RFCs received by ARCHITECT after 1:00 p.m. will be considered as received the following working day. CONTRACTOR will be notified in writing if responses will take more than fourteen (14) calendar days.

I. In the event the CONTRACTOR believes that a clarification by the ARCHITECT results in additional cost or time, CONTRACTOR shall not proceed with the Work indicated by the RFC until a Change Order (or Work Change Directive, if applicable to Project) is prepared and approved by the COUNTY OF SANTA BARBARA or the CONTRACTOR is authorized in writing to proceed. RFCs shall not justify a cost increase in the Work or a change in the Project schedule.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

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SECTION 01 29 00 - PAYMENT PROCEDURES

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes administrative and procedural requirements necessary to prepare and process Applications for Payment.

B. Related Requirements:

1. Document 004373 "Proposed Schedule of Values Form" for requirements for furnishing proposed schedule of values with bid.
2. Section 012100 "Allowances" for procedural requirements governing the handling and processing of allowances.
3. Section 012200 "Unit Prices" for administrative requirements governing the use of unit prices.
4. Section 012600 "Contract Modification Procedures" for administrative procedures for handling changes to the Contract.
5. Section 013200 "Construction Progress Documentation" for administrative requirements governing the preparation and submittal of the Contractor's construction schedule.
6. Section 018113.13 "Sustainable Design Requirements - LEED 2009 for New Construction and Major Renovations" for administrative requirements governing submittal of cost breakdown information required forsustainable design documentation.
7. Section 018113.16 "Sustainable Design Requirements - LEED 2009 for Commercial Interiors" for administrative requirements governing submittal of cost breakdown information required for sustainable design documentation.
8. Section 018113.19 "Sustainable Design Requirements - LEED 2009 for Core and Shell Development" for administrative requirements governing submittal of cost breakdown information required for sustainable design documentation.
9. Section 018113.23 "Sustainable Design Requirements - LEED 2009 for Schools" for administrative requirements governing submittal of cost breakdown information required for sustainable design documentation.
10. Section 018113.14 "Sustainable Design Requirements - LEED v4 BD+C" for administrative requirements governing submittal of cost breakdown information required for sustainable design documentation.
11. Section 018113.17 "Sustainable Design Requirements - LEED v4 ID+C" for administrative requirements governing submittal of cost breakdown information required for sustainable design documentation.
12. Section 018113.43 "Sustainable Design Requirements - ASHRAE
13. 189.1" for administrative requirements governing submittal of cost breakdown information required for sustainable design documentation.
14. Section 018113.53 "Sustainable Design Requirements - Green Globes" for administrative requirements governing submittal of cost breakdown information required for sustainable design documentation.

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1.2 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.

1.3 SCHEDULE OF VALUES

A. Coordination: Coordinate preparation of the schedule of values with preparation of Contractor's construction schedule. Cost-loaded Critical Path Method Schedule may serve to satisfy requirements for the schedule of values.

1. Coordinate line items in the schedule of values with items required to be indicated as separate activities in Contractor's construction schedule.
2. Submit the schedule of values to Construction Manager at earliest possible date, but no later than seven days before the date scheduled for submittal of initial Applications for Payment.

B. Format and Content: Use Project Manual table of contents as a guide to establish line items for the schedule of values. Provide at least one line itemfor each Specification Section.

1. Identification: Include the following Project identification on the schedule of values:
   a. Project name and location.
   b. Owner's name.
   c. Owner's Project number.
   d. Name of Architect.
   e. Architect's Project number.
   f. Contractor's name and address.
   g. Date of submittal.

2. Arrange schedule of values consistent with format of AIA Document G703.
3. 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. Round dollar amounts to whole dollars, with total equal to Contract Sum.
      1) Labor.
      2) Materials.
      3) Equipment.

4. Provide a breakdown of the Contract Sum in enough detail to facilitate continued evaluation of Applications for Payment and progress reports. Provide multiple line items for principal subcontract amounts more than five percent of 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.

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6. Allowances: Provide a separate line item in the schedule of values for each allowance. Show line-item value of unit-cost allowances, as a product of the unit cost, multiplied by measured quantity. Use information indicated in the Contract Documents to determine quantities.
7. Purchase Contracts: Provide a separate line item in the schedule of values for each Purchase contract. Show line-item value of Purchase contract.
8. Indicate Owner payments or deposits, if any, and balance to be paid by Contractor.
9. Overhead Costs, Proportional Distribution: Include total cost and proportionate share of general overhead and profit for each line item.
10. Overhead Costs, Separate Line Items: Show cost of temporary facilities and other major cost items that are not direct cost of actual work-in-place as separate line items.
11. Temporary Facilities: Show cost of temporary facilities and other major cost items that are not direct cost of actual work-in-place as separate line items.
12. Closeout Costs. Include separate line items under Contractor and principal subcontracts for Project closeout requirements in an amount totaling five percent of the Contract Sum and subcontract amount.
13. Schedule of Values Revisions: Revise the schedule of values when Change Orders or Construction Change Directives result in a change in the Contract Sum. Include at least one separate line item for each Change Order and Construction Change Directive.

1.4 APPLICATIONS FOR PAYMENT

1. Each Application for Payment following the initial Application for Payment shall be consistent with previous applications and payments, as certified by Construction Manager and paid for by Owner.
2. Payment Application Times: The date for each progress payment is indicated in the Owner/Contractor Agreement. The period of construction work covered by each Application for Payment is the period indicated in the Agreement.
3. Payment Application Times: Submit final Application for Payment to Construction Manager by the end of the month. The period covered by each Application for Payment is one month, ending on the last day of the month.
4. Submit draft copy of Application for Payment five calendar days prior to due date for review by Construction Manager.

B. Application for Payment Forms: Use AIA Document G702 and AIA Document G703 or as approved by Owner as form for Applications for Payment.

1. Other Application for Payment forms proposed by the Contractor may be acceptable to Construction Manager and Owner. Submit forms for approval with initial submittal of schedule of values.

C. Application Preparation: Complete every entry on form. Notarize and execute by a person authorized to sign legal documents on behalf of Contractor. Construction Manager 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 for work completed following previous Application for Payment, whether or not payment has been received. Include only amounts for work completed at time of Application for Payment.
3. Include amounts of Change Orders and Construction Change Directives issued before last day of construction period covered by application.

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4. Indicate separate amounts for work being carried out under Owner-requested project acceleration.

D. 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.

E. Transmittal: Submit two signed and notarized original copies of each Application for Payment to Construction Manager. One copy shall include waivers of lien and similar attachments if required.

1. Transmit each copy with a transmittal form listing attachments and recording appropriate information about application.

F. Waivers of Mechanic's Lien: With each Application for Payment, submit waivers of mechanic's lien from entities lawfully entitled to file a mechanic's lien arising out of the Contract and related to the Work covered by the payment for construction period covered by the previous application.

1. Submit partial waivers on each item for amount requested in previous application, after deduction for retainage, on each item.
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 executed waivers of lien on forms acceptable to Owner.

G. 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. Combined Contractor's construction schedule (preliminary if not final) incorporating Work of multiple contracts, with indication of acceptance of schedule by each Contractor.
5. Products list (preliminary if not final).
6. Sustainable design action plans, including preliminary project materials cost data.
7. Schedule of unit prices.
8. Submittal schedule (preliminary if not final).
9. List of Contractor's staff assignments.

10. List of Contractor's principal consultants.
11. Copies of building permits.
12. Copies of authorizations and licenses from authorities having jurisdiction for performance of the Work.
13. Initial progress report.
14. Report of preconstruction conference.
15. Certificates of insurance and insurance policies.
16. Performance and payment bonds.
17. Data needed to acquire Owner's insurance.

H. Application for Payment at Substantial Completion: After Architect issues 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.
   a. Complete administrative actions, submittals, and Work preceding this application, as described in Section 017700 "Closeout Procedures."

2. This application shall reflect Certificate(s) of Substantial Completion issued previously for Owner occupancy of designated portions of the Work.

I. 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 Project closeout requirements.
2. Certification of completion of final punch list items.
3. Insurance certificates for products and completed operations where required and proof that taxes, fees, and similar obligations were paid.
4. Updated final statement, accounting for final changes to the Contract Sum.
5. AIA Document G706. 6.AIA Document G706A. 7.AIA Document G707.
6. Evidence that claims have been settled.
7. 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.
8. Final liquidated damages settlement statement.
9. Proof that taxes, fees, and similar obligations are paid.
10. Waivers and releases.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION 01 29 00

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SECTION 01 29 73 - SCHEDULE OF VALUES

PART 1 - GENERAL

1.1 SECTION INCLUDES

A. Procedure for submission of a certified Schedule of Values for review and approval by the COUNTY OF SANTA BARBARA.

1.2 RELATED REQUIREMENTS

A. Section 01 29 76: Progress Payment Procedures.

B. Section 01 31 13: Project Coordination.

C. Section 01 32 13: Construction Schedule.

D. Section 01 33 00: Submittal Procedures.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION

3.1 PREPARATION

A. Upon receipt of the Notice of Intent to Award, CONTRACTOR shall commence preparation of a Schedule of Values in accordance with the form as provided by COUNTY OF SANTA BARBARA.

B. CONTRACTOR shall coordinate the preparation of a Schedule of Values with preparation of the Construction Schedule as set forth in Section 01 32 13. The corresponding values from the specification division totals on cost loaded schedule shall match with the approved Schedule of Values.

C. Include the following Project identification on a certified Schedule of Values:

1. Project name and location.
2. Project Number.
3. Contract #.
4. CONTRACTOR name.
5. Date of Submittal.

D. The Schedule of Values shall be in tabular form with separate columns and shall include the following items:

1. Related Specification Section and Division.

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2. Description of Work.
3. Name of Subcontractor, manufacturer, or supplier.
4. Dollar value, quantity, and unit of measure of each line item.
5. Percentage of Contract amount to nearest one-hundredth percent, adjusted to total 100 percent.

E. Round amounts to the nearest whole dollar; the total shall equal the Contract Amount.

F. Provide a breakdown of the Contract Amount in enough detail acceptable to COUNTY OF SANTA BARBARA to facilitate continued evaluation of Application for Payment and progress reports. Coordinate with the Project Manual table of content and COUNTY OF SANTA BARBARA approved Schedule of Values. Provide line items for subcontract amounts, where appropriate.

G. Provide separate line items for items in the Schedule of Values for total installed value of that part of the Work.

H. Provide separate line item for labor and material when required by the COUNTY OF SANTA BARBARA.

I. 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 except the amounts shown as separate line items.

J. Temporary facilities and other cost items that are not direct cost of actual work-in-place shall be shown as separate line items.

K. An approved certified Schedule of Values shall serve as the basis for the monthly certified Application for Payment.

L. If at any time, COUNTY OF SANTA BARBARA determines, in its reasonable discretion, that the schedule of Values does not approximate the actual cost being incurred by CONTRACTOR to perform the Work, CONTRACTOR shall prepare, for COUNTY OF SANTA BARBARA approval, a revised Schedule of Values, which then shall be used as the basis for future progress payments. Without changing the Contract Amount, COUNTY OF SANTA BARBARA reserves the right to require CONTRACTOR:

1. To increase or decrease amounts within the line items in the Schedule of Values; and,
2. To conform the price breakdown to COUNTY OF SANTA BARBARA accounting practice.

3.2 SUBMITTAL

A. CONTRACTOR shall submit three (3) certified copies of a Schedule of Values for review and approval by the COUNTY OF SANTA BARBARA at least 14 days before the first Application for Payment.

B. COUNTY OF SANTA BARBARA will review and if necessary, return the submitted Schedule of Values with summary comments noting items not in compliance with the requirements of the Contract Documents. CONTRACTOR shall revise the submitted Schedule of Values and return Three copies within three days of receipt of summary comments.

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C. Signature by COUNTY OF SANTA BARBARA shall constitute acceptance of the submitted Schedule of Values.

D. An approved copy of the Schedule of Values by COUNTY OF SANTA BARBARA will be transmitted to CONTRACTOR, and Inspector.

END OF SECTION

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SECTION 01 29 76 - PROGRESS PAYMENT PROCEDURES

PART 1 - GENERAL

1.1 SECTION INCLUDES:

A. This Section specifies administrative and procedural requirements for a certified Application for Payment.

1. Coordinate the certified Schedule of Values and certified Application for Payment with, but not limited to, the Construction Schedule, submittal log, and list of Subcontractors.

1.2 RELATED REQUIREMENTS:

A. Section 01 29 73: Schedule of Values.

B. Section 01 32 13: Construction Schedule.

C. Section 01 77 00: Contract Closeout.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION

3.1 APPLICATION FOR PAYMENT

A. Each certified Application for Payment shall be consistent with previous applications and payments as reviewed by COUNTY OF SANTA BARBARA Representative, paid for by COUNTY OF SANTA BARBARA, and:

1. The initial Application for Payment and Final Application for Payment at time of Completion involve additional requirements.

B. Payment Application Times: The period of Work covered by each Application for Payment is payment date for each progress payment as specified in the General Conditions. The period covered by each Application for Payment is previous month.

C. Payment Application Forms: Use AIA or COUNTY OF SANTA BARBARA provided forms for the Application for Payment.

D. Application Preparation: Complete every entry on the form. Include execution by a person authorized to sign legal documents on behalf of CONTRACTOR. COUNTY OF SANTA BARBARA will return incomplete applications without action.

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E. Transmittal: Submit a minimum of Three signed and original copies of each certified Application for Payment to COUNTY OF SANTA BARBARA. All copies shall be complete, including releases and similar attachments.

1. Transmit each copy with a transmittal form listing attachments and recording appropriate information related to the application, in a manner acceptable to COUNTY OF SANTA BARBARA.

F. Initial Application for Payment within 60 days of issuance of Notice to Proceed: Administrative actions and submittals, that must precede or coincide with submittal for first certified Application for Payment include, but are not limited to, the following:

1. Certified Schedule of Values.
2. Performance and payment bonds.
3. List of principal suppliers and fabricators.
4. Worker Compensation certificates, if applicable.
5. Auto Insurance, if applicable.
6. Hazardous Material Insurance Certificates, if applicable.
7. Construction Schedule.
8. Submittal Schedule.
9. Emergency Contact List.
10. Copies of authorizations and licenses from governing authorities for performance of Work.
11. Certified Payroll (Submitted directly to Labor Compliance in electronic format as specified by COUNTY OF SANTA BARBARA including hard copy).
12. Storm Water Pollution Prevention Plan (SWPPP).
13. Certification of Compliance with CEQA Mitigations, if applicable.

G. Applications for Payment: Administrative actions and submittals that must precede or coincide with submittal of Progress Applications for Payment include, but are not limited to, the following:

1. Certified Payroll (submitted directly to Labor Compliance in electronic format as specified by COUNTY OF SANTA BARBARA including hard copy).
2. Updated and current Project Record Drawings (as-built).
3. Monthly Construction Schedule (updated, submitted, and approved).
4. Approved Schedule of Values.
5. List of Subcontractors (Payments Summary).
6. Storm Water Pollution Prevention Plan(SWPPP) – Site Monitoring Report.
7. Certification of Compliance with CEQA Mitigations, if applicable.

H. Final Application for Payment at Completion: Following COUNTY OF SANTA BARBARA issuance of certificate of Completion, submit an Application for Payment:

1. Administrative actions, submittals and/or Work that shall precede or coincide with this application include:
   a. Occupancy permits and similar approvals by authorities having legal jurisdiction over Work.
   b. Removal of temporary facilities and services.
   c. Testing, adjusting and balance records.
   d. Removal of surplus materials, rubbish, and similar elements.
   e. Meter readings.
   f. Start-up performance reports.
   g. COUNTY OF SANTA BARBARA training and orientations.
   h. Operating and maintenance instruction manuals.

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i. Preliminary Warranties, guarantees and maintenance agreements.
j. Delivery of extra materials, products and or stock.
k. Change over information related to COUNTY OF SANTA BARBARA occupancy, use, operation, and maintenance.
l. Final cleaning.
m. Ensure that Work is completed.
n. Advise on shifting insurance coverage.
o. List of defective Work, recognized as exceptions to certificate of Completion.
p. Change of door locks, including keys, to COUNTY OF SANTA BARBARA system.
q. Certified Payroll (submitted directly to Labor Compliance in electronic format as specified by the COUNTY OF SANTA BARBARA including hard copy).
r. Certification that all benefit contributions due and owing to appropriate union trusts has been paid by CONTRACTOR and Subcontractors, as specified by the General Conditions.
s. Storm Water Pollution Prevention – Site Monitoring Reports, SWPP revisions, compliance certifications, and Notice of Termination (NOT) (see Section 01 74 16).
t. Certification of Compliance with CEQA Mitigations, where applicable.
u. Waivers and releases for CONTRACTOR.

END OF SECTION

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SECTION 01 30 00 - ADMINISTRATIVE REQUIREMENTS

PART 1 - GENERAL

1.1 SECTION INCLUDES

A. Administration of Contract: Provide administrative requirements for the proper coordination and completion of work including the following:

1. Supervisory personnel.
2. Preconstruction conference.
3. Project meetings, minimum of two per month; prepare and distribute minutes.

B. Reports: Monthly with progress schedule.

C. Work Schedule: Submit progress schedule, updated monthly.

D. Perform Surveys: Lay out the work and verify locations during construction.

E. Emergency Contacts: Submit and post a list of emergency telephone numbers and address for individuals to be contacted in case of emergency.

F. Record Documents: Submit record drawings and specifications; to be maintained and annotated by CONTRACTOR as work progresses.

1.2 REQUIREMENTS

A. A close liaison will be maintained by the COUNTY OF SANTA BARBARA's Representative, COUNTY OF SANTA BARBARA, and the CONTRACTOR. The COUNTY OF SANTA BARBARA's Representative(s) shall notify the COUNTY OF SANTA BARBARA immediately of any problems encountered, including but not limited to impacts to the cost, schedule and/or quality.

B. The COUNTY OF SANTA BARBARA's Representative(s) shall observe, inspect, and approve all Work and may reject unsuitable Work that does not conform to the Drawings and Specifications.

C. The COUNTY OF SANTA BARBARA's Representative(s) shall always have free access to the jobsite while Work is in progress, and the CONTRACTOR shall furnish information and assistance as necessary to the COUNTY OF SANTA BARBARA's Representative(s).

D. The COUNTY OF SANTA BARBARA's Representative(s) shall monitor construction for conformance with the approved Drawings and Specifications.

E. The authority of the COUNTY OF SANTA BARBARA's Representative(s) is limited to the following functions:

1. Observe and accept or reject work and materials including approval or disapproval of materials submittals.
2. Clarify Specifications and Drawings.
3. Provide input on elements of the design which require field-fitting due to conditions unknown prior to construction.

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1. The COUNTY OF SANTA BARBARA's Representative(s) are not authorized to take the following actions, all of which remain the sole responsibility of the COUNTY OF SANTA BARBARA:
2. Make changes to the contract provisions, period of performance, or change any contract terms and conditions.
3. Make decisions concerning any claims and disputes.

1.3 SUBMITTALS

A. Types of Submittals: Provide types of submittals listed in individual sections and number of copies required below. Electronic copies may be substituted in lieu of all requirements. Refer to Specifications Section 01 33 00, Submittal Procedures.

1. Informational submittals, Site Logistics Plan, Demolition Work Plan, Health & Safety Plan, - 3 copies.
2. Schedule Submittals - 3 copies.
3. Shop drawings, reviewed and annotated by the CONTRACTOR - 3 copies.
4. Inspection and test reports - 3 copies.
5. Warranties - 3 copies.
6. Survey data - 3 copies.
7. Closeout submittals - 3 copies.

B. Submittal Procedures: Comply with project format for submittals. Comply with submittal procedures established by ENGINEER's including ENGINEER's submittal and shop drawing stamp. Provide required resubmittals if original submittals are not approved. Provide distribution of approved copies including modifications after submittals have been approved.

C. Samples and Shop Drawings: Samples and shop drawings shall be prepared specifically for this project. Shop drawings shall include dimensions and details, including adjacent construction and related work. Note special coordination required. Note any deviations from requirements of the Contract Documents.

D. Warranties: Provide warranties as specified; warranties shall not limit length of time for remedy of damages Owner may have by legal statute. CONTRACTOR, supplier, or installer responsible for performance of warranty shall sign warranties.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

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SECTION 01 31 00 – PROJECT MANAGEMENT AND COORDINATION

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes administrative provisions for coordinating construction operations on Project, including, but not limited to, the following:

1. General coordination procedures.
2. Coordination drawings.
3. RFIs.
4. Digital project management procedures.
5. Web-based Project management software package.
6. Project meetings.

B. Each contractor shall participate in coordination requirements. Certain areas of responsibility are assigned to a specific contractor.

C. Related Requirements:

1. Section 011200 "Multiple Contract Summary" for a description of the division of work among separate contracts and responsibility for coordination activities not in this Section.
2. Section 013200 "Construction Progress Documentation" for preparing and submitting Contractor's construction schedule.
3. Section 017300 "Execution" for procedures for coordinating general installation and field-engineering services, including establishment of benchmarks and control points.
4. Section 017700 "Closeout Procedures" for coordinating closeout of the Contract.
5. Section 019113 "General Commissioning Requirements" for coordinating the Work with Owner's Commissioning Authority.

1.2 DEFINITIONS

A. BIM: Building Information Modeling.

B. RFC: Request for Clarification. Request from Contractor seeking information required by or clarifications of the Contract Documents.

1.3 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, telephone number, and email address 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 15 calendar 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, cellular telephone numbers, and e-mail addresses. Provide names, addresses, and telephone numbers 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, in web-based Project software directory. Always keep list current.

1.4 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. 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.
2. Coordinate installation of different components to ensure maximum performance and accessibility for required maintenance, service, and repair.
3. Make adequate provisions to accommodate items scheduled for later installation.

B. Coordination of Multiple Contracts: Each contractor shall cooperate with project coordinator, who shall coordinate its construction operations with those of other contractors and entities to ensure efficient and orderly installation of each part of the Work. Each contractor shall coordinate its own operations with operations included in different Sections that depend on each other for proper installation, connection, and operation.

1. 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.

2. Coordinate installation of different components with other contractors to ensure maximum performance and accessibility for required maintenance, service, and repair.
3. Make adequate provisions to accommodate items scheduled for later installation.

C. 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.

D. Administrative Procedures: Coordinate scheduling and timing of required administrative procedures with other construction activities and scheduled activities of other contractors with Construction Manager 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.

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5. Progress meetings. 6.Preinstallation conferences. 7.Project closeout activities. 8.Startup and adjustment of systems.

1.5 COORDINATION DRAWINGS

A. Coordination Drawings, General: Prepare coordination drawings according to requirements in individual Sections, and additionally where installation is not completely indicated 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 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 coordination drawings 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, 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.
   g. Indicate dimensions shown on Drawings. Specifically note dimensions that appear to be in conflict with submitted equipment and minimum clearance requirements. Provide alternative sketches to Architect indicating proposed resolution of such conflicts. Minor dimension changes and difficult installations will not be considered changes to the Contract.

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 plenums to accommodate layout of light fixtures and other components 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.

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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, switchboard, switchgear, transformer, busway, generator, and motor-control center locations.
   d. Location of pull boxes and junction boxes, dimensioned from column center lines.

8. Fire-Protection System: Show the following:
   a. Locations of standpipes, mains piping, branch lines, pipe drops, and sprinkler heads.

9. Review: Architect will review coordination drawings to confirm that, in general, the Work is being coordinated, but not for the details of the coordination, which are Contractor's responsibility. If Architect determines that coordination drawings are not being prepared in sufficient scope or detail, or are otherwise deficient, Architect will so inform Contractor, who shall make suitable modifications and resubmit.
10. 1Coordination Drawing Prints: Prepare coordination drawing prints according to requirements in Section 013300 "Submittal Procedures."

C. Coordination Drawing Process: Prepare coordination drawings in the following manner:

1. Schedule submittal and review of Fire Sprinkler, Plumbing, HVAC, and Electrical Shop Drawings to make required changes prior to preparation of coordination drawings.
2. Commence routing of coordination drawing files with HVAC Installer, who will provide drawing plan files denoting approved ductwork. HVAC Installer will locate ductwork and piping on a single layer, using orange color. Forward drawings to Plumbing Installer.
3. Plumbing Installer will locate plumbing and equipment on a single layer, using blue color.
4. Fire Sprinkler Installer will locate piping and equipment, using red color. Fire Sprinkler Installer shall forward drawing files to Electrical Installer.
5. Electrical Installer will indicate service and feeder conduit runs and equipment in green color. Electrical Installer shall forward drawing files to Communications and Electronic Safety and Security Installer.
6. Communications and Electronic Safety and Security Installer will indicate cable trays and cabling runs and equipment in purple color. Communications and Electronic Safety and Security Installer shall forward completed drawing files to Contractor.
7. Contractor shall perform the final coordination review. As each coordination drawing is completed, Contractor will meet with COUNTY OF SANTA BARBARA (CM/CDR) and Architect to review and resolve conflicts on the coordination drawings.

D. Cl. Coordination Digital Data Files: Prepare coordination digital data files according to the following requirements:

1. File Preparation Format:
   a. Same digital data software program, version, and operating system as original Drawings.
   b. DWG Latest Version, operating in Microsoft Windows operating system.

2. File Submittal Format: Submit or post coordination drawing files using PDF format.

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3. BIM File Incorporation: Develop and incorporate coordination drawing files into BIM established for Project.
   a. Perform three-dimensional component conflict analysis as part of preparation of coordination drawings. Resolve component conflicts prior to submittal. Indicate where conflict resolution requires modification of design requirements by Architect.

4. Architect will furnish Contractor one set of digital data files of Drawings for use in preparing coordination digital data files.
   a. Architect makes no representations as to the accuracy or completeness of digital data files as they relate to Drawings.
   b. Contractor shall execute a data licensing agreement in the form acceptable to Owner and Architect.

1.6 REQUEST FOR CLARIFICATION(RFC)

A. General: Immediately on discovery of the need for additional information, clarification, or interpretation of the Contract Documents, Contractor shall prepare and submit an RFC in the form specified.

1. Architect will return without response those RFCs submitted to Architect by other entities controlled by Contractor.
2. Coordinate and submit RFCs in a prompt manner to avoid delays in Contractor's work or work of subcontractors.

B. Content of the RFC: Include a detailed, legible description of item needing information or interpretation and the following:

1. Project name.
2. Owner name.
3. Owner's Project number.
4. Name of Architect and Construction Manager.
5. Architect's Project number.
6. Date.
7. Name of Contractor.
8. RFC number, numbered sequentially.
9. RFC subject.
10. 1Specification Section number and title and related paragraphs, as appropriate.
11. 1Drawing number and detail references, as appropriate.
12. 1Field dimensions and conditions, as appropriate.
13. 1Contractor's suggested resolution. If Contractor's suggested resolution impacts the Contract Time or the Contract Sum, Contractor shall state impact in the RFC.
14. 1Contractor's signature.
15. 1Attachments: Include sketches, 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. RFC Forms: As provided or approved by Owner.

1. Attachments shall be electronic files in PDF format.

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D. CI. Architect's and Construction Manager's Action: Architect and Construction Manager will review each RFC, determine action required, and respond. Allow fourteen calendar days for Architect's response for each RFc. RFCs received by Construction Manager after 1:00 p.m. will be considered as received the following working day.

1. The following Contractor-generated RFCs will be returned without action:
   a. Requests for approval of submittals.
   b. Requests for approval of substitutions.
   c. Requests for approval of Contractor's means and methods.
   d. Requests for coordination information already indicated in the Contract Documents.
   e. Requests for adjustments in the Contract Time or the Contract Sum.
   f. Requests for interpretation of Architect's actions on submittals.
   g. Incomplete RFIs or inaccurately prepared RFCs.

2. Architect's action may include a request for additional information, in which case Architect's time for response will date from time of receipt by Architect AND Construction Manager of additional information.
3. Architect's action on RFCs that may result in a change to the Contract Time or the Contract Sum may be eligible for Contractor to submit Change Proposal according to Section 012600 "Contract Modification Procedures."
   a. If Contractor believes the RFC response warrants change in the Contract Time or the Contract Sum, notify Construction Manager in writing within Three (3) Calendar days of receipt of the RFC response.

E. RFC Log: Prepare, maintain, and submit a tabular log of RFCs organized by the RFC number. Submit log weekly. Use software log that is part of web-based Project management software. Include the following.

1. Project name.
2. Name and address of Contractor.
3. Name and address of Architect and Construction Manager.
4. RFI number, including RFCs that were returned without action or withdrawn.
5. RFI description.
6. Date the RFC was submitted.
7. Date Architect's and Construction Manager's response was received.
8. Identification of related Minor Change in the Work, Construction Change Directive, and Proposal Request, as appropriate.
9. Identification of related Field Order, Work Change Directive, and Proposal Request, as appropriate.

F. On receipt of Construction Manager's action, update the RFC log and immediately distribute the RFC response to affected parties. Review response and notify Construction Manager within three Calendar days if Contractor disagrees with response.

1.7 DIGITAL PROJECT MANAGEMENT PROCEDURES

A. Use of Architect's Digital Data Files: Digital data files of Architect's CAD drawings will be provided by Architect for Contractor's use during construction.

1. Digital data files may be used by Contractor in preparing coordination drawings, Shop Drawings, and Project Record Drawings.

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2. Architect makes no representations as to the accuracy or completeness of digital data files as they relate to Contract Drawings.
3. Contractor shall execute a data licensing agreement in the form acceptable to Owner and Architect.
4. The following digital data files will be furnished for each appropriate discipline:
   a. Floor plans.
   b. Reflected ceiling plans.
   c. Others as requested and approved by Owner.

B. Web-Based Project Management Software Package: Provide and administer web-based Project management software package for purposes of hosting and managing Project communication and documentation until Final Completion.

1. Web-based Project management software includes, at a minimum, the following features:
   a. Compilation of Project data, including Contractor, subcontractors, Architect, Architect's consultants, Owner, and other entities involved in Project. Include names of individuals and contact information.
   b. Access control for each entity for each workflow process, to determine entity's digital rights to create, modify, view, and print documents.
   c. Document workflow planning, allowing customization of workflow between project entities.
   d. Creation, logging, tracking, and notification for Project communications required in other Specification Sections, including, but not limited to, RFIs, submittals, Minor Changes in the Work, Construction Change Directives, and Change Orders.
   e. Track status of each Project communication in real time, and log time and date when responses are provided.
   f. Procedures for handling PDFs or similar file formats, allowing markups by each entity. Provide security features to lock markups against changes once submitted.
   g. Processing and tracking of payment applications.
   h. Processing and tracking of contract modifications.
   i. Creating and distributing meeting minutes.
   j. Document management for Drawings, Specifications, and coordination drawings, including revision control.
   k. Management of construction progress photographs.
   l. Mobile device compatibility, including smartphones and tablets.

2. Provide Project management software user licenses for use of Owner, Owner's Commissioning Authority, Construction Manager, Architect, and Architect's consultants. Provide four hours of software training at Architect's office for web-based Project software users.
3. At completion of Project, provide digital archive in format that is readable by common desktop software applications in format acceptable to Architect.

Provide data in locked format to prevent further changes.

4. Manufacturers: Subject to compliance with requirements, provide products by available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
   a. Autodesk, Inc.
   b. Corecon Technologies, Inc.
   c. Deltek Inc.
   d. Meridian Systems, Inc.
   e. Newforma, Inc.
   f. Procore Technologies, Inc.
   g. Viewpoint, Inc.; a Trimble Company.

C. PDF Document Preparation: Where PDFs are required to be submitted to Construction Manager, prepare 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.
3. Certifications: Where digitally submitted certificates and certifications are required, provide a digital signature with digital certificate on where indicated.

1.8 PROJECT MEETINGS

A. General: Construction Manager will schedule and conduct meetings and conferences at Project site unless otherwise indicated.

B. Pre-construction Conference: Construction Manager will schedule and conduct a pre-construction conference before starting construction, at a time convenient to Owner, but no later than 15 calendar days after execution of the Agreement.

1. Attendees: Authorized representatives of Owner, Owner's Commissioning Authority, Construction Manager, Architect, their consultants; Contractor and its superintendent; major subcontractors; suppliers; and other concerned parties shall attend the conference. Participants at the conference shall be familiar with Project and authorized to conclude matters relating to the Work.
2. Agenda: Discuss items of significance that could affect progress, including the following:
   a. Responsibilities and personnel assignments.
   b. Tentative construction schedule.
   c. Phasing.
   d. Critical work sequencing and long lead items.
   e. Designation of key personnel and their duties.
   f. Lines of communications.
   g. Use of web-based Project software.
   h. Procedures for processing field decisions and Change Orders.
   i. Procedures for RFCs.
   j. Procedures for testing and inspecting.
   k. Procedures for processing Applications for Payment.
   l. Distribution of the Contract Documents.
   m. Submittal procedures.
   n. Sustainable design requirements.
   o. Preparation of Record Documents.
   p. Use of the premises.
   q. Work restrictions.
   r. Working hours.
   s. Owner's occupancy requirements.
   t. Responsibility for temporary facilities and controls.
   u. Procedures for moisture and mold control.
   v. Procedures for disruptions and shutdowns.
   w. Construction waste management and recycling.
   x. Parking availability.
   y. Office, work, and storage areas.
   z. Equipment deliveries and priorities.
   aa. First aid.
   bb. Security.
   cc. Progress cleaning.

3. Minutes: Entity responsible for conducting meeting will record and distribute meeting minutes.

C. Sustainable Design Requirements Coordination Conference: Construction Manager will schedule and conduct a sustainable design coordination conference before starting construction, at a time convenient to Owner, Construction Manager, Architect, and Contractor.

1. Attendees: Authorized representatives of Owner, Owner's Commissioning Authority, Construction Manager, Inspectors, Architect, and their consultants; Contractor and its superintendent and sustainable design coordinator; major subcontractors; suppliers; and other concerned parties shall attend the conference. Participants at the conference shall be familiar with Project and authorized to conclude matters relating to the Work.
2. Agenda: Discuss items of significance that could affect meeting sustainable design requirements, including the following:
   a. Sustainable design Project checklist.
   b. General requirements for sustainable design-related procurement and documentation.
   c. Project closeout requirements and sustainable design certification procedures.
   d. Role of sustainable design coordinator.
   e. Construction waste management.
   f. Construction operations and sustainable design requirements and restrictions.
3. Minutes: Entity responsible for conducting meeting will record and distribute meeting minutes.

D. Preinstallation Conferences: Conduct a preinstallation conference at Project site before each construction activity when required by other Sections and when required for 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 Architect, Construction Manager, Inspectors, and Owner's Commissioning Authority] 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:
   a. Contract Documents.
   b. Options.
   c. Related RFCs.
   d. Related Change Orders.
   e. Purchases.
   f. Deliveries.
   g. Submittals.
   h. Sustainable design requirements.
   i. Review of mockups.
   j. Possible conflicts.
   k. Compatibility requirements.
   l. Time schedules.
   m. Weather limitations.
   n. Manufacturer's written instructions.
   o. Warranty requirements.
   p. Compatibility of materials.
   q. Acceptability of substrates.
   r. Temporary facilities and controls.
   s. Space and access limitations.

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t. Regulations of authorities having jurisdiction.
u. Testing and inspecting requirements.
v. Installation procedures.
w. Coordination with other work.
x. Required performance results.
y. Protection of adjacent work.
z. 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 other parties requiring 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.

E. Project Closeout Conference: Construction Manager will schedule and conduct a project closeout conference, at a time convenient to Owner and Architect, but no later than 60 calendar days prior to the scheduled date of Substantial Completion.

1. Conduct the conference to review requirements and responsibilities related to Project closeout.
2. Attendees: Authorized representatives of Owner, Owner's Commissioning Authority, Construction Manager, Inspectors, Architect, 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. Procedures for completing and archiving web-based Project software site data files.
   d. Submittal of written warranties.
   e. Requirements for completing sustainable design documentation.
   f. Requirements for preparing operations and maintenance data.
   g. Requirements for delivery of material samples, attic stock, and spare parts.
   h. Requirements for demonstration and training.
   i. Preparation of Contractor's punch list.
   j. Procedures for processing Applications for Payment at Substantial Completion and for final payment.
   k. Submittal procedures.
   l. Coordination of separate contracts.
   m. Owner's partial occupancy requirements.
   n. Installation of Owner's furniture, fixtures, and equipment.
   o. Responsibility for removing temporary facilities and controls.

4. Minutes: Entity conducting meeting will record and distribute meeting minutes.

F. Progress Meetings: Construction Manager will conduct progress meetings at regular intervals.

1. Coordinate dates of meetings with preparation of payment requests.
2. Attendees: In addition to representatives of Owner, Owner's Commissioning Authority, Construction Manager, Inspectors, and Architect, each contractor, subcontractor, supplier,

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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 meeting 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.
      1) Review schedule for next period.
   b. Review present and future needs of each entity present, including the following:
      1) Interface requirements.
      2) Sequence of operations.
      3) Resolution of BIM component conflicts.
      4) Status of submittals.
      5) Status of sustainable design documentation.
      6) Deliveries.
      7) Off-site fabrication.
      8) Access.
      9) Site use.
      10) 1Temporary facilities and controls.
      11) 1Progress cleaning.
      12) 1Quality and work standards.
      13) 1Status of correction of deficient items.
      14) 1Field observations.
      15) 1Status of RFIs.
      16) 1Status of Proposal Requests.
      17) 1Pending changes.
      18) 1Status of Change Orders.
      19) 1Pending claims and disputes.
      20) 2Documentation of information for payment requests.

4. Minutes: Entity responsible for conducting the meeting will record and distribute the meeting minutes to each party present and to parties requiring 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.

G. Coordination Meetings: Construction Manager will conduct] regular intervals. Project 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[, Owner's Commissioning Authority, Construction Manager, Inspectors, and Architect, 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 meetings shall be familiar with Project and authorized to conclude matters relating to the Work.
2. Agenda: Review and correct or approve minutes of the previous coordination meeting. Review other items of significance that could affect progress. Include topics for discussion as appropriate to status of Project.

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a. Combined Contractor's Construction Schedule: Review progress since the last coordination meeting. Determine whether each contract is on time, ahead of schedule, or behind schedule, in relation to combined 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.

b. Schedule Updating: Revise combined Contractor's construction schedule after each coordination meeting, where revisions to the schedule have been made or recognized. Issue revised schedule concurrently with report of each meeting.

c. Review present and future needs of each contractor present, including the following:
   1) Interface requirements.
   2) Sequence of operations.
   3) Resolution of BIM component conflicts.
   4) Status of submittals.
   5) Deliveries.
   6) Off-site fabrication.
   7) Access.
   8) Site use.
   9) Temporary facilities and controls.
   10) 1Work hours.
   11) 1Hazards and risks.
   12) 1Progress cleaning.
   13) 1Quality and work standards.
   14) 1Status of RFCs.
   15) 1Proposal Requests.
   16) 1Change Orders.
   17) 1Pending changes.

3. Reporting: Record meeting results and distribute copies to everyone in attendance and to others affected by decisions or actions resulting from each meeting.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION 01 31 00

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SECTION 01 31 10 - COMMUNICATION

PART 1 - GENERAL

1.1 GENERAL COMMUNICATION

A. The COUNTY OF SANTA BARBARA shall designate a COUNTY OF SANTA BARBARA'S Representative for this project.

B. All oral communication and correspondence shall be between CONTRACTOR Representative, COUNTY OF SANTA BARBARA (CM/CDR) and ARCHITECT'S Representative. The ARCHITECT'S Representative shall not provide oral direction to the CONTRACTOR Representative. All direction to the CONTRACTOR Representative shall be through written Requests for Clarification, or other contractually permitted documentation.

C. The ARCHITECT'S Representative will communicate and transmit information to the COUNTY OF SANTA BARBARA'S (CM/CDR) representative as requested by the COUNTY OF SANTA BARBARA.

D. Subcontractors: Do not contact members of the design team directly. Transmit problems or questions in writing using the Request for Clarification form (RFC) through CONTRACTOR

E. In case of an EMERGENCY contact the COUNTY OF SANTA BARBARA (CM/CDR) and ARCHITECT immediately. If they are not available, contact the COUNTY OF SANTA BARBARA Representative.

1.2 CORRESPONDENCE

A. Address all written correspondence to COUNTY OF SANTA BARBARA (CM/CDR) and ARCHITECT.

B. Format: Number correspondence sequentially beginning with Serial Letter #001. Include project title and ARCHITECT'S project number.

1.3 REQUEST FOR CLARIFICATION (RFC)

A. When field conditions or Contract Document contents require clarification or verification by the ARCHITECT or ARCHITECT'S consultants, a written RFC is to be submitted per the following:

1. Identify the nature and location of each clarification/verification using the RFC form; provide as a minimum the following information:
   a. Project name and number.
   b. Date.
   c. Date response required by.
   d. RFC number.
   e. Subject.
   f. Initiator of the question.
   g. Indication of costs and/or schedule impact, if known.
   h. Location on site.
   i. Contract drawing reference.

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j. Contract specification section and paragraph reference.
k. Descriptive text.
l. Space for reply on same page as questions; and
m. Single subject matter, 1 item each - architectural, civil, structural, mechanical, electrical.

2. Number each RFC sequentially beginning with #001. Only one questions per RFC. Do not attach cover sheets.

B. Route: RFC's in same manner as correspondence.

C. Copy: RFC's in same manner as correspondence.

D. Clarifications: Incorporate the essence of all oral discussions onto an RFC form or receive ASI from ARCHITECT.

E. Procedure: If, after an oral discussion or directive, the CONTRACTOR fails to correct work that in the opinion of the COUNTY OF SANTA BARBARA fails to conform to the Contract Documents, a Nonconformance Report shall be issued. Upon receipt of NCR, CONTRACTOR shall take immediate action to correct work. Review corrections at progress meetings for nonconforming work.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

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SECTION 01 31 13 - PROJECT COORDINATION

PART 1 - GENERAL

1.1 SECTION INCLUDES

A. This Section specifies administrative and procedural requirements necessary for coordinating Work operations including, but not limited to, the following:

1. General coordination procedures.
2. Coordination drawings.

1.2 RELATED REQUIREMENTS

1. Section 01 32 13: Construction Schedule.
2. Section 01 33 00: Submittal Procedures.
3. Section 01 77 00: Contract Closeout.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION

3.1 COORDINATION

A. CONTRACTOR shall coordinate operations included in various sections of Contract Documents to assure efficient and orderly installation of each part of Work. Coordinate Work operations included under related sections of Contract Documents that depend on each other for proper installation, connection, and operation of Work, including but not limited to:

1. Schedule construction operations in sequence required where installation of one part of Work depends on installation of other components, before or after its own installation.
2. Coordinate installation of different components to assure maximum accessibility for required maintenance, service, and repair.
3. Provide provisions to accommodate items scheduled for later installation.
4. Prepare and administer provisions for coordination drawings.

B. Where necessary, prepare memoranda for distribution to each party involved, outlining special procedures required for coordination. Include such items as required in notices, reports, attendance at meetings, and:

1. Prepare similar memoranda for COUNTY OF SANTA BARBARA and Separate Work Contract where 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 assure orderly progress of Work. Such administrative activities include, but are not limited to, following:

1. Preparation of schedules.
2. Installation, relocation, and removal of temporary facilities.
3. Delivery and processing of submittals.
4. Progress meetings.
5. Project closeout activities.

D. Conservation: Coordinate Work operations to assure operations are carried out with consideration given to conservation of energy, water, materials, and:

1. Salvage materials and equipment involved in performance of, but not actually incorporated into Work.

3.2 SUBMITTALS

A. Coordination Drawings: CONTRACTOR shall prepare coordination drawings to coordinate the installation of products and materials fabricated, furnished, and installed by separate entities, under different parts of the Contract. CONTRACTOR shall notify the COUNTY OF SANTA BARBARA (CM/CDR), and ARCHITECT of all major conflicts in writing in a timely manner so that the design team can respond without construction delays. Coordination drawings shall address the following at a minimum:

1. Limitations in available space for installation or service. CONTRACTOR shall overlay plans of each trade and verify space requirements and conflicts between trades. Minor changes and adjustments that do not affect design intent shall be made by CONTRACTOR and shall be highlighted for ARCHITECT'S review.
2. Incompatibility between items provided under different trades (such as difference in voltage between equipment specified under Divisions 22 and 23 and electrical power provided under Division 26.)
3. Inconsistencies between drawings, specifications, and codes (between trades and within each trade).
4. Additional items required for existing facilities construction projects shall be designed and prepared from available as-built drawings that are verified through non-invasive and non-destructive, visual observation only. CONTRACTOR shall field verify actual existing conditions during and upon completion of demolition work and incorporate findings into preparation of coordination drawings. Minor changes and adjustments that do not affect design intent shall be made by Sub-Contractor and shall be highlighted for COUNTY OF SANTA BARBARA (CM/CDR) and ARCHITECT'S reviews.

B. Prepare coordination drawings in CAD with each trade on a separate layer, in specified color and scale. CONTRACTOR and each Subcontractor shall provide and forward reproducible copies and CAD drawing files in the order described here where applicable:

1. Structural shop drawings shall indicate location and sizes of columns, beams and other structural members, as well as wall, roof and slab penetrations, and will be provided to mechanical, electrical, low voltage and plumbing Sub-contractors for coordination. Structural items shall be indicated using black lines.
2. HVAC Subcontractor will indicate all ductwork, piping and equipment complete with installation and dimensioned service clearances, duct and pipe sizes, fitting types and sizes, top or bottom of duct and pipe elevations, distances of ducts, pipes and equipment from building reference points and hanger and support locations. Minor changes and adjustments that do not affect design intent shall be made by Subcontractor and shall be highlighted for COUNTY OF SANTA BARBARA (CM/CDR) and ARCHITECT'S reviews.

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Forward drawings to plumbing Subcontractor for further coordination. HVAC items shall be indicated using orange lines.

3. Plumbing Subcontractor will indicate all plumbing lines, and equipment complete with installation and dimensioned service clearances, pipe sizes, fitting types and sizes, top or bottom of pipe elevations, distances of pipes and equipment from building reference points and hanger/support locations. Coordinate with HVAC Subcontractor. Minor changes and adjustments that do not affect design intent shall be made by Sub-contractor and shall be highlighted for COUNTY OF SANTA BARBARA (CM/CDR) and ARCHITECT'S reviews. Upon completion drawings shall be forwarded to Fire Sprinkler Subcontractor for further coordination. All Plumbing items shall be indicated using blue lines.
4. Fire sprinkler Subcontractor will indicate fire sprinkler piping and equipment complete with installation and dimensioned service clearances, pipe sizes, fitting types and sizes, top or bottom of pipe elevations, distances of pipes and equipment from building reference points and hanger or support locations. Coordinate with Plumbing and HVAC Subcontractors. Minor changes and adjustments that do not affect design intent shall be made by sub-contractors and shall be highlighted for COUNTY OF SANTA BARBARA (CM/CDR) and ARCHITECT'S reviews. Upon completion drawings shall be forwarded to Electrical CONTRACTOR for further coordination. Fire sprinkler equipment shall be indicated using red lines.
5. Electrical and Low Voltage Subcontractors will indicate service and feeder conduit runs and other electrical equipment complete, including low voltage with installation and dimensioned service clearances, sizes, top or bottom of conduit and rack elevations, distances of conduits and equipment from building reference points and hanger and support locations. Coordinate with Fire Sprinkler, Plumbing and HVAC Subcontractors. Minor changes and adjustments that do not affect design intent shall be made by sub-contractors and shall be highlighted for COUNTY OF SANTA BARBARA (CM/CDR) and ARCHITECT'S reviews. Upon completion
6. drawings shall be forwarded to CONTRACTOR for further coordination. Electrical work shall be indicated in dark green lines. Low voltage work shall be indicated in light green lines.
7. CONTRACTOR will be responsible for the overall coordination review. As each coordination drawing is completed, CONTRACTOR will meet with COUNTY OF SANTA BARBARA (CM/CDR)to review and resolve all conflicts on coordination drawings.
8. Coordination meetings will be held in Project field office of CONTRACTOR. CONTRACTOR is required to distribute Shop Drawings, cut sheets and submittals to Subcontractors where appropriate. Reviewed coordination drawings will be maintained in Project field office of CONTRACTOR. Meeting minutes shall be developed by CONTRACTOR and submitted to COUNTY OF SANTA BARBARA (CM/CDR) within 5 days.

END OF SECTION

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SECTION - PROJECT MEETINGS

PART 1 - GENERAL

1.1 SECTION INCLUDES

A. This Section specifies administrative and procedural requirements for Project meetings, including but not limited to, the following:

1. Job start meeting.
2. Pre-installation conferences.
3. Progress meetings.
4. Meetings as required by COUNTY OF SANTA BARBARA.

1.2 RELATED REQUIREMENTS

A. Section 01 31 13: Project Coordination.

B. Section 01 32 13: Construction Schedule.

C. Section 01 33 00: Submittal Procedures.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION

3.1 JOB START MEETING

A. In accordance with General Conditions, COUNTY OF SANTA BARBARA (CM/CDR)will schedule a job start meeting before starting the Work, at a time and date determined by COUNTY OF SANTA BARBARA. Meeting shall be held at the Project site, or another location as determined by COUNTY OF SANTA BARBARA (CM/CDR). Meeting will be held to review responsibilities, procedures, and other administrative requirements contained within the Contract Documents.

B. Authorized representatives of COUNTY OF SANTA BARBARA (CM/CDR), INSPECTOR, ARCHITECT, CONTRACTOR, and other parties shall attend the meeting. All participants at the meeting shall be familiar with the Project and authorized to conclude matters relating to the Work.

C. Agenda items shall include significant items which could affect progress of the Work, including, but not limited to the following:

1. Preliminary Construction Schedule.
2. Critical work sequencing.
3. Designation of responsible personnel.
4. Identification of COUNTY OF SANTA BARBARA

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5. Lines of Communication
6. Procedures for processing field decisions.
7. Procedures for testing and inspection
8. Request for Proposal.
9. Request for Clarification.
10. Construction Directive and Change Order.
11. Procedures for processing Applications for Payment.
12. Prevailing wages.
13. Submittal and review of Shop Drawings, Product Data, material lists, and Samples.
14. Preparation of project record documents.
15. Use of the Project site and/or premises.
16. Procedures for disruption and shutdown
17. Parking availability.
18. Office, work, and storage areas.
19. Equipment deliveries and priorities.
20. Safety procedures.
21. First Aid.
22. Security.
23. Housekeeping. Progress cleaning
24. Working hours and work restrictions
25. Contract Compliance Officer.
26. Insurance Services.
27. Environmental Health and Safety.
28. Owner's occupancy requirements
29. Substantial Completion, Administrative Closeout and Contract Completion requirements and procedures.
30. Procedures for Mandatory Dispute and Claim Resolution.
31. Storm Water Pollution Prevention Plan (SWPPP).
32. CEQA Compliance.

D. CONTRACTOR and/or COUNTY OF SANTA BARBARA (CM/CDR), shall prepare and issue meeting minutes to attendees and interested parties no later than five calendar days after the meeting date.

3.2 PRE-INSTALLATION CONFERENCES

A. CONTRACTOR shall coordinate and conduct pre-installation conferences at the Project site as required by related Sections of the Contract Documents.

B. CONTRACTOR, manufacturers, and fabricators involved in or affected by the installation and its coordination or integration with other preceding and/or subsequent installations of Work shall attend the meeting. CONTRACTOR shall advise COUNTY OF SANTA BARBARA , INSPECTOR, and ARCHITECT of scheduled meeting dates in order to secure their attendance.

1. CONTRACTOR shall review the progress of construction activities and preparations for the activity under consideration at each pre-installation conference, including requirements for the following:
   a. Contract Documents.
   b. Options.
   c. Related Construction Directives and Change Orders.
   d. Purchases.
   e. Deliveries.
   f. Shop Drawings, Product Data, and quality-control samples.

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g. Review of mockups.
h. Possible conflicts.
i. Compatibility problems.
j. Time schedules.
k. Weather limitations.
l. Manufacturer's recommendations.
m. Warranty requirements.
n. Compatibility of materials.
o. Acceptability of substrates.
p. Temporary facilities.
q. Space and access limitations.
r. Governing regulations.
s. Safety.
t. Inspecting and testing requirements.
u. Required performance results.
v. Recording requirements.
w. Protection.

2. CONTRACTOR shall record significant discussions and directives received from each conference. CONTRACTOR shall, within three (3) calendar days after the meeting date, distribute the minutes of the meeting to all concerned parties, including but not limited to, COUNTY OF SANTA BARBARA(CM/CDR), INSPECTOR, and ARCHITECT.

3.3 PROGRESS MEETINGS

A. Progress meetings will be held at the Project site at regular intervals, typically weekly, as determined by the COUNTY OF SANTA BARBARA (CM/CDR).

B. In addition to representatives of CONTRACTOR, COUNTY OF SANTA BARBARA (CM/ CDR), and ARCHITECT, each Subcontractor, supplier, or other entity concerned with current progress or involved in planning, coordination, or performance of the Work shall, if requested by COUNTY OF SANTA BARBARA, be represented at these meetings. All participants at the conference shall be familiar with the Project and authorized to conclude all matters relating to the Work.

C. Failure of CONTRACTOR to be so represented at any progress meeting which is held at a mutually agreed time or for which a written notice is given, shall not relieve CONTRACTOR from abiding by all COUNTY OF SANTA BARBARA (CM/CDR), determinations or directives issued at such meeting.

D. COUNTY OF SANTA BARBARA (CM/CDR), will review and correct or approve minutes of the previous progress meeting and will review other significant items affecting progress. Topics for discussion as appropriate to the status of the Project include but are not limited to:

1. Interface requirements.
2. Construction Schedule (review of Contractor's three-week Look-Ahead and Monthly Schedules).
3. Sequence and coordination.
4. Status of submittals / RFCs.
5. Deliveries.
6. Off-site fabrication.
7. Access.
8. Site utilization.

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9. Temporary Construction Facilities and Controls.
10. Hours of work.
11. Hazards and risks.
12. Housekeeping.
13. Quality of materials, fabrication, and execution.
14. Unforeseen conditions.
15. Testing and Inspection.
16. Defective Work.
17. Construction Directive.
18. Request for Proposal.
19. Change Order Proposals and Change Orders.
20. Documentation of information for payment requests.
21. Application for Payment.
22. Other items as required or as brought forth.
23. Initial Notice of Start of Issue, Event, Condition, Circumstance, or Cause of Perceived Delay, Disruption, Interference, Hindrance, Acceleration as described in the General Conditions).
24. Final Notice of End of Issue, Event, Condition, Circumstance, or Cause of Perceived Delay, Disruption, Interference, Hindrance, Acceleration as described in the General Conditions).
25. Storm Water Pollution Prevention.
26. CEQA Compliance.

E. No later than three (3) calendar days after each progress meeting, CONTRACTOR and/ or COUNTY OF SANTA BARBARA (CM/CDR) will prepare and distribute minutes of the meeting to each present and absent party. Include a brief summary, in narrative form, of progress, decisions, directives, actions taken, and all other issues since the previous meeting and report.

1. Schedule Updating: CONTRACTOR shall revise the Construction Schedule after each progress meeting where revisions to the schedule have been made or recognized and issue the revised schedule at the next scheduled progress meeting.

3.4 ADDITIONAL MEETINGS

A. COUNTY OF SANTA BARBARA, upon giving notice to the intended parties and without further obligation, may require additional meetings to discuss Work and/or Project related activities.

3.5 COUNTY OF SANTA BARBARA'S RIGHT TO RECORD

A. CONTRACTOR agrees on behalf of itself and all its subcontractors that the COUNTY OF SANTA BARBARA may audiotape or videotape any meetings, training, and any work at any time during the Project.

END OF SECTION

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SECTION 01 31 26 - ELECTRONIC PROJECT MANAGEMENT SYSTEM

PART 1 - GENERAL

1.1 DESCRIPTION

A. This Section is in addition to the Contract General Conditions.

B. The CONTRACTOR shall be required to use an Electronic Project Management (EPM) system for electronic construction management document control and communications between the COUNTY OF SANTA BARBARA (CM/CDR), other project-related consultants, and the CONTRACTOR (aka the Project Team).

C. Unless otherwise designated by the COUNTY OF SANTA BARBARA (CM/CDR), the system will be maintained and owned by the CONTRACTOR but operated collaboratively by the Project Team. CONTRACTOR is required to get COUNTY OF SANTA BARBARA approval on the type of EPM system program that will be used on this project. COUNTY OF SANTA BARBARA preferred EPM is Procore construction management software or equal. The EPM that the CONTRACTOR chooses shall be approved by the COUNTY OF SANTA BARBARA. The CONTRACTOR shall be responsible for training the members of the Project team on how to use the EPM at no additional cost to the COUNTY OF SANTA BARBARA.

D. The CONTRACTOR shall be primarily responsible for the scanning, uploading, and logging of all electronic documents for the project as indicated below.

E. The CONTRACTOR shall provide personnel and equipment as required by their employees to electronically submit all necessary documents.

F. The EPM system shall contain the following information which shall be made available by the CONTRACTOR for the project team:

1. Submittal Information (shop drawings, product data, etc.) and Logs
2. Requests for Clarification and Logs
3. Inspection Requests / Reports
4. Non-Compliance Inspection Reports
5. Project Photographs
6. Project Meeting Minutes
7. Project FTP Site
8. Contract Documents (including specifications, drawings, reference materials, sketches, ASIs, etc.)
9. Other Documentation as determined by the COUNTY OF SANTA BARBARA and the Project team.

G. All Request for Clarification (RFCs) and Inspection Requests shall be submitted by the CONTRACTOR to the COUNTY OF SANTA BARBARA (CM/CDR) electronically through the EPM.

H. The COUNTY OF SANTA BARBARA will NOT accept faxed and/or handwritten documentation of RFCs, RFC Sketches, and/or Inspection Requests.

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1. The CONTRACTOR shall be solely responsible for data entry via the chosen EPM Website for the generation of RFIs.
2. The CONTRACTOR shall be solely responsible for the scanning of sketches / drawings as necessary for the electronic submittal and attachment of necessary information related to RFIs.
3. CONTRACTOR shall supply field personnel all necessary computer equipment necessary to enter RFIs and other documentation electronically.

I. Submittals shall be submitted via Section 01 33 00 Submittal Procedures.

1.2 CONTRACTOR'S RESPONSIBILITIES

A. The CONTRACTOR shall have computer(s) with capabilities to access the EPM system at their on-site and off-site project offices. At the pre-construction meeting, the CONTRACTOR shall provide to the COUNTY OF SANTA BARBARA (CM/CDR) the contact information (including email addresses) of all CONTRACTOR personnel that the CONTRACTOR chooses to provide coordination for the EPM system and information. At a minimum, this will include the CONTRACTOR'S Project Engineer and/or other technical staff as required. These personnel shall have the computer skills required to access the Internet and do basic trouble shooting of the EPM system. The CONTRACTOR shall provide training and technical support to the Project team personnel for use of the EPM system. The CONTRACTOR shall complete 4-hours training, minimum, for each Project team personnel member who will access and use the EPM. The EPM shall be onsite and operational to process the CONTRACTOR'S first payment request.

1.3 OFFICIAL RECORDS

A. The documentation and records maintained on the EPM system will be the "Official Record" for the project (not including as-builts created by the ARCHITECT). At the conclusion of the project all records shall be made available via Adobe "pdf" and/or other electronic filing methods approved by the COUNTY OF SANTA BARBARA for import/export.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

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SECTION 01 31 29 - PARTNERING

PART 1 - GENERAL

1.1 SECTION INCLUDES

A. The furnishing of labor, materials, equipment, services, and incidentals necessary for a Partnering Agreement process.

B. This specification requires the use of a formal Partnering process between COUNTY OF SANTA BARBARA and CONTRACTOR. Partnering is a collaborative effort and a long-term commitment between two or more organizations for the purpose of achieving specific project objective by maximizing the efficiency and effectiveness of each organization's participation in meeting specific project requirements. This effectiveness requires changing traditional "individualized" relationships to "shared culture" relationships without regard to organizational boundaries. The partnering relationship is based upon trust, dedication to common goals, understanding of each other's individual expectations and values, and a full commitment to success. Benefits include improved communications, efficiency and cost effectiveness, increased opportunity for innovation, and the continuous improvement of product quality and services.

C. The COUNTY OF SANTA BARBARA'S Partnering process applies these concepts to the delivery of new facilities. By using partnering in this contract, the COUNTY OF SANTA BARBARA seeks to maximize the opportunity to achieve project success measured by how well the project meets the operational requirements for the school, financial constraints for the parties, the school schedule constraints, safety, quality, functional requirements of the project, and the need to employ appropriate levels of risk management throughout the project.

1.2 SUBMITTALS

A. CONTRACTOR shall, upon Notice of Intent to Award, begin arranging for the Partnering workshop. CONTRACTOR shall provide a list of CONTRACTOR employees, subcontractors, and other personnel the CONTRACTOR anticipates will attend the meeting. The attendee list shall include the job title of each person, an email address, telephone and fax number.

B. CONTRACTOR shall propose at least three facilitators and submit their names to the COUNTY OF SANTA BARBARA for review and mutual agreement with COUNTY OF SANTA BARBARA as to a facilitator for the project Partnering process. CONTRACTOR shall provide resumes of the proposed facilitators as well as information about each facilitator's business including, but not limited to years in business, references and proposed agenda.

C. CONTRACTOR shall recommend a location and a date, subject to COUNTY OF SANTA BARBARA approval, for the initial workshop between CONTRACTOR and COUNTY OF SANTA BARBARA.

D. At the completion of the initial Partnering workshop, and any follow up meetings, within

E. 15 days thereafter the Facilitator shall provide to CONTRACTOR and COUNTY OF SANTA BARBARA the following:

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1. Copies of meeting minutes for attendees in accordance with the agenda detailing the issues addressed, actions required, and comments made by all parties. The summary shall be provided in electronic format in MS Word for email distribution.
2. Partnering Charter in sufficient quantities for attendees and file copies for primary parties involved.
3. Proposal for follow up meetings, if required.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION

3.1 PARTNERING PROCEDURES

A. Initial Partnering Meeting: The initial Partnering Workshop shall be an all-day meeting or as mutually agreed between COUNTY OF SANTA BARBARA (CM/CDR) and CONTRACTOR. The initial meeting may be prior to or combined with the pre- construction conference but shall occur no later than the Notice to Proceed. The number of follow up meetings will be as required in Article 3.01.C below. COUNTY OF SANTA BARBARA and CONTRACTOR shall:

1. Mutually agree upon the scope, agenda, attendees, and a location for the meeting.
2. Use a facilitator to organize and conduct the meetings:
   a. The facilitator is to act as a neutral party. There must be no conflict of interest on the part of the facilitator in favor of COUNTY OF SANTA BARBARA, CONTRACTOR or ARCHITECT.
   b. COUNTY OF SANTA BARBARA and CONTRACTOR will provide the Facilitator with a list of attendees. COUNTY OF SANTA BARBARA will be approximately **five (5)** people in attendance.
   c. The meeting arrangements (meeting space, audio visual equipment etcetera) will be the responsibility of the Facilitator.
   d. CONTRACTOR and COUNTY OF SANTA BARBARA will be responsible for expenses incurred by their respective employees, including but not limited to meals, travel and lodging.
   e. The Facilitator should contact COUNTY OF SANTA BARBARA and CONTRACTOR at least three weeks prior to the workshop, and have a conference call with the parties at least 10 calendar days prior to the workshop to discuss ideas and to finalize the agenda. The agenda will be based on the needs of the project delivery team, and may be as specific as deemed necessary. The Facilitator is responsible for developing the full agenda in conjunction with both parties.

B. Participation in Partnering: It is the responsibility of COUNTY OF SANTA BARBARA and CONTRACTOR to compile a list of and invite the key project personnel to participate in the partnering workshops, as well as key representatives of interested parties in attendance. Examples include, but are not limited to ARCHITECT, CONSTRUCTION MANAGER, Project Inspector, subcontractors, material suppliers, city and county officials, local jurisdictions, and utility companies. CONTRACTOR and COUNTY OF SANTA BARBARA shall encourage staff to attend and actively participate in the partnering process. CONTRACTOR and COUNTY OF SANTA BARBARA agree that the personnel identified and attending the workshop will be assigned to the project.

C. Payment: The cost of the initial partnering workshop will be paid by CONTRACTOR. CONTRACTOR will be responsible for arranging the partnering workshop (meeting room, audio

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visual equipment, supplies, cost of facilitator, etcetera). Expenses for miscellaneous incidentals shall be paid for out of this cost.

D. Follow up partnering meeting would be scheduled on a quarterly basis. These meetings will generally be "executive" level involving CONTRACTOR, ARCHITECT, Project Inspector and COUNTY OF SANTA BARBARA (CM/CDR) only. The cost of these meetings shall be borne by CONTRACTOR. For planning purposes, these meetings will generally be one (1) day in duration and may be held at the jobsite or other facility available to CONTRACTOR.

END OF SECTION

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SECTION 01 32 00 - CONSTRUCTION PROGRESS DOCUMENTATION

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes administrative and procedural requirements for documenting the progress of construction during performance of the Work, including the following:

1. Startup construction schedule. 2.Contractor's Construction Schedule. 3.Construction schedule updating reports. 4.Daily construction reports.
2. Material location reports.
3. Site condition reports.
4. Unusual event reports.

B. Related Requirements:

1. Section 012900 "Payment Procedures" for schedule of values and requirements for use of cost-loaded schedule for Applications for Payment.
2. Section 013213 "Construction Schedule".
3. Section 013214 "Construction Milestones"
4. Section 01324A "Construction Milestones Appendix A"

1.2 DEFINITIONS

A. Activity: A discrete part of a project that can be identified for planning, scheduling, monitoring, and controlling the construction Project. Activities included in a construction schedule consume time and resources.

1. Critical Activity: An activity on the critical path that must start and finish on the planned early start and finish times.
2. Predecessor Activity: An activity that precedes another activity in the network.
3. Successor Activity: An activity that follows another activity in the network.

B. Cost Loading: The allocation of the schedule of values for completing an activity as scheduled. The sum of costs for all activities must equal the total Contract Sum.

C. CPM: Critical path method, which is a method of planning and scheduling a construction project where activities are arranged based on activity relationships. Network calculations determine the critical path of Project and when activities can be performed.

D. Critical Path: The longest connected chain of interdependent activities through the network schedule that establishes the minimum overall Project duration and contains no float.

E. Event: The starting or ending point of an activity.

F. Float: The measure of leeway in starting and completing an activity.

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1. Float time is not for the exclusive use or benefit of either Owner or Contractor, but is a jointly owned, Project resource available to both parties as needed to meet schedule milestones and Contract completion date.
2. Free float is the amount of time an activity can be delayed without adversely affecting the early start of the successor activity.
3. Total float is the measure of leeway in starting or completing an activity without adversely affecting the planned Project completion date.

G. Resource Loading: The allocation of labor and equipment necessary for completing an activity as scheduled.

1.3 INFORMATIONAL SUBMITTALS

A. Format for Submittals: Submit required submittals in the following format:

1. Working electronic copy of schedule file.
2. PDF file.
3. Two paper copies, of sufficient size to display entire period or schedule, as required.

B. Startup construction schedule.

1. Submittal of cost-loaded startup construction schedule will not constitute approval of schedule of values for cost-loaded activities.

C. Startup Network Diagram: Of size required to display entire network for entire construction period. Show logic ties for activities.

D. Contractor's Construction Schedule: Initial schedule, of size required to display entire schedule for entire construction period.

1. Submit a working digital copy of schedule, using software indicated, and labeled to comply with requirements for submittals.

E. CPM Reports: Concurrent with CPM schedule, submit each of the following reports. Format for each activity in reports to contain activity number, activity description, cost and resource loading, original duration, remaining duration, early start date, early finish date, late start date, late finish date, and total float in calendar days.

1. Activity Report: List of activities sorted by activity number and then early start date, or actual start date if known.
2. Logic Report: List of preceding and succeeding activities for each activity, sorted in ascending order by activity number and then by early start date, or actual start date if known.
3. Total Float Report: List of activities sorted in ascending order of total float.
4. Earnings Report: Compilation of Contractor's total earnings from the Notice to Proceed until most recent Application for Payment.

F. Construction Schedule Updating Reports: Submit with Applications for Payment.

G. Daily Construction Reports: Submit at weekly intervals.

H. Material Location Reports: Submit at monthly intervals.

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I. Site Condition Reports: Submit at time of discovery of differing conditions.

J. Unusual Event Reports: Submit at time of unusual event.

K. Qualification Data: For scheduling consultant.

1.4 QUALITY ASSURANCE

A. Scheduling Consultant Qualifications: An experienced specialist in CPM scheduling and reporting, with capability of producing CPM reports and diagrams within 24 hours of Architect's request.

B. Prescheduling Conference: Conduct conference at Project site to comply with requirements in Section 013100 "Project Management and Coordination." Review methods and procedures related to the preliminary construction schedule and Contractor's Construction Schedule, including, but not limited to, the following:

1. Review software limitations and content and format for reports.
2. Verify availability of qualified personnel needed to develop and update schedule.
3. Discuss constraints, including work stages, interim milestones, and Owner occupancy.
4. Review delivery dates for Owner-furnished products. 5.Review schedule for work of Owner's separate contracts. 6.Review submittal requirements and procedures.
5. Review time required for review of submittals and resubmittals.
6. Review requirements for tests and inspections by independent testing and
7. inspecting agencies.
8. Review time required for Project closeout and Owner startup procedures, including commissioning activities.
9. Review and finalize list of construction activities to be included in schedule.
10. Review procedures for updating schedule.

1.5 COORDINATION

A. Coordinate Contractor's Construction Schedule with the schedule of values, list of subcontracts, submittal schedule, progress reports, payment requests, and other required schedules and reports.

1. Secure time commitments for performing critical elements of the Work from entities involved.
2. Coordinate each construction activity in the network with other activities, and schedule them in proper sequence.

1.6 CONTRACTOR'S CONSTRUCTION SCHEDULE

A. Computer Scheduling Software: Prepare schedules using current version of a program that has been developed specifically to manage construction schedules.

B. Scheduling Consultant: Engage a consultant to provide planning, evaluation, and reporting, using CPM scheduling.

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1. In-House Option: Owner may waive requirement to retain a consultant if Contractor employs skilled personnel with experience in CPM scheduling and reporting techniques. Submit qualifications.
2. Meetings: Scheduling consultant to attend all meetings related to Project progress, alleged delays, and time impact.

C. Time Frame: Extend schedule from date established for the Notice of Award to date of Final Completion.

1. Contract completion date to not be changed by submission of a schedule that shows an early completion date, unless specifically authorized by Change Order.

D. Activities: Treat each floor or separate area as a separate numbered activity for each main element of the Work. Comply with the following:

1. Activity Duration: Define activities so no activity is longer than 15 calendar days, unless specifically allowed by OWNER.
2. Temporary Facilities: Indicate start and completion dates for the following as applicable:
   a. Securing of approvals and permits required for performance of the Work.
   b. Temporary facilities.
   c. Construction of mock-ups, prototypes, and samples.
   d. Owner interfaces and furnishing of items.
   e. Interfaces with Separate Contracts.
   f. Regulatory agency approvals.
   g. Punch list.
3. Procurement Activities: Include procurement process activities for long lead-time items and major items, requiring a cycle of more than 60 days, as separate activities in schedule.
4. Submittal Review Time: Include review and resubmittal times indicated in Section 013300 "Submittal Procedures" in schedule. Coordinate submittal review times in Contractor's Construction Schedule with submittal schedule.
5. Startup and Testing Time: Include no fewer than fifteen (15) calendar days for startup and testing.
6. Commissioning Time: Include no fewer than fifteen (15) calendar days for commissioning.
7. Substantial Completion: Indicate completion in advance of date established for Substantial Completion and allow time for Architect's and Construction Manager's administrative procedures necessary for certification of Substantial Completion.
8. Punch List and Final Completion: Include not more than thirty (3) calendar days for completion of punch list items and Final Completion.

E. Constraints: Include constraints and work restrictions indicated in the Contract Documents and as follows in schedule and show how the sequence of the Work is affected.

1. Phasing: Arrange list of activities on schedule by phase.
2. Work under More Than One Contract: Include a separate activity for each contract.
3. Work by Owner: Include a separate activity for each portion of the Work performed by Owner.
4. Products Ordered in Advance: Include a separate activity for each product. Include delivery date indicated in Section 011000 "Summary." Delivery dates indicated stipulate the earliest possible delivery date.
5. Owner-Furnished Products: Include a separate activity for each product. Include delivery date indicated in Section 011000 "Summary." Delivery dates indicated stipulate the earliest possible delivery date.

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6. Work Restrictions: Show the effect of the following items on the schedule:
   a. Coordination with existing construction.
   b. Limitations of continued occupancies.
   c. Uninterruptible services.
   d. Partial occupancy before Substantial Completion.
   e. Use-of-premises restrictions.
   f. Provisions for future construction.
   g. Seasonal variations.
   h. Environmental control.

7. Work Stages: Indicate important stages of construction for each major portion of the Work, including, but not limited to, the following:
   a. Subcontract awards.
   b. Submittals.
   c. Purchases.
   d. Mockups.
   e. Fabrication.
   f. Sample testing.
   g. Deliveries.
   h. Installation.
   i. Tests and inspections.
   j. Adjusting.
   k. Curing.
   l. Building flush-out.
   m. Startup and placement into final use and operation.
   n. Commissioning.

8. Construction Areas: Identify each major area of construction for each major portion of the Work. Indicate where each construction activity within a major area must be sequenced or integrated with other construction activities to provide for the following:
   a. Structural completion.
   b. Temporary enclosure and space conditioning.
   c. Permanent space enclosure.
   d. Completion of mechanical installation.
   e. Completion of electrical installation.
   f. Substantial Completion.

F. Milestones: Include milestones indicated in the Contract Documents in schedule, including, but not limited to, the Notice to Proceed, Substantial Completion, and Final Completion. Refer to Section 01 32 14 and Section 01 32 14 A.

G. Cost Correlation: Superimpose a cost correlation timeline, indicating planned and actual costs. On the line, show planned and actual dollar volume of the Work performed as of planned and actual dates used for preparation of payment requests.

   1. See Section 012900 "Payment Procedures" for cost reporting and payment procedures.

H. Upcoming Work Summary: Prepare summary report indicating activities scheduled to occur or commence prior to submittal of next schedule update. Summarize the following issues:

   1. Unresolved issues.
   2. Unanswered Requests for Information.
   3. Rejected or unreturned submittals.
   4. Notations on returned submittals.

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5. Pending modifications affecting the Work and the Contract Time.

I. Contractor's Construction Schedule Updating: At monthly intervals, update schedule to reflect actual construction progress and activities. Issue schedule with each regularly scheduled progress meeting.

1. Revise schedule immediately after each meeting or other activity where revisions have been recognized or made. Issue updated schedule concurrently with the report of each such meeting.
2. Include a report with updated schedule that indicates every change, including, but not limited to, changes in logic, durations, actual starts and finishes, and activity durations.
3. As the Work progresses, indicate Final Completion percentage foreach activity.

J. Recovery Schedule: When periodic update indicates the Work is 14 or more calendar days behind the current approved schedule, submit a separate recovery schedule indicating means by which Contractor intends to regain compliance with the schedule. Indicate changes to working hours, working days, crew sizes, equipment required to achieve compliance, and date by which recovery will be accomplished.

K. Distribution: Distribute copies of approved schedule to Architect, Construction Manager (CM/CDR), Owner, separate contractors, testing and inspecting agencies, and other parties identified by Contractor with a need-to-know schedule responsibility.

1. Post copies in Project meeting rooms and temporary field offices.
2. When revisions are made, distribute updated schedules to the same parties and post in the same locations. Delete parties from distribution when they have completed their assigned portion of the Work and are no longer involved in performance of construction activities.

1.7 STARTUP CONSTRUCTION SCHEDULE - NOT USED

1.8 CPM SCHEDULE REQUIREMENTS – REFER TO SECTION 01 32 14 CONSTRUCTION SCHEDULE

1.9 REPORTS

A. Daily Construction Reports: Prepare a daily construction report recording the following information concerning events at Project site:

1. List of subcontractors at Project site.
2. List of separate contractors at Project site. 3.Approximate count of personnel at Project site. 4.Equipment at Project site.
3. Material deliveries.
4. High and low temperatures and general weather conditions, including presence of rain or snow.
5. Testing and inspection.
6. Accidents.
7. Meetings and significant decisions.
8. Unusual events.
9. Stoppages, delays, shortages, and losses.
10. Meter readings and similar recordings.

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11. Emergency procedures.
12. Orders and requests of authorities having jurisdiction.
13. Change Orders received and implemented.
14. Change Directives received and implemented.
15. Services connected and disconnected.
16. Equipment or system tests and startups.
17. Partial completions and occupancies.
18. Substantial Completions authorized.

B. Material Location Reports: At monthly intervals, prepare and submit a comprehensive list of materials delivered to and stored at Project site. List to be cumulative, showing materials previously reported plus items recently delivered. Include with list a statement of progress on and delivery dates for materials or items of equipment fabricated or stored away from Project site. Indicate the following categories for stored materials:

1. Material stored prior to previous report and remaining in storage.
2. Material stored prior to previous report and since removed from storage and installed.
3. Material stored following previous report and remaining in storage.

C. Site Condition Reports: Immediately on discovery of a difference between site conditions and the Contract Documents, prepare and submit a detailed report. Submit with a Request for Information. Include a detailed description of the differing conditions, together with recommendations for changing the Contract Documents.

D. Unusual Event Reports: When an event of an unusual and significant nature occurs at Project site, whether or not related directly to the Work, prepare and submit a special report. List chain of events, persons participating, responses by Contractor's personnel, evaluation of results or effects, and similar pertinent information. Advise Owner in advance when these events are known or predictable.

1. Submit unusual event reports directly to Owner within three (3) calendar day(s) of an occurrence. Distribute copies of report to parties affected by the occurrence.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION 01 32 00

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SECTION 01 32 13 - CONSTRUCTION SCHEDULE

PART 1 - GENERAL

1.1 SECTION INCLUDES

A. Required procedures, preparation, submittals, reviews, updates, and revisions to the cost/schedule integrated construction schedule. The purpose of this section is to:

1. Ensure adequate planning and execution of the Work by CONTRACTOR.
2. Establish a standard against which satisfactory completion of the Project can be measured by COUNTY OF SANTA BARBARA.
3. Assist CONTRACTOR and COUNTY OF SANTA BARBARA Construction Manager in monitoring progress.
4. Aid in assessing the impact of any changes to the Contract.
5. Provide justification for progress payments.

1.2 RELATED REQUIREMENTS

A. Section 01 11 00 Summary of Work.

B. Section 01 29 73 Schedule of Values.

C. Section 01 29 76 Progress Payment Procedures.

D. Section 01 31 13 Project Coordination.

E. Section 01 33 00 Submittal Procedures.

F. Section 01 50 00 Construction Facilities Temporary Controls.

G. Section 01 77 00 Contract Closeout.

H. Section 01 78 36 Warranties.

PART 2 - PRODUCTS

2.1 SCHEDULING SOFTWARE

A. CONTRACTOR shall utilize Primavera Scheduling Software (P6) to employ the Critical Path Method (CPM) in the development and maintenance of the construction schedule. If the version of Primavera Scheduling Software (P6) used is greater than Version 15.1, the CONTRACTOR shall save & export schedules in Version 15.1 before submitting to COUNTY OF SANTA BARBARA for review. The scheduling software shall be capable of being resource loaded with manpower, costs, and materials. It shall also be capable of generating time-scaled logic diagrams, resource histograms and profiles, bar charts, layouts, and reports with any and/or all activity detail.

B. All schedule calculation rules, auto cost rules and resource calculation rules shall be in a format acceptable to COUNTY OF SANTA BARBARA. When schedule calculations are performed, the "Retained Logic" setting shall be used. CONTRACTOR shall use the zero "Decimal Places" setting.

PART 3 - EXECUTION

3.1 SUBMITTALS

A. CONTRACTOR shall retain a construction scheduler to work in enough capacity to perform all the requirements outlined in this Section. CONTRACTOR shall submit to the COUNTY OF SANTA BARBARA (CM/CDR) a resume of the proposed Scheduler for review and acceptance prior to the preparation of any Schedule. The resume shall demonstrate the proposed scheduler's capability to plan, coordinate, execute, and monitor a cost/resource loaded CPM schedule as required for this Project and have a minimum of five years direct experience using Primavera Project Planner or Equal/Like Schedule program. Scheduler will cooperate with COUNTY OF SANTA BARBARA and shall be available on site for monitoring, maintaining, and updating schedules in a timely manner. COUNTY OF SANTA BARBARA has the right to reject the Scheduler based upon a lack of experience as required by this Section or based on lack of on-site performance and timeliness of schedule submittals. If COUNTY OF SANTA BARBARA (CM/CDR) does not accept the proposed Scheduler, CONTRACTOR shall within one week of disapproval, propose another scheduler who meets the experience requirements stated above.

B. CONTRACTOR shall submit two color originals and three copies of all bar charts, reports and/or other required schedule data as outlined in this Section. CONTRACTOR shall electronically deliver the schedule file in its original format at the time of submittal.

C. CONTRACTOR shall attend a pre-construction scheduling conference with COUNTY OF SANTA BARBARA (CM/CDR) within 7 days after Notice of Award. Contractor shall then develop and submit the Preliminary Construction Schedule within 14 days after Notice of Award.

D. CONTRACTOR shall submit the Proposed Baseline Schedule no later than thirty days from the Notice to Proceed.

E. CONTRACTOR shall submit the Monthly Schedule Updates, Four-Week Rolling Schedules, and Recovery Schedules as required.

3.2 PRELIMINARY CONSTRUCTION SCHEDULE

A. The purpose of the cost-loaded Preliminary Construction Schedule is to provide an interim mechanism in which to measure performance on individual activities and to validate the CONTRACTOR'S monthly Application for Payment on work performed (starting with month one) during the first three months of the job until the complete Baseline Schedule is approved by the COUNTY OF SANTA BARBARA (CM/CDR).

B. CONTRACTOR shall develop and submit a cost loaded Preliminary Construction Schedule as required by this Section. It shall be submitted in computer generated network format and shall be organized by Activity Codes representing the CONTRACTOR'S intended sequencing of the Work. The Preliminary Construction Schedule shall include activities for the first 90 calendar

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days following the NTP such as mobilization, preparation of submittals, specified review periods, procurement items, fabrication items, milestones, and detailed construction activities.

1. Upon COUNTY OF SANTA BARBARA'S (CM/CDR) acceptance of the Preliminary Construction Schedule, CONTRACTOR shall update the accepted Preliminary Construction Schedule each month (beginning with month 1) and submit these updates until CONTRACTOR'S Baseline Schedule is fully developed and accepteSince updates to Preliminary Construction Schedule are the basis for payment to CONTRACTOR during the first three-month period, submittal and acceptance of such updates shall be a condition precedent to approving monthly payment(s), as referenced in General Conditions.

C. Provide a written narrative describing CONTRACTOR'S approach to mobilization, procurement, and construction during the first 90 calendar days including crew sizes, equipment and material delivery, site access, submittals, and permits.

D. Submit Bar Charts, Tabular Reports, a Cost Flow Histogram, Electronic Data, and Plots in accordance with the General Conditions.

3.3 SCHEDULE OF VALUES

A. CONTRACTOR shall cost load activities in the Construction Baseline Schedule and allocate costs to the cost accounts of all activities. The cost accounts shall match the CSI sections listed in the Table Of Contents of the Specifications. The format shall be coordinated with Specification Section 01 29 73 (Schedule of Values), and Specification Section 01 29 76 (Progress Payment Procedures).

B. Submit a computer-generated report from the Construction Baseline Schedule using the P6 scheduling software. The report shall contain the following data for each activity: Cost Account Number (by CSI section), Cost Account Description, Cost Account Budget, Cost to Date, Cost this Period, and Cost to complete. Total costs shall be organized and totaled by CSI section. This report shall be the source of the data CONTRACTOR reports on the Schedule of Values.

C. The cost loading associated with the activities shall be based on CONTRACTOR estimates of costs that CONTRACTOR will incur performing the specific activities. If COUNTY OF SANTA BARBARA determines that the costs are front loaded and/or the distribution of costs is unreasonable, CONTRACTOR shall revise accordingly and resubmit the Schedule of Values within five (5) days for COUNTY OF SANTA BARBARA review.

3.4 BASELINE SCHEDULE CPM NETWORK

A. No later than thirty days from the Notice to Proceed, CONTRACTOR shall submit a detailed Proposed Baseline Schedule that covers the entire duration of the Project. This schedule shall convey CONTRACTOR'S plan for organizing, managing, and executing the Work.

B. The Proposed Baseline Schedule shall include activity descriptions, sequencing, logic relationships, duration estimates, cost loading by CSI section in accordance with General Conditions, resource loading of manpower, and other information as set forth in this Section.

1. The Proposed Baseline Schedule shall include all Milestones as well as all activities required to achieve timely completion of the Milestones.

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2. The Proposed Baseline Schedule shall include activities for: all construction activities, the NTP, Milestones, submittals, coordination drawings, re-submittals, procurement of materials and equipment, manufacturing, fabrication & delivery, COUNTY OF SANTA BARBARA (CM/CDR) furnished contractor installed items (OFCI), access restrictions, work restrictions, phased occupancy, testing, start-up, and contract closeout activities. The Proposed Baseline Schedule shall allow a period for COUNTY OF SANTA BARBARA (CM/ CDR) and ARCHITECT to review each submittal, as required by Section 01 33 00 and other sections which require additional time for COUNTY OF SANTA BARBARA reviews and deferred submittal reviews.
3. The Proposed Baseline Schedule shall include start and completion dates for: temporary facilities, construction of mock-ups, prototypes, samples, punch list, COUNTY OF SANTA BARBARA interfaces and furnishing of items, separate work contracts, regulatory agency approvals, and permits required for performance of the Work.
4. The Proposed Baseline Schedule shall allow for all foreseeable factors and risks which affect performance of the Work. Include allowances for weather conditions in accordance with General Conditions, applicable laws, transportation, traffic, air quality, noise, or any other applicable regulatory requirements, regulations or collective bargaining agreements pertaining to labor.
5. The Proposed Baseline Schedule shall include an activity with a minimum review period of one hundred days for all Deferred Approvals. In addition, as a predecessor to this activity, a separate 18-day COUNTY OF SANTA BARBARA (CM/CDR) review period shall be included in the Proposed Baseline Schedule.
6. CONTRACTOR shall not use any float suppression techniques such as preferential sequencing or logic, special hidden lag time between activities or milestones, float absorption activities, or unjustifiable over-estimating of activity durations in preparing the Proposed Baseline Schedule. Finish Milestones should be constrained to a "Finish on or before" constraint. No "Zero Free Float" constraints, No "Early" Constraints, and No "Mandatory Finish" constraints shall be utilized.
    a. The Proposed Baseline Schedule shall include activity durations based on the crew sizes and equipment utilization that CONTRACTOR will maintain during the ProjecNo activity durations shall exceed fifteen (15) working days unless approved by the COUNTY OF SANTA BARBARA (CM/CDR). Non- construction activities such as procurement, delivery, or submittal activities are exempted. CONTRACTOR will need to perform their due- diligence to make sure that the activity man-power loading and activity durations are directly integrated.

7. CONTRACTOR shall include with the Proposed Baseline Schedule a written narrative report sufficiently comprehensive to explain the rationale behind CONTRACTOR'S approach to the Work including but not limited to: activity durations, manpower flow, average crew sizes (by trade), equipment requirements, anticipated production rates, constraints, holidays and other non-work days, potential problem areas, permits, coordination with regulatory authorities, utilities, separate work contracts and other parties, and long lead delivery items requiring more than thirty days from the date of order to delivery to the Project site.

C. At the COUNTY OF SANTA BARBARA'S request, furnish a detailed written explanation of CONTRACTOR'S basis for specific durations, logic, phasing, or other information. Such an explanation shall include CONTRACTOR'S rationale for selecting the number of crews, crew composition, number of shifts per day, number of hours in a shift, number of work days per week, construction equipment, and similar factors.

D. The Proposed Baseline Schedule activities shall contain the following data:

1. Activity ID numbers shall consist of a built-in intelligence scheme. Following COUNTY OF SANTA BARBARA acceptance of the Baseline Schedule, Activity ID numbers shall not be changed.
2. Activity Descriptions shall provide adequate information that readily identifies each activity, work scope, and location.
3. At a minimum, activity codes specified in the General Conditions shall be applied to each activity. This is at the activity level and is different than WBS coding structure.
4. Cost accounts (in CSI Master Format) and Resource accounts shall be applied to each activity. They shall include lump sum costs, and man-hours/man-days (where applicable).

E. At COUNTY OF SANTA BARBARA'S request, furnish a written explanation for each lead or lag relationship and each constrained date. Unjustifiable leads, lags, and constraints will result in COUNTY OF SANTA BARBARA'S rejection of the Proposed Baseline Schedule.

F. Calendar Identification: In the scheduling software, identify all activities that will require overtime shifts, double shifts, and work on weekends or holidays. Identify non-work days and holidays in the schedule calendar. No holiday or non-work-day restrictions are permitted on this calendar. Within the schedule software, the CONTRACTOR shall not use Primavera Global Calendars from past projects, but rather shall use project specific calendars created for this specific contract. The Calendar coding shall be transferable and compatible with the COUNTY OF SANTA BARBARA calendars as to not distort any start/finish dates and "total float" values upon schedule re-calculation.

G. Activity Codes: As a minimum, the Activity Codes shown in the Table 1 below shall be assigned to each activity.

Table 1

Name	Length	Description
Type of activity (for example: mobilization, submittals, procurement/fabrication, construction, milestones, etcetera.) Area or Building		
Stage (for example: Foundations, Superstructure, Exterior, Interior, Roof, Floor Number etcetera.)		
SBST	2	Substage (a specific area within a stage such as: main electrical

1. COUNTY OF SANTA BARBARA may require additional coding of activities. The mandatory activity code requirements listed in Table 1 are not to be construed as setting limits on CONTRACTOR'S management and coordination responsibilities but are intended to guide CONTRACTOR in the administration of its contractual responsibilities.

H. Milestones: are designated dates in which Work or portions thereof are required to start and complete in accordance with the Contract Documents.

1. Where the term completion or similar terms are used regarding a Milestone, it shall be construed to mean all portions of the Work in the indicated phase, area, and zone are complete and acceptable to COUNTY OF SANTA BARBARA. Where the term starts or similar terms are used in the designation of a Milestone, it shall be construed to mean a portion of the Work in the indicated phase, area, or zone is required to be commenced.

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2. A Proposed Baseline Schedule extending beyond the Milestones or Contract Time will not be acceptable.
3. Finish Milestones shall be constrained with "Finish on or before" type constraints in.
4. In the P6 scheduling software, prior to opening the project, click the "dates" tab and place a "must finish by" date to match the Contract Completion Milestone date.
5. A Proposed Baseline Schedule indicating Work completed in less time than the Milestones and/or Contract Time will not be acceptable. Rather, CONTRACTOR shall show any unused contract time as float available to the project.
6. Milestones shall be placed on a calendar with seven days per week. No Holiday or non-work-day restrictions are permitted on this calendar.

I. The Critical Path shall be clearly indicated on all schedules submitted. An activity is defined as critical when it is shown to be on the longest path from beginning to end.

J. CONTRACTOR shall allow for inclement weather in the Proposed Baseline Schedule by incorporating an activity titled "Rain Day Impact Allowance" as the last activity prior to the Completion Milestone. No other activities may be concurrent with it. The duration of the Rain Day Impact Allowance activity will be based on Table #2 below, and will be calculated from the Notice to Proceed until the original date of Completion.

Table 2: Cumulative Calendar Days "Rain Day Impact Allowance":

January		6	July	0
February	5	August	0	
March	5	September	1	
April	4	October	1	
May	1	November	3	
June	0	December	5	

1. When inclement weather at the Project site impacts Critical Path activities, CONTRACTOR may provide the COUNTY OF SANTA BARBARA with a written request for a weather impact day describing the inclement weather delay on the Critical Path activities. The inclement weather delay must be clearly indicated by a 70 percent decrease in the field labor workforce hours on Critical Path activities on the day in question as indicated by CONTRACTOR'S Daily reports from the day in question and the scheduled work days prior to the day in question. Upon COUNTY OF SANTA BARBARA'S independent confirmation of the amount of rainfall and impact, COUNTY OF SANTA BARBARA will authorize CONTRACTOR to reduce the duration of the Rain Day Impact Allowance by one day.
2. Inclement weather on non-scheduled workdays shall not be granted as weather impact days. If CONTRACTOR asks to work a specific weekend or holiday and gives COUNTY OF SANTA BARBARA advanced, written notification of critical path work to be performed and a substantial amount of precipitation occurs that prevents the work from being performed, then that day can be claimed as a weather impact day. If the effects of inclement weather from a non-scheduled work day carry forward to a scheduled work day and impacts the Critical Path as noted above, then the scheduled work day will be considered impacted by weather. Any unused rain day allowance at the end of the project will be shown as available float to the Completion Milestone. Excusable, non-compensable time extensions will be granted for inclement weather to Completion milestone only after the weather impact area affecting the critical path work has exhausted the allotted cumulative Rain Day Impact Allowance. On projects that have multiple phases with defined start & finish dates, the cumulative rain impact allowance

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may be split up (pro-rated) into their designated phases upon COUNTY OF SANTA BARBARA Approval.

K. Cost loaded Activities:

1. Each activity included in the Proposed Baseline Schedule shall be assigned the cost CONTRACTOR estimates it will incur performing that activity. Each activity's assigned cost will be inclusive of overhead and profit so CONTRACTOR'S total overhead and profit is distributed over all activities on a pro rata basis. The sum of the costs assigned to activities shall equal the total contract value. No activity costs shall be assigned to manufacturing or delivery activities unless approved by COUNTY OF SANTA BARBARA. If COUNTY OF SANTA BARBARA finds that the costs are front loaded and the distribution of costs is unreasonable, CONTRACTOR shall redistribute the costs and resubmit the revised Schedule of Values within five days for COUNTY OF SANTA BARBARA backcheck.
2. CONTRACTOR shall cost load activities in the Proposed Baseline Schedule and allocate costs to related resource/cost accounts associated with each activity. The cost accounts shall match the CSI sections listed in the Table of Contents of the Specifications. All cost-loaded activities shall roll-up to their designated CSI sections and shall be the basis for the data reported in the Schedule of Values (Section 01 29 73), and Progress Payment Procedures (Section 01 29 76).
3. Submit computer generated reports using the scheduling software which will be the basis for the approved Schedule of Values. The reports shall contain the following data for each activity: Cost/Resource Account Number (by CSI section), Cost/Resource Account Description, Cost/Resource Account Budget, Cost to Date, Cost this Period, and Cost at Completion. Total Costs shall be organized and totaled by CSI section.
4. Submit a Cost Flow Histogram in accordance with General Conditions.

L. CONTRACTOR shall submit computer generated reports and plots with the Proposed Baseline Schedule submittal package. Format shall display the following columns: Activity ID, Activity Description, Original Duration, Remaining Duration, Percent Complete, Early Start, Early Finish, Late Start, Late Finish, and Total Float. Unless otherwise noted, bar charts and reports shall be on 8 ½ by 11 paper and bound.

1. Color Bar charts shall be generated separately for:
   a. Milestones only.
   b. All Activities sorted by Early Start date and organized by Project, Area, Stage, and Substage. (The network shall be organized to show continuous flow of all activities from left to right). CONTRACTOR is reminded that during the monthly schedule update process, even the activities that have already been completed need to be shown in this "all activities" bar chart report.
   c. Activities sorted by Responsibility.
   d. Summary level of all activities sorted by craft/trade and area.
   e. Critical Path (Longest Path). The network shall be organized to show continuous flow of all critical activities on the longest path from left to right (sorted by early start).

2. Reports:
   a. Total Float sorted low to high.
   b. Predecessors and Successors sorted by Activity ID.

3. Cost Flow Histogram
   a. Using the costs assigned to each activity, develop a Histogram that projects the estimated invoice amounts by month for the Project duration. The histogram shall be produced from the scheduling software on 11" by 17" paper (landscape mode).

It shall contain both a monthly bar histogram and a cumulative cost curve on the same graph. The Total Costs shall be based on the Early Dates option.

4. Man Power Histogram
   a. Submit a planned man-power graphic bar histogram produced from the scheduling software on 11" by 17" paper (landscape mode) that displays total man-hours based on Early Dates. Show both a weekly bar histogram and a cumulative curve on same graph. In addition, provide a summary excel table of average crew sizes and peak crew sizes broken down by trade/subcontractor. CONTRACTOR will need to perform their due-diligence to make sure that the activity man-power loading is realistic and adequate based on material /labor cost estimates.

5. Provide a written narrative as required by General Conditions.
6. Electronic data: Provide an electronic file in its original format of the Schedule. The electronic P6 files shall be saved in "XER" type format. (Version 15.1)
7. Plots: Produce a color bar chart on E-size paper (30 by 42-inch) organized (at a minimum) by project, area, stage, and substage.

M. COUNTY OF SANTA BARBARA will notify CONTRACTOR of any adjustments that are required for the Proposed Baseline Schedule to be accepted. CONTRACTOR shall perform any required adjustments to the Proposed Baseline Schedule and resubmit it for acceptance certifying in writing that all information contained therein complies with the Contract Documents. COUNTY OF SANTA BARBARA will review the Proposed Baseline Schedule for accuracy, reasonableness, and conformance with the Contract Documents and shall provide comments within ten days of receipt. Within five days after receiving COUNTY OF SANTA BARBARA comments, CONTRACTOR shall both incorporate changes to address COUNTY OF SANTA BARBARA concerns and resubmit the Proposed Baseline Schedule for COUNTY OF SANTA BARBARA backcheck. This process will continue until the Proposed Baseline Schedule is accepted as the Baseline Schedule. Once accepted by COUNTY OF SANTA BARBARA, the Baseline Schedule will be the basis upon which CONTRACTOR shall prepare updates that record and report actual performance and progress. The accepted Baseline Schedule and subsequent Monthly Updates (reference General Conditions) shall be the basis for consideration and analysis of requests for time extensions and CONTRACTOR progress payments.

N. COUNTY OF SANTA BARBARA acceptance of the Baseline Schedule or CONTRACTOR'S failure to identify or include an element of the Contract, shall not release CONTRACTOR'S obligation to complete all required Work in accordance with the Contract Documents.

3.5 REQUIREMENTS FOR MONTHLY/WEEKLY SCHEDULE UPDATING

A. Once the Baseline Schedule is accepted by COUNTY OF SANTA BARBARA, CONTRACTOR shall copy the Approved Baseline file to a new name, status the activities with actual as-built data through the end of the month & submit Monthly Schedule Updates beginning with month No. 1. The current month's schedule update cannot be accepted until the previous Monthly Schedule Update has been accepted by COUNTY OF SANTA BARBARA. Each Monthly Schedule Update shall be submitted concurrently with the Monthly Pay Application no later than the fifth day of the succeeding month in accordance with the General Conditions.

B. Monthly Schedule Update Format.

1. Initially, the contractor shall status a current Monthly Schedule Update with actual Work progress only. No logic ties shall be modified. Status all Actual Start and Finish dates,

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adjust Remaining Durations where needed, and update Percent Completion of cost and resource loaded activities. No activity Original Durations or Logic shall be changed unless authorized by COUNTY OF SANTA BARBARA. No new activities shall be added (except for the addition of new activities for every re-submittal and re-review required) or unless authorized by the COUNTY OF SANTA BARBARA.

2. Once the schedule is statused in accordance with the General Conditions, CONTRACTOR shall print (and submit with Monthly Schedule Update) a report of "out-of-sequence" logic that results from the updating process. CONTRACTOR shall then correct all "out-of-sequence" logic to reflect CONTRACTOR'S actual Work sequence. Prior to submission of the Monthly Schedule Update, CONTRACTOR shall review and validate that all remaining activities along with their schedule relationships are still accurate based on the actual work flow in the field. If CONTRACTOR chooses to modify logic or add activities (other than out-of-sequence corrections), it shall be done in accordance with the General Conditions for COUNTY OF SANTA BARBARA Review & Approval. CONTRACTOR shall also submit a comparison report between the previous monthly schedule update and the current monthly update that will document the overall changes (i.e., comparison software such as "Digger", or "Schedule Analyzer", etc.,).
3. During construction, CONTRACTOR may desire to break down specific activities into greater detail. If greater detail is necessary, then CONTRACTOR shall identify expanded activities such that the Baseline Schedule activities that the expanded activities originated from are readily apparent. CONTRACTOR shall not allow the aggregate duration of the expanded activities to exceed the duration assigned to the Baseline Schedule activity unless permitted by COUNTY OF SANTA BARBARA in writing.
4. Auto cost rules and calculation rules shall link Remaining Duration and Percent Complete.
5. The Data Date for the Monthly Schedule Updates shall be the first day of the succeeding month. At a minimum, three days prior to the submission of the Monthly Schedule Update, CONTRACTOR shall meet in person with COUNTY OF SANTA BARBARA to present the proposed Percentages of Completion and Actual Start and Actual Finish dates. Once percentages of completion and actual dates have been agreed to, they shall be the basis of the Monthly Schedule Update.
6. CONTRACTOR shall submit a Cost Histogram that overlays the planned cost curve from the Baseline Schedule, against the monthly cumulative "cost to date" curve, and against the remaining activities planned curve from the current Monthly Schedule Update.
7. Written Narrative Report: CONTRACTOR shall include a written report to explain the Monthly Schedule Update. The narrative shall, at a minimum include the following headings with appropriate discussions of each topic:
    a. Introduction.
    b. A Summary of Work which was on-going (This Pay Period).
    c. Problem Areas and Proposed Solutions.
    d. Critical Path.
    e. Current and Anticipated Delays.
    f. Coordination of Work with Others.
    g. Milestone Status.
    h. Revisions: the standard schedule comparison report that compares the current update to the previous update shall be submitted to help document any variances/changes. However, this comparison report will not be accepted by COUNTY OF SANTA BARBARA in lieu of the above written narrative requirements outline above.

8. In updating the Schedule, CONTRACTOR shall not modify Activity ID numbers, schedule calculation rules/criteria, or the Activity Coding Structure required.
9. Submit bar charts, reports, a cost flow histogram, man-power histogram, written narrative, electronic data, and plots in accordance with the General Conditions.

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10. 1Submit a cost-loaded report (progressed monthly) produced from the scheduling software that displays all the activities organized by the CSI section cost/resource accounts. This report shall follow the General Conditions, Section 01 29 73 (Schedule of Values), and Section 01 29 76 (Progress Payment Procedures).

C. Four-Week Rolling Schedule: At each Weekly Progress Meeting, CONTRACTOR shall present a Four-Week Schedule in Bar Chart format. It shall show one (1) week of actual and three (3) weeks of forecasted progress. The Four-Week Rolling Schedule shall be used as a basis for discussing progress and work planned during the three (3) weeks.

1. The Four-Week Rolling Schedule shall be based on the most recent COUNTY OF SANTA BARBARA Accepted Monthly Schedule Update. It shall include weekly updates to all construction, submittal, fabrication and procurement, and separate work contract activities. CONTRACTOR shall ensure that it accurately reflects the current progress of the Work.
2. CONTRACTOR shall discuss at the weekly Progress meeting the actual dates and any variances to critical or near critical activities.
3. Upon request by COUNTY OF SANTA BARBARA, CONTRACTOR shall provide the Four-Week Rolling Schedule in electronic format.
4. If the Four-Week Rolling Schedule indicates activities are behind schedule, CONTRACTOR shall provide a Recovery Schedule in accordance with the General Conditions.
5. If the CONTRACTOR chooses to provide a Four-Week Rolling Schedule in a greater level of detail (by trade/subcontractor) outside of the monthly contractual P6 schedule database, then upon CONTRACTOR REQUEST and COUNTY OF SANTA BARBARA written approval, the CONTRACTOR may proceed as long as the detailed activities roll-up to the contractual P6 monthly schedule updates. These detailed activities will need to be linked to the overall Completion date as to properly forecast whether the project is ahead or behind schedule during the weekly Progress Meetings. The Four-Week Rolling Schedule must accurately reflect the work that is going on during the current week and must accurately reflect what will happen in the next three weeks.

3.6 RECOVERY SCHEDULES

A. If a Monthly Schedule Update indicates negative float greater than ten (10) days on a critical path as result of events not predicated by the General Conditions CONTRACTOR shall prepare a Proposed Recovery Schedule demonstrating CONTRACTOR'S plan to regain the time lost. The Recovery Schedule shall be submitted either in advance of or concurrent with the Monthly Schedule Update and CONTRACTOR progress request. Both the Monthly Schedule Update and the Proposed Recovery Schedule shall be based on the same percentages of completion and actual dates accepted by COUNTY OF SANTA BARBARA under the General Conditions.

B. The Proposed Recovery Schedule shall be based on a copy of the Monthly Schedule Update for the calendar month during which the negative float first appears.

C. The Proposed Recovery Schedule shall include a written narrative that identifies the causes of the negative float on the critical path and provides CONTRACTOR'S proposed corrective action to ensure timely completion of all Milestones and the Completion Date. CONTRACTOR'S corrective actions shall include but are not limited to increasing concurrent operations, increasing labor, adding multiple shifts in a 24-hour period, and adding overtime.

D. During any period when CONTRACTOR is found to be behind schedule by COUNTY OF SANTA BARBARA, the Monthly Schedule Update described above shall become a weekly

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requirement (at no additional cost to COUNTY OF SANTA BARBARA) to provide a greater degree of focus on the timely completion of the Work. These Updates shall be submitted to COUNTY OF SANTA BARBARA every Monday morning. When CONTRACTOR is deemed by COUNTY OF SANTA BARBARA to be back on schedule, CONTRACTOR may revert to submitting the schedule monthly.

E. CONTRACTOR'S progress payment may not be processed until COUNTY OF SANTA BARBARA accepts the Proposed Recovery Schedule. Following such an acceptance, the Proposed Recovery Schedule will be known as the Recovery Schedule and future Work will be performed by CONTRACTOR in accordance with it.

3.7 FRAGNETS AND TIME EXTENSION REQUESTS

A. Float is not for exclusive use or benefit of either COUNTY OF SANTA BARBARA or CONTRACTOR but is an expiring resource available to both parties on a non-discriminatory basis. If required to meet specified Milestones, either party may utilize float. Adjustments to Milestones or Contract Time will only be authorized by Change Order and only to the extent the claimed adjustments exceed total float along the most critical path of the current Monthly Schedule Update in effect at the time of the claimed adjustments. The claimed adjustments to the Milestones and/or Contract Time must also cause the Completion Date to exceed that currently indicated in the Monthly Schedule Update. No time extensions will be granted nor delay damages paid under contract until all available float is used and the CONTRACTOR obtains a Time Extension Request approval from the COUNTY OF SANTA BARBARA in accordance with the General Conditions in its entirety. CONTRACTOR claimed adjustments to an existing negative float path will not receive consideration until the activity with the highest negative float is driven even further negative.

1. Claimed adjustments to the Milestones or Contract Time will be administered in conjunction with those set forth in the General Conditions.

B. Pursuant to the float sharing requirements of this Section, the use of float suppression techniques such as preferential sequencing or logic, special lead or lag logic restraints, and extended activity times or durations are prohibited. The use of float time disclosed or implied using alternate float suppression techniques shall be proportionally shared to benefit COUNTY OF SANTA BARBARA and CONTRACTOR. The use of any technique solely for the purpose of suppressing float will result in COUNTY OF SANTA BARBARA rejection of the submitted Monthly Schedule Update.

C. In the event CONTRACTOR believes the Project has suffered an adverse impact arising from events predicated by the General Conditions, CONTRACTOR may prepare a Time Extension Request by submitting a Schedule Fragnet and a written narrative outlining the detail of the impact. A Schedule Fragnet must demonstrate a critical path delay. Such a delay must adversely impact the Completion Date for CONTRACTOR to receive a time extension. To demonstrate such an impact successfully, CONTRACTOR shall prepare a Schedule Fragnet based on a copy of COUNTY OF SANTA BARBARA accepted Monthly Schedule Update for the calendar month during which the adverse impact occurred. This "copy" of the COUNTY OF SANTA BARBARA accepted Monthly Schedule Update shall however first be updated (by COUNTY OF SANTA BARBARA and CONTRACTOR jointly) with both Percentages of Completion and Actual Dates up to the day the delay commenced. This process will provide the "pre-delay" project status. Once COUNTY OF SANTA BARBARA and CONTRACTOR have agreed to the "pre-delay" project status, CONTRACTOR should make a copy of this "pre-delay" schedule and this copy is to be the starting point for CONTRACTOR'S Schedule Fragnet development. COUNTY OF SANTA BARBARA will evaluate the activities, logic, durations,

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etcetera, in the Schedule Fragnet and will evaluate if the adverse impact arose from events described by the General Conditions. The Fragnet shall also include CONTRACTOR-caused delays that affect the critical or near critical path in the network and should be accounted for in the Time Impact Analysis if overlapped at any point in time with COUNTY OF SANTA BARBARA-caused delay. If rain impact days were granted between the Start and Finish of COUNTY OF SANTA BARBARA-caused delay period, they should be accounted for in the Time Impact Analysis as well. Provided COUNTY OF SANTA BARBARA determines such an impact occurred, CONTRACTOR may be due a time extension equal to the number of proportioned days of variance/delay that resulted to the Completion Date.

D. Activities added into a Schedule Fragnet to demonstrate the impact of adverse event shall be assigned a unique activity code. The Schedule shall be organized by this unique activity code.

E. The Schedule Fragnet shall incorporate logic that accurately ties reflective of the adverse event to pre-event predecessor activities and post event successor activities.

F. The format and components of a Schedule Fragnet submittal shall be in accordance with this Section and the General Conditions. It is crucial for the Fragnet to be submitted within the same month of discovery so it can be resolved during the monthly schedule update review. The notice shall be transmitted to COUNTY OF SANTA BARBARA within the stipulations outlined in the General Conditions.

G. If COUNTY OF SANTA BARBARA accepts CONTRACTOR'S Schedule Fragnet and an extension is granted, a Change Order will be prepared. COUNTY OF SANTA BARBARA will advise what change order number the time extension will become. When CONTRACTOR receives this Change Order number, all the activities added to the Schedule Fragnet shall be given Activity Identification Numbers that corresponds with the Change Order number. CONTRACTOR shall cost load and resource-load the activities if required by COUNTY OF SANTA BARBARA. If resource loading is required, the resource loading shall include a breakdown of labor, material, and equipment quantities.

H. If COUNTY OF SANTA BARBARA rejects CONTRACTOR'S Schedule Fragnet in part based on improper forecast logic or activity tasks then it shall be revised accordingly to conform to COUNTY OF SANTA BARBARA'S review comments and resubmitted. If the forecast logic and activity tasks cannot be agreed to then the pre-delay schedule outlined in the General Conditions shall be compared to the actual as-built data in the succeeding month of the encountering issue, event, condition, circumstance, and/or cause. The variance to the project between the pre-delay and post delay schedules shall be discussed in CONTRACTOR'S written narrative and proportioned between the different parties involved in the delay.

I. If COUNTY OF SANTA BARBARA rejects CONTRACTOR'S Schedule Fragnet in whole then CONTRACTOR may follow the procedures set forth in the General Conditions.

3.8 PAYMENT FOR SCHEDULING

A. The Work of this Section will be included as part of the bid price.

B. Preparation, revising, maintenance, and compliance with this Section and Section 01 29 73 is an integral part of the Contract Documents and is specified to have a minimum value equal to 2 percent of the original Contract Amount or $150,000, whichever is less. This amount shall be proportionally cost loaded into two activities in both the Proposed Baseline Schedule and the Schedule of Values described in Section 01 29 73. One activity for the "Baseline Schedule" and the other activity for the "Monthly Schedule Update Process" as follows:

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1. CONTRACTOR may allocate twenty percent (20 percent) of the total cost and place in the "Baseline Schedule" activity. It can then be billed against when the COUNTY OF SANTA BARBARA accepts the Proposed Baseline Schedule as the Baseline Schedule.
2. The remaining eighty percent (80 percent) may be cost loaded into the "Monthly Schedule Update Process" activity. This amount may be billed in equal monthly increments. The amount of those increments is determined by dividing the remaining cost by the total number of months in the Contract Time. Payment of these incremental amounts is contingent upon COUNTY OF SANTA BARBARA acceptance of CONTRACTOR Monthly Schedule Updates, Recovery Schedules, Four-Week Rolling Schedules, Fragnets, Time Impact Analysis, and the updated Log of Required Submittals.
3. The CONTRACTOR shall anticipate in their base contract scope that numerous Fragnets and written time impact analyses will be required during the duration of the project with the Monthly Schedule Updates. Requests for extra scheduling services will not be considered until the CONTRACTOR demonstrates that all the costs stipulated in the General Conditions has been expended.

3.9 FAILURE TO COMPLY WITH REQUIREMENTS

A. At any time during the project if CONTRACTOR fails to comply with the specified requirements, COUNTY OF SANTA BARBARA reserves the right to engage independent estimating and scheduling consultants to fulfill these requirements. Upon notice to CONTRACTOR, COUNTY OF SANTA BARBARA shall assess against CONTRACTOR, incurred costs for these additional services.

B. In such an event, COUNTY OF SANTA BARBARA will require, and CONTRACTOR shall participate and provide requested information to ensure the resulting Milestones Schedule accurately reflects CONTRACTOR's plan to execute the Work in compliance with the Contract Documents. If it becomes necessary for COUNTY OF SANTA BARBARA to recommend logic or duration revisions because of CONTRACTOR failure to furnish acceptable data, and if CONTRACTOR has objections to the recommendations, CONTRACTOR shall provide notice to COUNTY OF SANTA BARBARA within three days and CONTRACTOR shall provide an acceptable alternate plan. If CONTRACTOR fails to so note any objections and provide an acceptable alternate plan, or if CONTRACTOR implements the recommendations of COUNTY OF SANTA BARBARA without so noting any objections, CONTRACTOR will be deemed to have waived all objections and concurred with the recommended logic/duration revisions provided by ARCHITECT and/or COUNTY OF SANTA BARBARA.

C. Submittal of any Monthly Schedule Updates are subject to review and acceptance by COUNTY OF SANTA BARBARA. COUNTY OF SANTA BARBARA retains the right, including, but not limited to the General Conditions, to withhold progress payments in whole or part until CONTRACTOR submits a Monthly Schedule Update acceptable to COUNTY OF SANTA BARBARA. If a Monthly Schedule Update is "Rejected" due to the COUNTY OF SANTA BARBARA not receiving a satisfactory schedule that accurately reflects the on-going work activities, the COUNTY OF SANTA BARBARA will mandate a separate meeting with the CONTRACTOR and approved Scheduler to remedy the non-conformance. If after the 2nd consecutive months, the COUNTY OF SANTA BARBARA still has to "Reject" the monthly Schedule update due to non-conformance, then the CONTRACTOR'S Scheduler will need to be replaced at no additional cost to the COUNTY OF SANTA BARBARA. CONTRACTOR shall within one week of disapproval, propose another Scheduler who meets the experience requirements stated in this Section.

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3.10 CONTRACTOR RESPONSIBILITY

A. Nothing in this Section shall be construed to be a usurpation of CONTRACTOR authority, responsibility, and obligation to plan and schedule Work as CONTRACTOR deems necessary, subject to all other requirements of the Contract Documents.

B. CONTRACTOR shall involve the subcontractors, manufacturers, and suppliers in the development and periodic updating of the schedule.

3.11 RECORD DOCUMENTS / FINAL AS-BUILT SCHEDULE

A. Prior to Contract Completion of the Work, CONTRACTOR shall submit a final as-built schedule, and a time-scaled network diagram reflecting the actual dates of all activities. This shall be submitted prior to the final application of payment and prior to the request to release retention.

END OF SECTION

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01 32 14A – CONSTRUCTION MILESTONES

APPENDIX A – CONSTRUCTION MILESTONES

CONTRACTOR shall commence performance of the Contract upon the date specified in the Notice to Proceed and shall furnish sufficient forces, facilities and materials, work such hours, including extra shifts and overtime operations, so as to fully perform the Work in accordance with the following Milestones.

Milestone	Description	Milestone Completion Date*	Completion Date
No. 1	**Notice to Proceed**: Is established in accordance with Document 00 21 13, Instructions to Bidders, Document 00 65 10, Notice to Proceed and Document 00 70 00 Article 15.1 of the General Conditions.	As specified by NTP.	As specified by NTP.
No. 2	**Preliminary Construction Schedule**: In accordance with Article 10.1.1.1 of the General Conditions, Contractor shall provide a preliminary schedule of construction indicating the starting and completion dates of the various stages of the Work, including any information, and following any form as may be specified in the Specifications. Once approved by County, this shall become the Construction Baseline Schedule. This schedule shall include and identify all tasks that are on the Project's critical path with a specific determination of the start and completion of each critical path task, all contract milestones and each milestone's completion date(s) as may be required by the County, and the date of Project Completion.	10 calendar days after the effective date of the NTP.	
No. 3	**Schedule of Submittals**: In accordance with Articles 10.1.1.2, 10.5, 10.6, 10.7, 10.8 & 10.9 of the General Conditions, Contractor shall provide a preliminary schedule of submittals, including Shop Drawings, Product Data, and Samples submittals. Once approved by County, this shall become the Submittal Schedule. All submittals shall be forwarded to the County by the date indicated on the approved Submittal Schedule, unless an earlier date is necessary to maintain the Construction Schedule, in which case those submittals shall be forwarded to the County so as not to delay the Construction Schedule. Milestones may include, but not be limited to, Shop Drawings and Submittals that are either critical or near critical to the overall Completion of the Project, Deferred Approvals steel Shop Drawings, excavation support system drawings, seismic calculations, shoring system drawings, or any long lead fabrication/procurement item requiring Shop Drawings.	10 calendar days after the effective date of the NTP.	

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* Milestone date to be determined by CONTRACTOR during development of the Construction Baseline Schedule and submitted to the COUNTY'S CONSTRUCTION MANAGER for approval.

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Milestone	Description	Milestone Completion Date*	Completion Date
No. 4	**Schedule of Values**: In accordance with Article 10.1.1.3 of the General Conditions, the Contractor shall provide a preliminary schedule of values for all component parts of the Work for which progress payments may be requested. The schedule of values must include quantities and prices of items totaling the Contract Price and must subdivide the Work into component parts in sufficient detail to serve as the basis for progress payments during construction. The preliminary schedule of values should include, at a minimum, the following information Overhead and Profit; Supervision; General Conditions; Layout; Mobilization; Submittals; Bonds and Insurance; Closeout Documentation; Demolition; Installation; Rough-In; Finishes; Testing; Punch List and Acceptance. Divided by each of the following areas: Site Work; By each building; By each floor. The preliminary schedule of values shall not provide for values any greater than the following percentages of the Contract value: Mobilization and layout combined to equal not more than 1%; Submittals, samples and shop drawings combined to equal not more than 3%; Bonds and insurance combined to equal not more than 2%; Closeout Documentation shall have a value in the preliminary schedule of not less than 5%.	10 calendar days after the effective date of the NTP.	
No. 5	**Safety Plan**: In accordance with Article 10.1.1.4 of the General Conditions, the Contractor shall provide a preliminary Contractor's Safety Plan specifically adapted for the Project. Contractor's Safety Plan shall comply with the following requirements: (1) All applicable requirements of California Division of Industrial Safety ("CalOSHA") and/or of the United States Occupational Safety and Health Administration ("OSHA"). (2) All provisions regarding Project safety, including all applicable provisions in these General Conditions. (3) Contractor's Safety Plan shall be prepared in both English and in the predominant language(s) of the Contractor's and its Subcontractors' employees.	10 calendar days after the effective date of the NTP.	
No. 6	**Complete Subcontractor List**: In accordance with Article 10.1.1.5 of the General Conditions, the Contractor shall provide a preliminary Subcontractor List stating the name, address, telephone number, e-mail address, California State Contractors License number, classification, and monetary value of all Subcontracts for parties furnishing labor, material, or equipment for the Project.	10 calendar days after the effective date of the NTP.	
No. 7	**Completion of Site Logistics Plan**: In accordance with Article 10.4 of the General Conditions and Specifications Section 01 12 20, Site Logistics Plan, the Contractor shall provide a Site Logistics Plan for review and approval by the County's Construction Manager, prior to site mobilization.	Prior to completion of site mobilization.	

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* Milestone date to be determined by CONTRACTOR during development of the Construction Baseline Schedule and submitted to the COUNTY'S CONSTRUCTION MANAGER for approval.

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Milestone	Description	Milestone Completion Date*	Completion Date
No. 8	**Completion of Mobilization Activities**: Is defined as CONTRACTOR mobilization completed, logistics plan submittal and approval (access, gates, parking, trailer locations, signage), site fencing complete, temporary offices complete (trailers- fully functional with furniture, office equipment, network connection and office supplies., storage bins, dumpsters), temporary Utilities complete (water, electric, phone, sanitation, fire protection), Project signage complete, obtain all required permits, implementation of Storm Water Pollution Prevention measures, submission of CONTRACTOR Safety Plan, submission of CONTRACTOR Hazard Communication Plan.	30 calendar days after the effective date of the NTP.	
No. 9	**Baseline Schedule Complete**: Is defined as County's Construction Manager approved baseline schedule, meeting the schedule requirements of the General Conditions, Special Conditions and Division 01 Sections 01 32 13, Construction Schedule and 01 32 14, Construction Milestones.	90 calendar days after the effective date of the NTP.	
No. 11	**Building Pad Certification**: Shall be separately listed for each building and is defined as building areas excavated, graded, and surveyed in accordance with Division 01 Section 01 71 23, Field Engineering.	Contractor to submit for Review & Approval by OWNER.	
No. 12	**Site Underground Utilities Complete**: Defined as all underground utilities (mechanical, electrical, and plumbing) installed from the point of supply to five feet outside the building line, inspected by the PROJECT INSPECTOR.	Contractor to submit for Review & Approval by OWNER.	
No. 13	**Foundations Complete**: Defined as all rebar, formwork, and concrete in place, inspected by the PROJECT INSPECTOR.	Contractor to submit for Review & Approval by OWNER.	
No. 14	**Structural System Complete**: Defined as the structural system completely erected, tested, and inspected by the PROJECT INSPECTOR>.	Contractor to submit for Review & Approval by OWNER.	

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* Milestone date to be determined by CONTRACTOR during development of the Construction Baseline Schedule and submitted to the COUNTY'S CONSTRUCTION MANAGER for approval.

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Milestone	Description	Milestone Completion Date*	Completion Date
No. 15	**Roofing Systems Complete**: Defined as roofing system completely installed and inspected by the PROJECT INSPECTOR.	Contractor to submit for Review & Approval by OWNER.	
No. 16	**Exterior Painting Complete**: Defined as exterior finish coat completed and inspected by PROJECT INSPECTOR.	Contractor to submit for Review & Approval by OWNER.	
No. 17	**Utility Provider Access**: Shall be separately listed for each utility and is defined as complete access to all areas and rooms for electrical, water, gas, sewer, cable and telephone incoming and distribution services.	Contractor to submit for Review & Approval by OWNER.	
No. 18	**Permanent Lighting Functional**: Defined as all lighting fixtures installed and wires leading to light sources, dimmers, control panels, and transformers to be completely pulled, terminated, tested, and operational with permanent and/or temporary power and inspected by the PROJECT INSPECTOR.	Contractor to submit for Review & Approval by OWNER.	
No. 19	**Electrical Equipment Energized (Permanent Power)**: Defined as all major electrical equipment (transformers, MCC's, CIC's, control panels, switches, etc.) installed with points of contact terminated, tested, inspected by the PROJECT INSPECTOR and energized with permanent power.	Contractor to submit for Review & Approval by OWNER.	
No. 20	**HVAC Equipment Complete**: Defined as all HVAC ducting installed, system fans and units operational, controls installed and operational, inspected by the PROJECT INSPECTOR.	Contractor to submit for Review & Approval by OWNER.	
No. 21	**HVAC Test and Balance:** Defined as HVAC equipment fully tested and balanced with verified test and balance reports submitted to ARCHITECT.	Contractor to submit for Review & Approval by OWNER.	

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* Milestone date to be determined by CONTRACTOR during development of the Construction Baseline Schedule and submitted to the COUNTY'S CONSTRUCTION MANAGER for approval.

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Milestone	Description	Milestone Completion Date*	Completion Date
No. 22	**Electrical UPS Complete**: Defined as Uninterrupted Power Supply system installed, operational, tested, and inspected by PROJECT INSPECTOR.	Contractor to submit for Review & Approval by OWNER.	
No. 23	**Mechanical Room Complete**: Defined as all mechanical equipment inside the mechanical room to be installed, operational, tested, and inspected by the PROJECT INSPECTOR.	Contractor to submit for Review & Approval by OWNER.	
No. 24	**Plumbing Complete**: Defined as all plumbing systems installed, operational, tested, and inspected by the PROJECT INSPECTOR.	Contractor to submit for Review & Approval by OWNER.	
No. 25	**Interior Painting Complete**: Defined as interior finish painting complete and inspected by the PROJECT INSPECTOR.	Contractor to submit for Review & Approval by OWNER.	
No. 26	**Computer Networking Systems**: Defined as all racks and cabinets (MDF/IDF/LDF), hardware components (switches, panels, UPS, routers, etc.) pathways, cables, and termination hardware. System shall be installed in accordance with contract documents and shall be 100% tested for defects in installation and to verify system operation and required performances. All system "close-out" documentation and material shall be submitted and approved.	Contractor to submit for Review & Approval by OWNER.	
No. 27	**Intrusion Alarm System**: defined as all pathways, cabling, motion detectors, main security key switch or keypad and alarm controller installed in accordance with contract documents and shall be 100% tested for proper operation and lack of defects in installation. All system "close-out" documentation and material shall be submitted and approved.	Contractor to submit for Review & Approval by OWNER.	

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* Milestone date to be determined by CONTRACTOR during development of the Construction Baseline Schedule and submitted to the COUNTY'S CONSTRUCTION MANAGER for approval.

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Milestone	Description	Milestone Completion Date*	Completion Date
No. 29	**Fire Sprinklers Complete**: Defined as all fire sprinkler piping complete, including sprinkler heads, joints, valves, escutcheons, solenoids, and actuators. Inclusive of sprinkler lines primed, completely tested, and inspected by the PROJECT INSPECTOR, State Fire Marshall and the City or County Fire Authority having jurisdiction.	Contractor to submit for Review & Approval by OWNER.	
No. 30	**Fire Alarm Complete**: Defined as fire annunciator control panel installed and completely tested, fire suppression equipment installed, egress plans submitted, and alarm system inspected by the PROJECT INSPECTOR, State Fire Marshall and the City or County Fire Authority having jurisdiction.	Contractor to submit for Review & Approval by OWNER.	
No. 31	**Owner Furnished Contractor Installed (OFCI) Materials**: Coordination and access shall be provided to a Separate Work Contractor and/or OWNER for delivery of OFCI materials in accordance with Document 01 64 00, Owner-Furnished Equipment.	Contractor to submit for Review & Approval by OWNER.	
No. 32	**Hardscape Complete**: Is defined as all asphalt/concrete, or outdoor hard surface complete in accordance with Drawings and Specifications and inspected by the PROJECT INSPECTOR.	Contractor to submit for Review & Approval by OWNER.	
No. 33	**Final Inspection**: Completion of above Milestones 11 to 34, as applicable, and completing the Final Inspection in accordance with Document 00 70 00 Article 20.3 of the General Conditions and Document 00 71 00 Articles 65 and 66 of the Special Conditions.	730 calendar days after the effective date of the NTP.	
No. 34	**Administrative Closeout / Contract Completion**: Is established in accordance with Document 01 77 01, Contract Closeout and Document 00 70 00 Article 21 of the General Conditions. Note: Contract Completion shall occur a maximum 30 days after Completion.	766 calendar days after the effective date of the NTP.	

END OF SECTION

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* Milestone date to be determined by CONTRACTOR during development of the Construction Baseline Schedule and submitted to the COUNTY'S CONSTRUCTION MANAGER for approval.

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SECTION 01 32 14 - CONSTRUCTION MILESTONES

PART 1 - GENERAL

1.1 SECTION INCLUDES

A. Requirements for Construction Milestones include logistics, phasing, and completion of designated phases prior to commencement of subsequent phases.

1.2 RELATED REQUIREMENTS

A. Section 01 11 00: Summary of Work.

B. Section 01 31 13: Project Coordination.

C. Section 01 32 13: Construction Schedule.

D. Section 01 32 14A: Construction Milestones – Appendix A.

E. Section 01 33 00: Submittal Procedures.

F. Section 01 50 00: Construction Facilities and Temporary Controls.

G. Section 01 77 00: Contract Closeout.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION

3.1 SUBMITTALS

A. CONTRACTOR shall submit a Project site logistics plans in accordance with and as required by this Section.

3.2 LOGISTICS

A. Prior to commencement of Work, CONTRACTOR shall prepare and submit to COUNTY'S Construction Manager, a detailed Project site logistic plan, in same size and scale of Drawings, setting forth CONTRACTOR plan of Work relative to following, but not limited to, items:

1. Hauling route(s) shall be in accordance with local ordinances, inclusive of a truck access route to and from Project site.
2. The identification of any overhead wire restrictions for power, street lighting, signal, or cable.
3. Local sidewalk access and street closure requirements.
4. Protection of sidewalk pedestrians and vehicular traffic.

5. Project site fencing and access gate locations.
6. Construction parking.
7. Material staging or delivery areas.
8. Material storage areas.
9. Temporary trailer locations.
10. Temporary service location and proposed routing of all temporary utilities.
11. Location of temporary or accessible fire protection.
12. Trash removal and location of dumpsters.
13. Concrete pumping locations.
14. Crane locations.
15. Location of portable sanitary facilities.
16. Mixer trucks wash out locations.
17. Traffic control signage.
18. Perimeter and site lighting.
19. Storm Water Pollution Prevention Plan – SWPPP.
20. Stockpile or lay down areas.
21. Security lighting

B. Revised Project site logistic plan may be required by CONSTRUCTION MANAGER for separately identified phases of Work as set forth in this Section.

C. CONTRACTOR is responsible for securing and/or obtaining all approvals and permits from authorities having jurisdiction relative to any activities set forth in Article 3.02.A.

D. If required CONTRACTOR shall consider 6-day workweek to complete the work to meet the COUNTY approved Construction contract time into their Construction Schedule.

3.3 CONSTRUCTION MILESTONES

A. Project will be constructed in separate Milestone increments, as identified, or as described in this Section or Contract Documents. Phasing will also delineate Work to be completed in each designated phase. Unless otherwise approved or directed by COUNTY, each phase shall be completed according to approved Baseline Schedule prior to commencement of next subsequent phase. CONTRACTOR shall incorporate and coordinate Work of Separate Work Contracts relative to this Project into the Phasing and Construction Schedule.

B. CONTRACTOR shall install all necessary Work for, but not limited to, power, lighting, signal, HVAC, drainage, and plumbing systems in phased Work before completion of designated phase. All valves, pull boxes, stub outs, temporary capping, and other Work necessary for phased completion and operation of all necessary systems shall be provided whether or not such Work is specifically identified in Contract Documents.

3.4 ORGANIZATION – GENERAL

A. CONTRACTOR shall prepare Construction Schedule in order to complete Work and related activities in accordance with the construction milestones as established in Appendix "A". CONTRACTOR shall obtain CONSTRUCTION approval on the milestones schedule prior to Baseline Schedule submittal. CONTRACTOR shall include all costs to complete all Work within Milestones or Contract Time. CONTRACTOR is required to mobilize and start construction of the entire site simultaneously.

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B. COUNTY will be seriously damaged by not having all Work completed within Milestones or Contract Time. It is mandatory Work be complete within Milestones or Contract Time. To avoid any impacts to the COUNTY approved Milestones or Contract Time, CONTRACTOR to consider 2 shift recovery schedules, as necessary.

3.5 ORGANIZATION – SPECIFIC

A. CONTRACTOR shall prepare Construction Baseline Schedule, and shall complete following, but not limited to Milestones, as shown in Section 01 32 1A A –Appendix

B. The Contract Time shall be a total of 766 calendar days from date of commencement of Contract Time.

END OF SECTION

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SECTION 01 32 33 - PHOTOGRAPHIC DOCUMENTATION

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Preconstruction photography.
2. Construction photography and time-lapse photography of work-in-progress.

1.2 GENERAL

A. Provide photographs at locations designated by ARCHITECT, including aerial views.

B. Photographer: Specialist, experienced in taking construction photography and time-lapse photography.

C. Equipment:

1. As necessary to photograph both interior and exterior exposures.
2. Utilize full range of lenses, including wide angle, telephoto and 360 degree.
3. If drones are used for aerial views, provide proof of FAA Certificated Drone Pilot and Drone Insurance.

1.3 SUBMITTAL REQUIREMENTS

A. Make photo submittals, to COUNTY OF SANTA BARBARA (CM/CDR) and ARCHITECT, along with each monthly Application for Payment.

B. Electronic Format:

1. Submit electronic files in jpeg format produced by digital camera with minimum resolution of not less than 3200 by 2400 pixels with minimum sensor size of 8 megapixels.
2. Submit without alteration, manipulation, editing, or modifications using image-editing software.
3. Date and Time: Include date and time in file name for each image.

C. Cloud based web application for 360-degree images shared with COUNTY OF SANTA

D. BARBARA(CM/CDR) , ARCHITECT and CONTRACTOR.

1.4 PRECONSTRUCTION PHOTOGRAPHS

A. Take photographs prior to beginning Work of this Contract.

B. Provide 10 Project Site photographs, including one aerial view.

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1.5 CONSTRUCTION PHOTOGRAPHS

A. Construction progress photography shall use both still and 360-degree photography to photo document work progress and site conditions. 360-degree photography shall use a cloud-based web application or program that allows photos to be organized and displayed on plan view drawings and accessed real time by the COUNTY OF SANTA BARBARA (CM/CDR), ARCHITECT and project team. At project closeout, deliver to the COUNTY OF SANTA BARBARA (CM/CDR) and ARCHITECT a stand-alone PDF export of the entire project photo documentation.

1. Take construction photographs, beginning two weeks after last preconstruction photograph, and continuing every other week for duration of the Work.
2. Take a minimum of one photo per area within the structure. For areas greater than 500 square feet, take one photo for every 250 square feet of area. Take additional photographs as needed to fully document Project.
3. Take one exterior photo every 300 feet of building perimeter. Take additional photographs as needed to fully document Project.

B. Provide three (3) independent single point stationary time-lapse photography cameras. The stationary time-lapse cameras shall be mounted to allow a wide range of view of the entire project. The location of stationary time-lapse cameras shall be approved by the COUNTY OF SANTA BARBARA (CM/CDR) and ARCHITECT. Time-lapse photos shall be taken every 10 minutes 24 hours per day seven days per week through the course of construction. Time-lapse photos shall be accessible real-time on the web. At project closeout, time-lapse photos shall be permanently archived and remain viewable by the COUNTY OF SANTA BARBARA and ARCHITECT.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

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SECTION 01 33 00 - SPECIAL PROCEDURES

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Submittal schedule requirements.
2. Administrative and procedural requirements for submittals.

B. Related Requirements:

1. Section 012900 "Payment Procedures" for submitting Applications for Payment and the schedule of values.
2. Section 013100 "Project Management and Coordination" for submitting coordination drawings and subcontract list and for requirements for web-based Project software.
3. Section 013200 "Construction Progress Documentation" for submitting schedules and reports, including Contractor's construction schedule.
4. Section 013233 "Photographic Documentation" for submitting preconstruction photographs, periodic construction photographs, and Final Completion construction photographs.
5. Section 017700 "Closeout Procedures" for submitting closeout submittals and maintenance material submittals.
6. Section 017823 "Operation and Maintenance Data" for submitting operation and maintenance manuals.
7. Section 017839 "Project Record Documents" for submitting record Drawings, record Specifications, and record Product Data.
8. Section 017900 "Demonstration and Training" for submitting video recordings of demonstration of equipment and training of Owner's personnel.

1.2 DEFINITIONS

A. Action Submittals: Written and graphic information and physical samples that require Architect's and Construction Manager's (CM/CDR) 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 and Construction Manager'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."

1.3 SUBMITTAL SCHEDULE

A. Submittal Schedule: Submit, as an action submittal, a list of submittals, 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

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Construction Manager 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 Schedule: Submit concurrently with startup construction schedule. Include submittals required during the first 60 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 Schedule: Submit concurrently with the first complete submittal of Contractor's construction schedule.
   a. Submit revised submittal schedule as required 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 and Construction Manager's final release or approval.
   g. Scheduled dates for purchasing.
   h. Scheduled date of fabrication.
   i. Scheduled dates for installation.
   j. Activity or event number.

1.4 SUBMITTAL FORMATS

A. Submittal Information: Include the following information in each submittal:

1. Project name.
2. Date.
3. Name of Architect.
4. Name of Construction Manager.
5. Name of Contractor.
6. Name of firm or entity that prepared submittal.
7. Names of subcontractor, manufacturer, and supplier.
8. Unique submittal number, including revision identifier. Include Specification Section number with sequential alphanumeric identifier and alphanumeric suffix for resubmittals.
9. Category and type of submittal.
10. Submittal purpose and description.
11. Number and title of Specification Section, with paragraph number and generic name for each of multiple items.
12. Drawing number and detail references, as appropriate.
13. Indication of full or partial submittal.
14. Location(s) where product is to be installed, as appropriate.
15. Other necessary identification.
16. Remarks.
17. Signature of transmitter.

B. Options: Identify options requiring selection by Architect.

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C. Deviations and Additional Information: On each submittal, clearly indicate deviations from requirements in the Contract Documents, including minor variations and limitations; include relevant additional information and revisions, other than those requested by Architect and Construction Manager (CM/CDR) on previous submittals. Indicate by highlighting on each submittal or noting on attached separate sheet.

D. Paper Submittals:

1. Place a permanent label or title block on each submittal item for identification; include name of firm or entity that prepared submittal.
2. Provide a space approximately 6 by 8 inches on label or beside title block to record Contractor's review and approval markings and action taken by Architect and Construction Manager (CM/CDR).
3. Action Submittals: Submit three paper copies of each submittal unless otherwise indicated.
4. Informational Submittals: Submit two paper copies of each submittal unless otherwise indicated.
5. Additional Copies: Unless additional copies are required for final submittal, and unless Architect or Construction Manager (CM/CDR) observes noncompliance with provisions in the Contract Documents, initial submittal may serve as final submittal.
6. Transmittal for Submittals: Assemble each submittal individually and appropriately for transmittal and handling. Transmit each submittal using Owner approved transmittal form.

E. Electronic Submittals: Prepare submittals as PDF package, incorporating complete information into each PDF file. Name PDF file with submittal number.

F. Submittals Utilizing Web-Based Project Software: Prepare submittals as PDF files or other format indicated by Project management software.

1.5 SUBMITTAL PROCEDURES

A. Prepare and submit submittals required by individual Specification Sections. Types of submittals are indicated in individual Specification Sections.

1. Email: Prepare submittals as PDF package and transmit to Architect by sending via email. Include PDF transmittal form. Include information in email subject line as requested by Architect.
   a. Architect, through Construction Manager (CM/CDR), will return annotated file. Annotate and retain one copy of file as a digital Project Record Document file.
2. Web-Based Project Management Software: Prepare submittals in PDF form, and upload to web-based Project management software website. Enter required data in web-based software site to fully identify submittal.
3. Paper: Prepare submittals in paper form and deliver 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 submittals for related parts of the Work specified in different Sections, so processing will not be delayed because of need to review submittals concurrently for coordination.
    a. Architect and Construction Manager (CM/CDR) reserve the right to withhold action on a submittal requiring coordination with other submittals until related submittals are received.

C. Processing Time: Allow time for submittal review, including time for resubmittals, as follows. Time for review shall commence on Construction Manager's receipt of submittal. No extension of the Contract Time will be authorized because of failure to transmit submittals enough in advance of the Work to permit processing, including resubmittals.

1. Initial Review: Allow fourteen 14 calendar days for initial review of each submittal. Allow additional time if coordination with subsequent submittals is required. Construction Manager (CM/CDR) will advise Contractor when a submittal being processed must be delayed for coordination.
2. Intermediate Review: If intermediate submittal is necessary, process it in same manner as initial submittal.
3. Resubmittal Review: Allow fourteen (14) calendar 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 twenty-one (21) calendar days for initial review of each submittal.
5. Concurrent Consultant Review: Where the Contract Documents indicate that submittals may be transmitted simultaneously to Architect and to Architect's consultants, allow fourteen (14) calendar days for review of each submittal. Submittal will be returned to Construction Manager (CM/CDR), through Architect, before being returned to Contractor.
    a. Submit one copy of submittal to concurrent reviewer in addition to specified number of copies to Architect and Construction Manager.

D. Resubmittals: Make resubmittals in same form and number of copies 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 with approval notation from Architect's and Construction Manager's action stamp.

E. 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.

F. Use for Construction: Retain complete copies of submittals on Project site. Use only final action submittals that are marked with approval notation from Architect's and Construction Manager's action stamp.

1.6 SUBMITTAL REQUIREMENTS

A. Product Data: Collect information into a single submittal for each element of construction and type of product or equipment.

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1. If information must be specially prepared for submittal because standard published data are unsuitable 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 that show 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 Shop Drawings, and before or concurrently with Samples.

B. 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 unless submittal based on Architect's digital data drawing files is otherwise permitted.

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. Paper Sheet Size: Except for templates, patterns, and similar full-size Drawings, submit Shop Drawings on sheets at least [8-1/2 by 11 inches, but no larger than 30 by 42 inches].
3. BIM Incorporation: Incorporate Shop Drawing files into BIM established for Project. Refer to Section 01 31 25 Building Information Modeling.

C. Samples: Submit Samples for review of type, color, pattern, and texture for a check of these characteristics with other materials.

1. Transmit Samples that contain multiple, related components, such as accessories together in one submittal package.
2. Identification: Permanently attach label on unexposed side of Samples that includes the following:
   a. Project name and submittal number.
   b. Generic description of Sample.
   c. Product name and name of manufacturer.
   d. Sample source.
   e. Number and title of applicable Specification Section.

f. Specification paragraph number and generic name of each item.

3. Email Transmittal: Provide PDF transmittal. Include digital image file illustrating Sample characteristics and identification information forrecord.
4. Web-Based Project Management Software: Prepare submittals in PDF form, and upload to web-based Project software website. Enter required data in web-based software site to fully identify submittal.
5. Paper Transmittal: Include paper transmittal, including complete submittal information indicated.
6. 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 an 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.

7. 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.
8. Samples for Verification: Submit full-size units or 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.
      1) Submit a single Sample where assembly details, workmanship, fabrication techniques, connections, operation, and other similar characteristics are to be demonstrated.
      2) If variation in color, pattern, texture, or other characteristic is inherent in material or product represented by a Sample, submit at least three (3) sets of paired units that show approximate limits of variations.

D. 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.

E. DI. 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, owners (, and other information specified.

F. DII. Design Data: Prepare and submit written and graphic information indicating compliance with indicated performance and design criteria in individual Specification Sections. Include list of assumptions and summary of loads.

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G. Include load diagrams if applicable. Provide name and version of software, if any, used for calculations. Number each page of submittal.

H. DIII. Certificates:

1. Certificates and Certifications Submittals: Submit 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. Provide a notarized signature where indicated.
2. 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.
3. 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.
4. Material Certificates: Submit written statements on manufacturer's letterhead, certifying that material complies with requirements in the Contract Documents.
5. Product Certificates: Submit written statements on manufacturer's
6. letterhead, certifying that product complies with requirements in the Contract Documents.
7. Welding Certificates: Prepare written certification that welding procedures and personnel comply with requirements in the Contract Documents.
8. Submit record of AWS B2.1/B2.1M on AWS forms. Include names of firms and personnel certified.

I. Test and Research Reports:

1. 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.
2. Include written recommendations for substrate preparation and primers required.
3. Field Test 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.
4. 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.
5. Preconstruction Test Reports: Submit reports written 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.
6. 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.
7. 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:
   a. Name of evaluation organization.
   b. Date of evaluation.
   c. Time period when report is in effect.
   d. Product and manufacturers' names.
   e. Description of product.
   f. Test procedures and results.
   g. Limitations of use.

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1.7 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 insufficient to perform services or certification required, submit a written request for additional information toArchitect.

B. Delegated Design Services Certification: In addition to Shop Drawings, Product Data, and other required submittals, submit digitally signed PDF file and three paper copies of certificate, 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.

C. BIM Incorporation: Incorporate delegated design drawing and data files into BIM established for Project.

1.8 CONTRACTOR'S REVIEW

A. Action Submittals 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 to Architect and Construction Manager (CM/ CDR).

B. Contractor's Approval: Indicate Contractor's approval for each submittal with a uniform approval stamp. Include 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.

1. Architect and Construction Manager (CM/CDR) will not review submittals received from Contractor that do not have Contractor's review and approval.

1.9 ARCHITECT'S AND CONSTRUCTION MANAGER'S REVIEW

A. Action Submittals: Architect and Construction Manager (CM/CDR) will review each submittal, indicate corrections or revisions required, and return.

1. PDF Submittals: Architect and Construction Manager will indicate, via markup on each submittal, the appropriate action.
2. Paper Submittals: Architect and Construction Manager will stamp each submittal with an action stamp and will mark stamp appropriately to indicate action
3. Submittals by Web-Based Project Management Software: Architect and Construction Manager (CM/CDR) will indicate, on Project management software website, the appropriate action.

B. Informational Submittals: Architect and Construction Manager (CM/CDR) will review each submittal and will not return it, or will return it if it does not comply with requirements. Architect and Construction Manager (CM/CDR) will forward each submittal to appropriate party.

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C. Partial submittals prepared for a portion of the Work will be reviewed when use of partial submittals has received prior approval from Architect and Construction Manager.

D. Incomplete submittals are unacceptable, will be considered nonresponsive, and will be returned for resubmittal without review.

E. Architect and Construction Manager (CM/CDR) will [return without review submittals received from sources other than Contractor.

F. Submittals not required by the Contract Documents will be returned by Architect without action.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION 01 33 00

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SECTION 01 33 60 - ELECTRONIC DOCUMENT REQUEST

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Procedure for obtaining electronic computer-aided design drafting (CADD) version of Contract Document Drawings.

1.2 STIPULATIONS AND CONDITIONS

A. Electronic documents are not Contract Documents.

B. Electronic documents are provided by the COUNTY OF SANTA BARBARA to CONTRACTOR for CONTRACTOR's convenience.

C. Electronic Documents will be transmitted to CONTRACTOR by the COUNTY OF SANTA BARBARA (CM/CDR)only after the CONTRACTOR agrees to and signs the Electronic Files Waiver.

D. Electronic documents may be used for no other purposes than for Project for which Contract Documents were prepared.

E. Waiver form to be provided by the ARCHITECT after NTP.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

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SECTION 01 35 00 - SPECIAL PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Construction Drawings, Technical Specifications, Addenda, and general provisions of the Contract, including Contract General Conditions and Supplementary General Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SECTION INCLUDES

1. Environmental protection procedures
2. Smoke/odor control procedures
3. Noise control procedures
4. Dust and air pollution control procedures
5. Hazardous materials procedures
6. Welding and burning mitigation procedures
7. Erosion and sediment control procedures (Storm Water Pollution Protection Plan)
8. Disposal operations procedures
9. Cultural resources procedures
10. Alteration project procedures.

1.3 RELATED SECTIONS

A. Section 01 73 29 - Cutting and Patching: General requirements for procedures and limitations for cutting and patching the work.

B. Section 01 57 19 - CEQA Mitigations. General requirements for procedures and limitations for handling hazardous materials.

1.4 ENVIRONMENTAL PROTECTION PROCEDURES

A. Environmental Protection Procedures, General: Requirements specified in this Section are in addition to those of the Contract General Conditions.

1. During the progress of the work, keep the premises occupied in a neat and clean condition and protect the environment both on site and off site, throughout and upon completion of the construction project.
2. In coordination with the COUNTY OF SANTA BARBARA, develop an Environmental Protection Plan in detail and submit to COUNTY OF SANTA BARBARA for approval within 30 calendar days from the date of commencement specified in the Notice to Proceed. Distribute approved plan to all employees and to all subcontractors and their employees. Environmental Protection Plan shall include, but not be limited to, the following items:
   a. Copies of required permits
   b. Proposed sanitary landfill site
   c. Other proposed disposal sites

d. Noise Control
e. Dust Control
f. Erosion and Sediment Control
g. Copies of any agreements with public or private landowners regarding equipment, materials storage, borrow sites, fill sites, or disposal sites. Such agreements made by CONTRACTOR shall be invalid if their execution causes violation of local or regional grading or land use regulations.

B. Environmental Protection: Provide protection, operate temporary facilities, and conduct construction in ways and by methods that comply with environmental regulations, and minimize the possibility that air, waterways and subsoil might be contaminated or polluted, or that other undesirable effects might result.

1. Avoid use of tools and equipment that produce harmful noise. Restrict use of noise making tools and equipment to hours that will minimize complaints from persons or firms near the site.
2. Comply with noise control requirements specified below.

C. Construction Operations: All construction operations shall comply with all applicable Federal, State, and local Codes, ordinances, statutes and regulations pertaining to water, air, solid waste and noise pollution. It shall be CONTRACTOR's responsibility to identify and determine necessary measures to be taken to comply with such Codes, ordinances, statutes, and regulations.

D. Definitions of Contaminants:

1. Sediment: Soil and other debris that have been eroded and transported by runoff water
2. Solid waste: Rubbish, debris, garbage and other discarded solid materials resulting from construction activities, including a variety of combustible and non-combustible wastes, such as ashes, waste materials that result from construction or maintenance and repair work, leaves and tree trimmings
3. Chemical waste: Includes petroleum products, bituminous materials, salts, acids, alkalis, herbicides, pesticides, disinfectants, organic chemicals and inorganic wastes. Some of the above may be classified as "hazardous"
4. Sanitary wastes:
   a. Sewage: Domestic sanitary sewage
   b. Garbage: Refuse and scraps resulting from preparation, cooking, dispensing and consumption of food.

E. Hazardous Materials: See also Section below titled "HAZARDOUS MATERIALS PROCEDURES."

1. Except as otherwise specified, in the event the CONTRACTOR encounters on the site material reasonably believed to be asbestos, polychlorinated biphenyl (PCB), or other hazardous materials which have not been rendered harmless, the CONTRACTOR shall immediately stop Work in the area affected and report the condition to the COUNTY OF SANTA BARBARA (CM/CDR) in writing.
2. Work in affected areas shall not thereafter be resumed except by written agreement of the COUNTY OF SANTA BARBARA and CONTRACTOR if in fact the material is asbestos, PCB, or other hazardous materials and has not been rendered harmless.
3. Work in affected areas shall be resumed in the absence of asbestos, PCB, or other hazardous materials, or when such materials have been rendered harmless.

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F. Protection of Natural Resources: It is intended that the natural resources within the Project boundaries and outside the limits of permanent work performed under this Contract be preserved in their existing condition or be restored to an equivalent or improved condition upon completion of the work. Confine construction activities to areas defined by the public roads, easements, and work area limits shown on the drawings. Return construction areas to their pre-construction elevations except where surface elevations are otherwise noted to be changed. Maintain natural drainage patterns. Conduct construction activities such that ponding of stagnant water conducive to mosquito breeding habitat will not occur at any time.

1. Land resources protection: Do not remove, cut, deface, injure or destroy trees or shrubs outside the work area limits. Do not remove, deface, injure or destroy trees within the Project area without permission from COUNTY OF SANTA BARBARA. Such improvements shall be removed and replaced, if required, by the CONTRACTOR at no change in Contract Time and Contract Sum.
2. Landscaping protection: Protect trees that are located near the limits of Project area which may possibly be defaced, bruised, or injured or otherwise damaged by the CONTRACTOR's operations. No ropes, cables or guys shall be fastened to or be attached to any existing nearby trees or shrubs for anchorages. Refer to additional requirements specified in Section 015600 - Temporary Barriers and Controls.

G. Repair and restoration: Repair or replace trees or other landscape feature scarred or damaged by equipment or construction operations as specified below. Repair and restoration plan shall be reviewed and approved by COUNTY OF SANTA BARBARA prior to its initiation.

1. Temporary construction:
   a. Remove all signs of temporary construction facilities such as haul roads, work areas, structures, foundations of temporary structures, stockpiles of excess or waste materials, or any other vestiges of construction as directed by the COUNTY OF SANTA BARBARA (CM/CDR).
   b. Level all temporary roads, parking areas and any other areas that have become compacted or shaped.
   c. Unpaved areas where vehicles have been operated shall receive suitable surface treatment or shall be periodically wetted down to prevent construction operations from producing dust damage and nuisance to persons and property, at no additional cost to the COUNTY OF SANTA BARBARA.
   d. Keep haul roads clear at all times of any object that creates an unsafe condition. Promptly remove any contaminants or construction materials dropped from construction vehicles. Do not drop mud and debris from construction equipment on public streets. Sweep clean turning areas and pavement entrances as necessary.

2. Water resources: Comply with all applicable Federal, State, and local Codes, ordinances, statutes and regulations pertaining to discharge (directly or indirectly) of pollutants to underground and natural waters.
   a. Perform all Work under the Contract in a manner that any adverse environmental impacts are reduced to a level that is acceptable to COUNTY OF SANTA BARBARA and authorities having jurisdiction.
   b. Refer to Division 2 - Site Construction, earthwork Sections, and Civil Drawings for specific requirements on control of storm water and disposal of water from dewatering activities.

3. Oily Substances: At all times, special measures shall be taken to prevent oily or other hazardous substances from entering the ground, drainage areas or local bodies of water in such quantities as to affect normal use, aesthetics or produce a measurable impact upon the areas. All soil or water that is contaminated with oily substances due to

CONTRACTOR's operations shall be disposed of in accordance with applicable regulations, at no change in Contract Time and Contract Sum.

4. Report to the COUNTY OF SANTA BARBARA all fuel, chemical, hydraulic fluid or other material spills, leaks, and other incidents due to human or natural causes for evaluation. All work in the affected area shall stop until the COUNTY OF SANTA BARBARA can complete its review. Should the COUNTY OF SANTA BARBARA determine environments consultants, the CONTRACTOR will comply with any required assistance in the environmental review. All contamination shall be dealt with in accordance with all applicable laws and regulations.

1.5 SMOKE/ODOR CONTROL PROCEDURES

A. Smoke/Odor Control: Protect primary fresh air intakes to existing buildings from exhaust from internal combustion engines, paint and solvent fumes and other noxious fumes and vapors.

1. Implement control methods such as snorkels from engines exhausts to 50 feet away from air intakes. Provide carbon filters on air intakes as necessary, including periodic replacement of filters to ensure effectiveness.
2. All other activities generating fumes shall be limited to minimum distance of 50 feet from air intake grilles.
3. If fume-generating procedures must occur within 50 feet of an air intake, CONTRACTOR shall do the following:
   a. Notify COUNTY OF SANTA BARBARA at least 14 calendar days in advance of such activities.
   b. Perform Work when it least impacts the COUNTY OF SANTA BARBARA (evenings, weekends or particularly windy days).
   c. Provide carbon filter media, plastic barriers, or other control methods to ensure fresh air only enters into the building ventilation system.

1.6 NOISE CONTROL PROCEDURES

A. Noise Control Procedures, General: Requirements of this Section are in addition to those of the Contract General Conditions. Maximum noise levels within 1,000 feet of residences, businesses, adjacent buildings, and other populated areas:

1. Noise levels for trenchers, pavers, graders and trucks: Not exceeding 90 dBA at 50 feet as measured under noisiest operating conditions.
2. Noise levels for all other equipment: Not exceeding 85 dBA at 50 feet.

B. Noise Control of Equipment:

1. Equip jackhammers with exhaust mufflers and steel muffling sleeves.
2. Use air compressors of a quiet type such as a "whisperized" compressor. Compressor hoods shall be closed while equipment is in operation.
3. Use electrically-powered rather than gasoline or diesel powered fork-lifts.

C. Noise Control of Construction Operations:

1. Keep noisy equipment as far as possible from noise-sensitive site boundaries.
2. Machines shall not be left idling.
3. Use electric power in lieu of internal combustion engine power whenever possible.

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4. Maintain equipment properly to reduce noise from excessive vibration, faulty mufflers, or other sources. All engines shall have properly functioning mufflers.

D. Scheduling of Noisy Operations: Schedule construction activities to minimize time of noisy operations and disruption to occupants of adjoining facilities. Notify COUNTY OF SANTA BARBARA in advance of performing Work creating unusual noise and schedule such Work at times mutually agreeable.

E. Accessory Noise: Do not play radios, tape recorders, televisions, and other similar items at construction site.

1.7 DUST AND AIR POLLUTION CONTROL PROCEDURES

A. Dust and Air Pollution Control Procedures, General: Requirements of this Section are in addition to those of the Contract General Conditions. Employ measures to prevent or minimize creation of dust and air pollution. CONTRACTOR shall appoint a dust control monitor to oversee and implement all measures specified in this Section.

B. Provide proper barricades and take all other necessary measures required to prevent dust and fumes from migrating to other buildings. Fumes from welding and epoxy operations shall be properly ventilated away from building at all times. CONTRACTOR shall control dust properly throughout the construction period at the construction site, corporation yard (if applicable), dirt borrow site (if Applicable), and dirt access route. Should dust or fumes migrate to other building areas, it shall be the CONTRACTOR's responsibility to clean immediately the affected occupied areas and mechanical equipment, including air handlers and ductwork. CONTRACTOR shall be responsible and liable for all associated damages and costs due to dust and fume damage.

1. Unpaved areas shall be wetted down, to eliminate dust formation, a minimum of twice a day to reduce particulate matter. When wind velocity exceeds 15 mph, site shall be watered down more frequently.
2. Store all volatile liquids, including fuels or solvents in closed containers.
3. No on-site burning of debris, lumber and other scrap shall be permitted.
4. Properly maintain equipment to reduce gaseous pollutant emissions.
5. Exposed areas, new driveways and sidewalks shall be seeded, treated with soil binders or paved, as appropriate, as soon as possible.
6. Cover stockpiles of soil, sand and other loose materials.
7. Cover trucks hauling soil, debris, sand or other loose materials.
8. Sweep project area streets at least once daily. Refer to Section 01 74 00 - Cleaning Requirements.

1.8 WELDING AND BURNING MITIGATION PROCEDURES

A. Welding and Burning Mitigation Procedures: Eliminate welding and burning of steel as much as possible. Where unavoidable, perform welding and burning with all possible precaution to avoid fire hazard. Provide a fire watch for minimum of 30 minutes after burning stops. Provide protection for all adjacent surfaces.

B. Precautions shall be taken during the construction phase to minimize the likelihood of ignition,

1. Smoking is prohibited within 50 feet of the construction area or material storage area.
2. Open flames or heat sources required for construction will be closely monitored to minimize the risk of accidental ignition.

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3. Fire extinguishers and water hoses shall be made readily available by the CONTRACTOR and maintained in case of emergency.

1.9 EROSION AND SEDIMENT CONTROL PROCEDURES

A. Erosion and Sediment Control Procedures: Refer to runoff control requirements specified in the Contract General Conditions. Obtain and comply with Storm Water Pollution Protection Plan (SWPPP) and project-specific requirements indicated on Civil Drawings.

1.10 DISPOSAL OPERATIONS PROCEDURES

A. Solid Waste Management:

1. Supply solid waste transfer containers. Daily remove all debris such as spent air filters, oil cartridges, cans, bottles, combustibles, and litter. Take care to prevent trash and papers from blowing onto adjacent property. Encourage personnel to use refuse containers. Convey contents to a sanitary landfill.
2. Washing of concrete containers where wastewater may reach adjacent property, storm drains or natural water courses will not be permitted. Remove any excess concrete to the sanitary landfill.

B. Chemical Waste and Hazardous Materials Management: furnish containers for storage of spent chemicals used during construction operations. Dispose of chemicals and hazardous materials in accordance with applicable regulations.

C. Garbage: Store garbage in covered containers, pick up daily and dispose of in a sanitary landfill.

D. Grading Spoil and Landscape Debris: Dispose of vegetation, weeds, rubble, and other materials removed by the clearing, stripping and grubbing operations off site at a suitable disposal site in accordance with applicable Federal, State and local Codes, ordinances, statutes and regulations.

E. Excavated Materials:

1. Native soil complying with the requirements of applicable Division 2 - Site Construction earthwork Section, may be used for backfilling, fill and embankments as allowed in applicable by that section.
2. Remove all material which is excavated more than that required for backfill. Dispose of unsuitable excavated material from the site and dispose of it legally.
   a. Excess suitable backfill material shall be hauled off site. No additional compensation will be paid to the CONTRACTOR for such off haul. Include all such costs in the Contract Sum.
   b. Unsuitable backfill material shall be disposed of off-site in accordance with applicable regulations, in a disposal site indicated in the Environmental Protection Plan.
   c. Remove rubbish and materials unsuitable for backfill immediately following excavation.
   d. Remove material more than that required for backfill immediately following backfill operations.

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1.11 CULTURAL RESOURCES PROCEDURES

A. Cultural Resources Procedures: Requirements specified in this Section are in addition to those required by the Contract General Conditions.

1. Project does not pass through any known archaeological sites. However, it is conceivable that unrecorded archaeological sites could be discovered during construction.
2. In the event that artifacts, human remains, or other cultural resources are discovered during subsurface excavations at locations of the Work, the CONTRACTOR shall protect the discovered items, cease work for a distance of 35 feet radius in the area, notify the ARCHITECT and COUNTY OF SANTA BARBARA (CM/CDR) and comply with applicable law.
3. COUNTY OF SANTA BARBARA may retain an Archaeologist to monitor and recover data and artifacts during period that work has ceased.
4. All items found which are considered to have archaeological significance are the property of the COUNTY OF SANTA BARBARA.

1.12 ALTERATION PROJECT PROCEDURES

A. Coordinate the work of trades and schedule elements of alterations and renovation work by procedures and methods to expedite completion of the work.

B. In addition to demolition specifically shown, cut, move or remove items as necessary to provide access or to allow alterations and new work to proceed. Include such items as:

1. Repair or removal of hazardous or unsanitary conditions.
2. Removal of abandoned items and items serving no useful purpose, such as abandoned piping, conduit and wiring.
3. Removal of unsuitable or extraneous materials not marked for salvage, such as abandoned furnishings and equipment, and debris such as rotted wood, rusted metals and deteriorated concrete.
4. Cleaning of surfaces, and removal of surface finishes as needed to install new work and finishes.

C. Patch, repair and refinish existing items to remain, to the specified condition for each material, with a smooth and clean transition to adjacent new items of construction.

D. Assign the work of moving, removal, cutting and patching, to trades qualified to perform the work in a manner to minimize the possibility of damage to each type of work, and provide means of returning surfaces to appearance of new work.

E. Perform cutting and removal work with minimal disruption and in a manner to avoid damage to adjacent work.

F. Cut finish surfaces such as masonry, tile, plaster or metals, using methods that terminate surfaces in a straight line at a natural point of division.

G. Perform cutting and patching as specified in Section 01 73 29 - Cutting and Patching.

H. Protect existing finishes, equipment, and adjacent construction that is scheduled to remain, from damage.

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

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2. Maintain existing interior work above 60 degrees F.
3. Provide weather protection, waterproofing, heat and humidity control as needed to prevent damage to remaining work and to new work.

1.13 BLASTING CONTROL AND SAFETY PLAN

A. If the CONTRACTOR decides to blast to remove rock, prior to construction, the CONTRACTOR shall prepare a Blasting Control and Safety Plan. This Plan shall indicate the location of all blasting activity, anticipated dates/times and pedestrian, construction worker and equipment/vehicle safety mechanisms that must be in place to ensure public safety. All blasting must occur within the parameters of the Blasting Control and Safety Plan. .

PART 2 - PRODUCTS

2.1 PRODUCTS FOR PATCHING, EXTENDING AND MATCHING

A. Provide same products or types of construction as that in existing structure, as needed to patch, extend or match existing.

B. Generally, the Contract Documents will not define products or standards of workmanship present in existing construction; determine products by inspection and necessary testing and determine quality of workmanship by using existing as a sample for comparison.

C. The presence of a product, finish, or type of construction requires that patching, extending or matching shall be performed as necessary to make work complete and consistent with identical standards of quality.

PART 3 - EXECUTION

3.1 CUTTING AND PATCHING

A. Perform cutting and patching as specified in Section 01 73 29 - Cutting and Patching.

END OF SECTION

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SECTION 01 35 10 - TRAFFIC CONTROL PROCEDURES

PART 1 - GENERAL

1.1 RELATED REQUIREMENTS

A. Division 00 70 00: General Requirements

B. Division 00 71 00: Special Requirements

1.2 REFERENCES (NOT USED)

1.3 PROTECTION OF PUBLIC TRAFFIC

A. Comply with requirements of Acts, Regulations and By-Laws in force for regulation of traffic or use of roadways upon or over which it is necessary to carry out Work or haul materials or equipment.

B. When working on travelled way:

1. Place equipment in position to minimize interference and hazard to travelling public.
2. Keep equipment units as close together as working conditions permit and preferably on same side of travelled way.
3. Do not leave equipment on travelled way overnight.

C. Close lanes of road only after receipt of written approval from Departmental Representative.

1. Before re-routing traffic erect suitable signs and devices to comply with requirements of Acts, Regulations and By-Laws.

D. Keep travelled way graded, free from potholes and of sufficient width for required number of lanes of traffic.

1. Provide 21-foot-wide minimum temporary roadway for traffic in two-way sections through Work and on detours.
2. Provide 15-feet-wide minimum temporary roadway for traffic in one-way sections through Work and on detours.

E. Provide graveled detours or temporary roads as directed by Departmental Representative to facilitate passage of traffic around restricted construction area:

F. Provide and maintain road access and egress to property fronting along Work under Contract and in other areas as indicated, except where other means of road access exist that meet approval of Departmental Representative.

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1.4 INFORMATIONAL AND WARNING DEVICES

A. Provide and maintain signs and other devices required to indicate construction activities or other temporary and unusual conditions resulting from Project Work which requires road user response.

B. Supply and erect signs, delineators, barricades, and miscellaneous warning devices to comply with requirements of Acts, Regulations and By-Laws.

C. Place signs and other devices in locations recommended in Acts, Regulations and By-Laws.

D. Meet with Departmental Representative prior to commencement of Work to prepare list of signs and other devices required for project. If situation on site changes, revise list to approval of Departmental Representative.

E. Continually maintain traffic control devices in use:

1. Check signs daily for legibility, damage, suitability and location. Clean, repair or replace to ensure clarity and reflectance.
2. Remove or cover signs which do not apply to conditions existing from day to day.

1.5 CONTROL OF PUBLIC TRAFFIC

A. Provide competent flag personnel, trained in accordance with, and properly equipped to comply with requirements of Acts, Regulations and By-Laws for situations as follows:

1. When public traffic is required to pass working vehicles or equipment that block all or part of travelled roadway.
2. When it is necessary to institute one-way traffic system through construction area or other blockage where traffic volumes are heavy, approach speeds are high and traffic signal system is not in use.
3. When workmen or equipment are employed on travelled way over brow of hills, around sharp curves or at other locations where oncoming traffic would not otherwise have adequate warning.
4. Where temporary protection is required while other traffic control devices are being erected or taken down.
5. For emergency protection when other traffic control devices are not readily available.
6. In situations where complete protection for workers, working equipment and public traffic is not provided by other traffic control devices.
7. At each end of restricted sections where pilot cars are required.
8. Delays to public traffic due to contractor's operators: 15 minutes maximum.

B. Where roadway, carrying two-way traffic, is restricted to one lane, for 24 hours each day, provide portable traffic signal system.

1. Adjust, as necessary, and regularly maintain system during period of restriction.
2. Ensure signal system meets requirements of Acts, Regulations and By-Laws.

1.6 OPERATIONAL REQUIREMENTS

A. Maintain existing conditions for traffic throughout period of contract except that, when required for construction under contract and when measures have been taken as specified and approved

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by Departmental Representative to protect and control public traffic, existing conditions for traffic to be restricted.

B. Maintain existing conditions for traffic crossing right-of-way.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

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SECTION 01 35 29 - HEALTH & SAFETY REQUIREMENTS

PART 1 - GENERAL

1.1 GENERAL REQUIREMENTS

A. This Section addresses special procedures and requirements that shall be followed for protection of health and safety of persons at the Project Site.

B. Contractor is responsible for site health & safety of its personnel and those of its subcontractors. COUNTY OF SANTA BARBARA and COUNTY OF SANTA BARBARA's Construction Manager are not responsible for health and safety at the site.

C. Health and safety requirements established in this Section are based on Site conditions anticipated from available Site data.

1. Procedures are intended for Work activities including, but not limited to:
   a. Hazardous Materials Abatement
   b. Scaffolding (if necessary)
   c. Ladders
   d. Crane Operations
   e. Work on roofs
   f. Demolition
   g. Shoring
   h. Backfilling
   i. Confined Space Entry

2. Contractor shall be responsible for reviewing and revising their safety program based on actual conditions encountered at the Site and to conform with all applicable laws and regulations.

D. Before Work at the Site proceeds, all personnel involved in performing Work activities shall read, understand, and sign the Site Health and Safety Plan (SHSP) prepared by Contractor.

1.2 SUBMITTALS

A. Submit as specified in SECTION 01 33 00.

B. Submittals shall include, but are not limited to:

C. Site health and safety plan (SHSP).

D. Personnel certificates of training.

E. Daily logs of air monitoring.

F. Site entry register.

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1.3 SITE HEALTH AND SAFETY PLAN

A. Contractor shall protect workers and the public from inadvertent entry into the site. The existing perimeter site fence shall remain during demolition. Contractor shall maintain and repair site perimeter fences during demolition services and fencing shall continuously remain in a secure and safe condition until the successful completion of contract work. Contractor is responsible to protect and secure the demolition site using at minimum chain link construction fencing sufficiently installed, secured and maintained to prevent unauthorized access to the site.

B. The Contractor shall be required to prepare and implement a Site-specific Health and Safety Plan ("HASP") in accordance with the company requirements specified in Section 01

C. 35 29, Health and Safety Requirements and all applicable federal and state and local regulations.

D. The Contractor shall develop a Site-Specific HASP for their operations that meets the requirements of applicable federal, state, and local requirements as well as the company requirements. The Contractor shall implement this plan taking precautions as necessary to protect the public and work force personnel from potential hazards. The Contractor shall utilize personnel with approved training as specified in Section 01 35 29, Health and Safety Requirements. The Contractor shall handle all wastes in accordance with applicable federal, state and local requirements.

E. Protection of Personnel & Public - Contractor shall conduct Work in a safe, workmanlike manner. Every excavation or area of construction on a site located five feet or less from the street or right of way line shall be enclosed with a suitable barrier to prevent the entry of unauthorized persons. Where located more than five feet from the street lot line, a barrier shall be erected, where required by the code official. All barriers shall be of adequate strength to resist wind pressure as specified by the Code Official. No area, section, or component of floors, roofs, walls, columns, pilasters, or other structural element will be allowed to be left standing without sufficient bracing, shoring, or lateral support to prevent collapse or failure while workmen remove debris or perform other work in the immediate area. Floors, roofs, walls, columns, pilasters, and other structural components that are designed and constructed to stand without lateral support or shoring, and are determined to be in stable condition, may remain standing without additional bracing, shoring, or lateral support until demolished, unless directed otherwise by COUNTY OF SANTA BARBARA. Ensure that no elements determined to be unstable are left unsupported and place and secure bracing, shoring, or lateral supports as may be required as a result of any cutting, removal, or demolition work performed under this contract.

F. CONTRACTOR shall provide new supports and reinforcement for existing construction weakened by demolition or removal work. Repairs, reinforcement, or structural replacement require approval by COUNTY OF SANTA BARBARA to performing such work.

G. General: Contractor shall prepare and submit a Site Health and Safety Plan (SHSP) to COUNTY OF SANTA BARBARA and COUNTY OF SANTA BARBARA's Construction Manager. Contractor shall be responsible for the safety and health of its staff and that of its Subcontractors. COUNTY OF SANTA BARBARA and COUNTY OF SANTA BARBARA's Construction Manager will not be responsible for approving Contractor's SHSP. COUNTY OF SANTA BARBARA and COUNTY OF SANTA BARBARA's Construction Manager shall be notified in writing and consulted before any changes to SHSP are implemented. Contractor shall include at a minimum the items described in the following paragraphs.

H. Key Personnel:

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1. Contractor shall designate an onsite health and safety representative (HSR) who will be responsible for the compliance to the SHSP including, but not limited to the following activities:
   a. Monitor workers' breathing zone and periodically at the Site for combustible gasses, dusts, asbestos.
   b. Oversee all operations at the Site.
   c. Maintain proper medical surveillance.
   d. Provide hazard communications to personnel at the Site.
   e. Train personnel in safe operating procedures.

I. Health Risk Analysis: Contractor shall develop a health risk analysis to include all hazards which may be encountered during the project.

1. Training Requirements:
   a. General: Contractor shall provide training for personnel, including supervisors, observers, and workers active on the Site. Training in safety precautions, procedures, and personal protective equipment shall comply with at a minimum, but not be limited to:
      1) 29 CFR 1910.120 (e) – Hazardous Waste Operations and Emergency Response-Training.
      2) 29 CFR 1910.146 – Permit-required confined spaces.
      3) 29 CFR 1910.1200 – Hazard communication.
      4) 29 CFR 1910.1001 – Asbestos
      5) 29 CFR 1926 - OSHA Standards for the Construction Industry
      6) 29 CFR 1926.59 - OSHA Hazard Communication Standard for Construction Industry
      7) Any other requirements not listed to conduct the work in accordance with all Applicable Laws and Regulations.

J. Health and Safety Training: Prior to commencement of Work activities, health and safety training shall be conducted by the HSR to review pertinent sections of the SHSP.

1. All workers shall attend.
2. Personnel not attending shall be given a similar pre-Work orientation individually or in groups by the HSR.
3. If a significant change in on-Site operations occurs during Work activities, another Site-specific training session shall be given.
4. A record of training and attendance shall be provided in the Project safety log.

K. Training Certification: Contractor shall submit copies of current training certifications for all Project personnel to COUNTY OF SANTA BARBARA and COUNTY OF SANTA BARBARA's Construction Manager prior to entry onto the Work Site.

L. Site Visitors: A visitor seeking entry into an exclusion zone or contamination reduction zone on Site shall present documents of current health and safety training and medical surveillance examination/certification equivalent to that required for on-Site Work. HSR shall provide orientation on relevant sections of the SHSP.

1. Personal Protective Equipment:
   a. Contractor shall include in SHSP all personal protective equipment (PPE) anticipated for use on Site according to level of protection indicated by health risk analysis.
   b. Level D with high visibility safety vest shall be the minimum level of protection set for Site operations.

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c. Site Security and Control:
   1) Include procedures for Site security and control in SHSP.
   2) Indicate Site exclusion and contamination reduction zone boundaries in SHSP.
   3) Provide register log form for entering and leaving the Site.
d. Contingency Plan:
   1) SHSP shall include a contingency plan for health and safety emergencies.
   2) This plan shall incorporate any Site-specific or COUNTY OF SANTA BARBARA-specific requirements.
   3) A copy of the contingency plan shall remain on-Site, signed by and available for review by all personnel.
e. Standard Operating Procedures:
   1) Contractor shall be familiar with and include in SHSP the COUNTY OF SANTA BARBARA's standard operating procedures (SOP) relevant to Work activities performed on Site.

PART 2 - PRODUCTS

2.1 PERSONAL PROTECTIVE EQUIPMENT

A. Level of Protection. Contractor shall include in SHSP all personal protective equipment (PPE) anticipated for use on Site.

1. Level D Protection: Work activities shall be conducted with a minimum of Level D protection indicated below. Contractor is responsible for identification and providing additional protective equipment as deemed necessary based on the identified hazards at the site. Level D protection shall at a minimum consist of:
   a. Work boots with steel toe and steel shank.
   b. Hard hat.
   c. Safety glasses
   d. Safety vest

2.2 FIRST AID PROVISIONS AND EMERGENCY EQUIPMENT

A. Fire Extinguishers: Type and number of fire extinguishers shall be determined by Contractor in accordance with Applicable Laws and regulations and submitted as part of the SHSP. Inspection and maintenance shall be the responsibility of Contractor. Other fire stations equipped with the appropriate type and size of fire extinguishers shall be established by Contractor as needed. These stations shall be clearly marked and identified in the SHSP. All combustible or flammable materials used onsite shall be stored in Underwriter's Laboratory (UL) listed and/or Factory Mutual (FM) approved containers.

B. Contractor shall arrange for local emergency rescue support (i.e. local fire department) or provide any and all emergency rescue equipment, such as safety harness and lifeline, and/or basket stretcher that is required to rescue an individual from an excavation cave-in and/or confined space.

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PART 3 - EXECUTION

3.1 SITE SECURITY AND CONTROL

A. Work Zones:

1. An exclusion zone for Work activities shall be established by the HSR.
2. Both zones shall be clearly delineated with the use of barrier tape or snow fencing.
3. Contractor's Site office, parking area, and other support operations shall be located outside the exclusion zone.
4. Any changes in the exclusion zone shall be presented in a written SHSP amendment by the HSR to COUNTY OF SANTA BARBARA and COUNTY OF SANTA BARBARA's Construction Manager for approval.
5. Boundaries of the exclusion and contaminated reduction zones shall be clearly posted by Contractor.

B. Site Register: Contractor shall maintain a register of all personnel visiting, entering, or working (on the Site) (in the exclusion zone).

C. Contractor is responsible for securing Work Zone and Site office from trespassers.

D. Contractor shall coordinate with COUNTY OF SANTA BARBARA and COUNTY OF SANTA BARBARA's Construction Manager to provide access as necessary for parties involved in other projects on the site, if any.

E. Signs: Before Site operations begin, Contractor shall post signs at the perimeter of the exclusion zone stating: DEMOLITION AREA – KEEP OUT DANGER – NO SMOKING AUTHORIZED PERSONNEL ONLY

1. Signs shall be printed in bold large letters on contrasting backgrounds.
2. Signs shall be visible from all points, where entry might occur and at such distances from the restricted area that personnel may read the signs and take necessary protective steps before entering.

3.2 CONTINGENCY PLAN

A. The following part of the SHSP shall be posted in Site construction office trailers, kept in all Site vehicles, and provided to supervisory personnel on Site.

1. Emergency Action – Standard Operating Procedures:
   a. Name, address, and telephone number of the nearest medical treatment facility shall be conspicuously posted. A map and direction for locating the facility, plus the travel time, shall be readily available.
   b. If the facility lacks toxicological capability, arrangements shall be made for consultant services.
   c. Arrangements to quickly obtain ambulance, emergency, fire, and police services.
   d. Telephone numbers and procedures for obtaining these services shall be conspicuously posted.
   e. Prior to mobilization at the Site, personal contact shall be made with emergency room personnel, the poison control center, and the local fire department and police. If outside of an established town, contact shall be made with county officials and local emergency services.

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f. An eye wash kit and first aid equipment shall be readily available on Site. Personnel shall have first aid and medical emergency training.
g. Sufficient water and/or dry chemical fire extinguisher and neutralizing agents shall be maintained on Site to cope with any situation until emergency services can arrive.
h. Medical Emergencies
    1) For any person who becomes ill or injured on Site and the injury or illness is minor, follow the requirements of the Site Health & Safety Plan.
    2) The SHSP shall outline how decontamination will occur should a medical emergency arise in the containment area.
i. Site-Specific Information. The following shall be provided on a Site- specific basis:
    1) Nearest Hospital: Name.
    2) Address.
    3) Phone number.
    4) Directions from the Site (map attached).
j. Nearest Fire Department: Phone number.
    1) Facility Contact: Phone number.
    2) Other emergency contacts.

3.3 CONFINED SPACE

A. Confined Space: As part of the SHSP, Contractor shall identify all tasks that shall be considered confined space entry (e.g., entrance into manholes, buildings and trenches), any procedure for entry into these spaces (i.e., air testing), and permit requirements.

END OF SECTION

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SECTION 01 35 60 - SITE SECURITY PROCEDURES

PART 1 - GENERAL

1.1 SUMMARY

A. This section describes the minimum-security measures to be taken and equipment to be used by the Contractor for the Site.

B. The Contractor shall be responsible for maintaining security of the Site as identified in the Project Plans twenty-four (24) hours a day, seven (7) days a week including holidays throughout the duration of the Contract.

C. Contractor shall have sole responsibility for job site security. CONTRACTOR shall protect the Work from theft, vandalism, and unauthorized entry.

D. CONTRACTOR shall employ and maintain sufficient safety measures to effectively prevent vandalism, vagrancy, theft, arson, and all other such negative impacts to the Work. Any impacts to the progress of the Work of CONTRACTOR, COUNTY OF SANTA BARBARA, or COUNTY OF SANTA BARBARA'S forces, due to loss from inadequate security, will be the responsibility of CONTRACTOR.

E. The Contractor shall make no claim against COUNTY OF SANTA BARBARA and COUNTY OF SANTA BARBARA consultants for damage resulting from theft, vandalism, unlawful and unauthorized entry onto the site.

F. The Contractor and its Security Services firm shall replace, repair, restore and make good all damage to property of COUNTY OF SANTA BARBARA and others resulting from failure of securing the site.

G. Until Completion of the Work, CONTRACTOR shall employ appropriate means to remove all graffiti from buildings, equipment, fences and all other temporary and/or permanent improvements on the Project site within twenty-four (24) hours from the date of report or forty-eight (48) hours of each occurrence.

H. If existing fencing or barriers are breached or removed for purposes of construction, the Contractor shall provide and maintain temporary security fencing in a manner satisfactory to COUNTY OF SANTA BARBARA.

I. Contractor shall maintain security throughout construction until the COUNTY OF SANTA BARBARA occupancy or acceptance.

J. The Contractor shall restrict entrance of persons and vehicles into the Site and existing facilities. The Contractor shall allow entrance only to authorized persons with proper identification.

K. Protect Work, existing premises and COUNTY OF SANTA BARBARA operations from theft, vandalism, and unauthorized entry.

L. Penal Code Sections 290 and 290.4 commonly known as "Megan's Law", require, among

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M. other things, individuals convicted of sexually oriented crimes, to register with the chief of police where the convicted individual resides or with a county sheriff or other law enforcement officials. CONTRACTOR shall check its own employees and require each Subcontractor to check its employees and report to CONTRACTOR if any such employees are registered sex offenders. CONTRACTOR shall check monthly during the life of the Contract to ascertain this information and report same to COUNTY OF SANTA BARBARA. Before starting the Work, and monthly thereafter during the life of Contract, CONTRACTOR shall notify COUNTY OF SANTA BARBARA in writing if any of its employees and/or if any Subcontractor's employee is a registered sex offender.

1.2 RELATED SECTIONS

A. Section 01 50 00 Construction Facilities Temporary Controls.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION

3.1 SECURITY PLAN

A. The Contractor shall submit a site security plan. This plan shall address at a minimum, the following:

1. Description of proposed daily security operations.
2. Method and frequency for conducting security checks.
3. Sign in/sign out procedures.
4. Location of security station (if implemented);
5. Description of how a breach of security shall be handled. A breach of security shall include, but not be limited to, unauthorized personnel located in the active Site work areas, unauthorized personnel attempting to gain access to the active Site work areas, broken fences and unlocked gates, and unauthorized access to COUNTY OF SANTA BARBARA work areas.
6. Location of security check points.
7. Security cameras. At a minimum, locate motion triggered security cameras at the following locations: entry and exit gates, site perimeter, office trailer(s), equipment trailer(s) and material storage area(s),
8. Location of security lighting. Lights triggered by motion detection or passive infrared sensor are required. At a minimum, provide lights surrounding the following locations at Office trailer, equipment storage trailer, material storage yard, equipment storage areas, entry and exit gates, site temporary roads, and around the perimeter of the site.
9. Lighting should be illuminated to a minimum consistent with applicable local regulations and should be visible from the traveled roads bordering the construction
10. site.
11. Communications: On-site security personnel shall contact COUNTY OF SANTA BARBARA local police/sheriff if they witness crime in progress.
12. List of personnel to be contacted in case of emergency.

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3.2 SITE SECURITY

A. Trailers shall be alarmed to provide security during periods of inactivity (nights, weekends, Holidays, etc.).

B. The Contractor shall provide keyed locks on all fence gates. The Contractor shall provide motion lights at each gate, at all trailers (where access is possible, i.e. doors and windows), and at all equipment storage areas.

C. The Contractor shall ensure that all gaps in fences are closed to provide security of the active work areas.

D. The Contractor shall be responsible for maintaining a log of all security incidents. This log shall be furnished to the COUNTY OF SANTA BARBARA's Construction Manager upon request.

3.3 ENTRANCE CONTROL

A. Control of all persons, equipment, and vehicles entering and leaving the Site shall be provided by the Contractor. CONTRACTOR SHALL BE REQUIRED TO MAINTAIN WORK AREA SITE SECURITY.

B. The Contractor shall require each person to display proper identification and credentials. If person does not have the proper credentials, he/she must be escorted by a person carrying the proper credentials.

C. The Contractor shall maintain a list of persons authorized for Site entry and submit a copy of the list to the COUNTY OF SANTA BARBARA's Construction Manager.

D. Implements procedures to deny unauthorized site access. The Contractor shall require all personnel and visitors having access to the Site to sign in and sign out and shall keep a record of all Site access. A log of all visitors shall be maintained.

E. Site visitors shall not be permitted to enter active work areas unless authorized by the COUNTY OF SANTA BARBARA's Construction Manager or Site Health and Safety Officer.

F. Vehicular access shall be restricted to authorized vehicles only.

G. Personal vehicles shall not be authorized to enter the on-site active work areas.

H. All Site activities, visitations, etc. shall be coordinated with COUNTY OF SANTA BARBARA daily. At a minimum, records of visitors and trucks entering/leaving the Site shall be provided upon request.

I. Restrict the access of all persons entering the construction area to the agreed upon access route and to the actual site of the Work.

J. Restrict activities of workers to authorized areas. Workers shall not mingle in student or public areas.

K. Provide COUNTY OF SANTA BARBARA with keys to all construction gates and building entrances.

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L. Post project contact list, to include 24-hour telephone numbers, for all key project staff members. Post list at major access points to the project site(s) and outside at the project office. Update as necessary.

M. Post warning signs to help keep unauthorized persons off the site.

N. Provide nighttime lighting of the site

O. Consider limiting vehicle access to the site to one designated entrance through which all vehicle traffic

P. Inspect the site at the end of each day before securing it to assure nothing has been compromised.

3.4 SECURITY STATION

A. The Contractor is required to provide an area designated for security operations. This area may be part of Contractor's offices.

END OF SECTION

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SECTION 01 41 10 - REGULATORY REQUIREMENTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Construction Drawings, Technical Specifications, Addenda, and general provisions of the Contract, including Contract General Conditions and Supplementary General Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 AUTHORITY AND PRECEDENCE OF CODES, ORDINANCES AND STANDARDS

A. Authority: All codes, ordinances and standards referenced in the Drawings and Specifications shall have the full force and effect as though printed in their entirety in the Specifications.

B. Precedence:

1. Where specified requirements differ from the requirements of applicable codes, ordinances and standards, the more stringent requirements shall take precedence.
2. Where the Drawings or Specifications require or describe products or execution of better quality, higher standard or greater size than required by applicable codes, ordinances and standards, the Drawings and Specifications shall take precedence so long as such increase is legal.
3. Where no requirements are identified in the Drawings or Specifications, comply with all requirements of applicable codes, ordinances and standards of authorities having jurisdiction.

C. COUNTY OF SANTA BARBARA OBLIGATIONS

1. Neither COUNTY OF SANTA BARBARA nor ARCHITECT are responsible for monitoring CONTRACTOR'S compliance with codes, laws or other Regulatory Requirements.
2. Reviews performed or failed to be performed by COUNTY OF SANTA BARBARA, ARCHITECT, and other consultants under employment by COUNTY OF SANTA BARBARA do not waive or change CONTRACTOR'S obligations, and do not constitute approval of the Work or portions of the Work.

D. CONTRACTOR REQUIREMENTS

1. Perform Work in accordance with requirements of governing agencies and other Regulatory Requirements; including Regulatory Requirements referenced by this Section and other Contract Documents.
2. Schedule and coordinate inspections and gain approvals required by governing
3. agencies in timely manner, as necessary for COUNTY OF SANTA BARBARA occupancy of site within Contract Time.
4. Inform Building Department, Fire Department, and other governing agencies in timely manner of changes in the Work affecting Regulatory Requirements.
5. Promptly forward to COUNTY OF SANTA BARBARA, inspections, reports, orders, permits, and other directives and correspondence received from inspector or governing agency having jurisdiction over the Work.

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6. Promptly notify COUNTY OF SANTA BARBARA where Contract Documents appear to conflict with Regulatory Requirements.

E. REGULATORY REQUIREMENTS

1. Regulatory Authorities establish minimum requirement levels. Where provisions of Contract Documents and Regulatory Requirements differ or conflict, more stringent requirements govern.
2. Regulatory Requirements added by other Sections or by Addendum apply to requirements of this Section.
3. Regulatory Requirements, current at date of Building Permit Submittal and as required by governing agencies, supersede and govern over those listed by this Section and other Contract Documents.

1.3 APPLICABLE CODES, LAWS, AND ORDINANCES

A. Applicable Codes, Laws, and Ordinances: Refer also to Section 01 11 00 - Summary of the Work regarding permits and licenses.

1. Performance of the Work shall meet or exceed the minimum requirements of the latest revisions of the California Code of Regulations (CCR), Title 24, including, but not limited to, the following:
   a. CCR Title 24, Part 1: California Building Standards Administrative Code.
   b. CCR Title 24, Part 2: California Building Code (CBC), consisting of Uniform Building Code (UBC) Volumes 1 through 3, with State of California Amendments.
   c. CCR Title 24, Part 3: California Electrical Code (CEC); consisting of National Fire Protection Association (NFPA) 70 - National Electrical Code (NEC), with State of California Amendments.
   d. CCR Title 24, Part 4: California Mechanical Code (CMC); consisting of Uniform Mechanical Code (UMC) with State of California Amendments.
   e. CCR Title 24, Part 5: California Plumbing Code (CPC); consisting of Uniform Plumbing Code (UPC) with State of California Amendments.
   f. CCR Title 24, Part 6 California Energy Code
   g. CCR Title 24, Part 9: California Fire Code (CFC); consisting of Uniform Fire Code (UFC) with current State of California Amendments.
   h. CCR Title 24, Part 10 California Existing Building Code
   i. CCR Title 24 Part 11 California Green Building Standards (CALGreen Code)
   j. CCR Title 24, Part 12: California Reference Standards Code; consisting of Uniform Building Code Standards (UBC Standards) with State of California Amendments.

2. Performance of the Work shall also comply with applicable requirements of California Code of Regulations (CCR) as follows:
   a. Title 19 - Public Safety
   b. Title 22 - Social Security

3. References on the Drawings or in the Specifications to "code", "Code" or "building code" similar terms, not otherwise identified, shall mean the codes specified above, together with all additions, amendments, changes, and interpretations adopted by code authorities of the jurisdiction having authority over the Project.
4. The applicable edition of all codes shall be that adopted at the time of issuance of permits by the authority having jurisdiction and shall include all modifications and additions adopted by that authority. The applicable date of laws and ordinances shall be that of the date of performance of the Work.

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B. Other Applicable Laws, Ordinances and Regulations:

1. Work shall be accomplished in conformance with all applicable laws, ordinances, rules and regulations of Federal, State, County, City and special agencies and jurisdictions having authority over the Project.
2. Performance of the Work shall be accomplished in conformance with all rules and regulations of public utilities, utility districts and other agencies serving the facility.
3. Where such laws, ordinances, rules and regulations require more care or greater time to accomplish Work, or require better quality, higher standards or greater size of products, Work shall be accomplished in conformance to such requirements with no change to the Contract Time and Contract Sum, except where changes in laws, ordinances, rules and regulations occur subsequent to the execution date of the Agreement.

PART 2 - PRODUCTS (NOT APPLICABLE TO THIS SECTION).

PART 3 - EXECUTION (NOT APPLICABLE TO THIS SECTION).

END OF SECTION

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SECTION 01 41 50 - LEAKAGE TEST FOR BUILDING ENVELOPES

PART 1 - GENERAL

1.1 SECTION INCLUDES

A. Building Envelope infiltration performance criteria.

B. Air Leakage Testing for building envelope mock-up.

C. Air Leakage Testing of the building envelope.

1.2 RELATED REQUIREMENTS

A. Section 01 43 39 Mockup

B. Section 07 25 00 Water and Air Barrier Systems: Air and Vapor Barriers for building envelope

C. Section 07 52 00 Modified Bituminous Membrane Roofing

D. Section 07 92 00 Joint Sealers: Sealants used for building envelope

E. Section 08 43 13 Aluminum-Framed Storefronts: Allowable Infiltration rates for Storefront

F. Section 08 44 13 Glazed Aluminum Curtain Walls: Allowable infiltration rates for Curtain Walls.

G. Section 08 54 13 Fiberglass Windows: Allowable infiltration rates for Fiberglass Windows

1.3 REFERENCE STANDARDS

A. ASTM E 779, Standard Test Method for Determining Air Leakage by Fan Pressurization, latest edition.

B. ASTM E 1186, Air Leakage Detection in Building Envelopes and Air Barrier Systems, latest edition.

C. ASTM E 1258, Test Method for Airflow Calibration of Fan Pressurization Devices, latest edition.

D. ASTM E 1827, Single-Point Method indicated in the Standard Test Methods for Determining Airtightness of Buildings Using an Orifice Blower Door, latest edition.

1.4 SUBMITTALS

A. Submit the following:

1. Test Reports: Submit preliminary, follow-up and final test reports including, but not limited to the following information for each tested location.
   a. Date of test.

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b. Weather conditions at time of test.
c. Name, firm and signature of technician, general contractor, COUNTY CONSTRUCTION MANAGER 's representative, and other key personnel that have witnessed the test.
d. Room name and number.
e. Room exterior wall(s) geographical orientation.
f. Room exterior wall area (square feet).
g. Room total wall area, exterior and interior (square feet).
h. Room volume (cubic feet).
i. Blower door testing pressures (Pa), positive and negative, and the resulting exfiltration and infiltration rates in air changes (ACH) and volume flow through the exterior wall area (CFM/sf).
j. Representative pictures of blower door and sealed interior duct openings.
k. Results and evaluation of smoke tests, including photographs, and recommendation for envelope improvements.

2. Submit electronic copy of preliminary report(s) with-in 5 days of testing.
3. Submit electronic copy final report(s) with-in 3 days of re-testing.

1.5 QUALITY ASSURANCE

A. The COUNTY CONSTRUCTION MANAGER (CM/CDR) shall retain the services of an approved Testing and Inspection Agency to perform required infiltration testing.

B. Contractor's Responsibilities:

1. Coordinate scheduling of mock-up and in-situ testing with Agency.
2. Provide Agency access to site as needed
3. Make minor modifications to mock-up if requested.
4. Contractor and all subcontractors' tradespersons responsible for the construction of the envelope shall attend a pre-conference with the testing agency describing the performance testing requirements and workmanship quality expectations.

C. The Testing Agency shall not have authority to require design changes. Notify the Architect and COUNTY CONSTRUCTION MANAGER (CM/CDR) of any requested design changes by the Testing Agency.

D. Instrument Certification: All instruments used shall be accurately calibrated and certified within six months of testing and maintained in good working order.

E. COUNTY CONSTRUCTION MANAGER (CM/CDR) Witness: Perform all tests in the presence of the COUNTY CONSTRUCTION MANAGER 's (CM/CDR) representative.

F. Architect's Witness: The Architect or Architect's representative reserves the right to observe all tests or selected tests to assure compliance with the specifications.

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PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION

3.1 GENERAL

A. Notification: Advise the COUNTY CONSTRUCTION MANAGER (CM/CDR) and design team 3 days in advance of each test. Failure to so notify will require the test to be rescheduled.

B. Testing Equipment: Provide all necessary equipment required to perform the tests.

C. TESTING PROCEDURE, ENVELOPE LEAKAGE

D. Sample rate:

1. Perform testing of typical example rooms with and without curtain wall, that are constructed specifically for the purpose of mockups, including exterior air barrier system, cladding, floor, ceiling and interior walls.
2. Perform preliminary testing on each of the following spaces (1 test each):
   a. Corner room (with 2 exterior walls).
   b. Inner room (with 1 exterior wall).
   c. Classroom/office at curtain wall.
   d. Classroom/office at framed wall.
   e. Other rooms or spaces as may be directed by the COUNTY CONSTRUCTION MANAGER and DCM.

      1. Perform follow-up testing on each preliminary space that did not initially pass the performance test.

3. Perform final testing on 10% of the enclosed rooms, with equal sampling of each room type. Performance criteria:
   a. Infiltration and exfiltration rates shall not exceed 0.10 CFM/sf for each space at 50 Pascals, where area (sf) is the exterior wall area.
      1) Schedule
      2) Procedure

4. Coordinate schedule with the general contractor so that preliminary and follow-up testing are performed on a mockup before the air-barrier system is installed on the actual building.
5. Final testing shall occur after the entire air-barrier and cladding system is installed on the actual building and before substantial completion.
6. Record all information indicated to be submitted with the test report.
7. Seal all interior wall openings including but not limited to diffusers, grilles and transfer air openings that communicate with ducted system or directly with adjacent rooms.
8. Test each room individually with a blower door installed at the entry door.
9. Perform test at positive and negative pressure at +/- 25, 50 and 75 Pascals and record results.
10. Perform smoke testing while the space is under 50 Pascal positive pressure to identify leaks in all spaces.
11. Identify areas of air-barrier discontinuities. Bring to the attention of the installing contractor and provide training to all related installation staff indicating recommendations to remedy the deficiency.
12. After deficiencies are remedied, perform follow-up testing and reporting.

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13. Perform final testing of air-barrier at sampling rate identified.

END OF SECTION

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SECTION 01 42 00 - REFERENCES

PART 1 - GENERAL

1.1 DEFINITIONS

A. General: Basic Contract definitions are included in the Conditions ofthe 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.

C. "Directed": A command or instruction by Architect and/or (CM/CDR). Other terms, including "requested," "authorized," "selected," "required," and "permitted," have the same meaning as "directed."

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": Unload, temporarily store, unpack, assemble, erect, place, anchor, apply, work to dimension, finish, cure, protect, clean, and similar operations at Project site.

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 Project is to be built.

1.2 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

B. to the extent referenced. Such standards are made a part of the Contract Documents by reference.

C. Publication Dates: Comply with standards in effect as of date of the Contract Documents unless otherwise indicated.

1. For standards referenced by applicable building codes, comply with dates of standards as listed in building codes.

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D. 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.

1.3 ABBREVIATIONS AND ACRONYMS

A. Industry Organizations: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they are to 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. Industry Organizations, List: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they are to mean the recognized name of the entities in the following list. Abbreviations and acronyms not included in this list are to 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." The information in this list is subject to change and is believed to be accurate as of the date of the Contract Documents.

1. AABC - Associated Air Balance Council; www.aabc.com.
2. AAMA - American Architectural Manufacturers Association; (see FGIA).
3. AAPFCO - Association of American Plant Food Control Officials; www.aapfco.org.
4. AASHTO - American Association of State Highway and Transportation Officials; www.transportation.org.
5. AATCC - American Association of Textile Chemists and Colorists; www.aatcc.org.
6. ABMA - American Bearing Manufacturers Association; www.americanbearings.org.
7. ABMA - American Boiler Manufacturers Association; www.abma.com.
8. ACI - American Concrete Institute; www.concrete.org.
9. ACP - American Clean Power; (Formerly: American Wind Energy Association); www.cleanpower.org.
10. ACPA - American Concrete Pipe Association; www.concretepipe.org.
11. AEIC - Association of Edison Illuminating Companies, Inc. (The); www.aeic.org.
12. AF&PA - American Forest & Paper Association; www.afandpa.org.
13. AGA - American Gas Association; www.aga.org.
14. AHAM - Association of Home Appliance Manufacturers; www.aham.org.
15. AHRI - Air-Conditioning, Heating, and Refrigeration Institute (The); www.ahrinet.org.
16. AI - Asphalt Institute; www.asphaltinstitute.org.
17. AIA - American Institute of Architects (The); www.aia.org.
18. AISC - American Institute of Steel Construction; www.aisc.org.
19. AISI - American Iron and Steel Institute; www.steel.org.
20. AITC - American Institute of Timber Construction; (see PLIB).
21. AMCA - Air Movement and Control Association International, Inc.; www.amca.org.
22. AMPP - Association for Materials Protection and Performance; www.ampp.org.
23. ANSI - American National Standards Institute; www.ansi.org.
24. AOSA/SCST - Association of Official Seed Analysts (The)/Society of Commercial Seed Technologists (The); www.analyzeseeds.com.
25. APA - APA - The Engineered Wood Association; www.apawood.org.
26. APA - Architectural Precast Association; www.archprecast.org.
27. API - American Petroleum Institute; www.api.org.
28. ARMA - Asphalt Roofing Manufacturers Association; www.asphaltroofing.org.
29. ASA - Acoustical Society of America; www.acousticalsociety.org.

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30. ASCE - American Society of Civil Engineers; www.asce.org.
31. ASCE/SEI - American Society of Civil Engineers/Structural Engineering Institute; (see ASCE).
32. ASHRAE - American Society of Heating, Refrigerating and Air-Conditioning Engineers; www.ashrae.org.
33. ASME - ASME International; [American Society of Mechanical.
34. ASSE - ASSE International; (American Society of Sanitary Engineering); www.asse-plumbing.org.
35. ASSP - American Society of Safety Professionals; www.assp.org.
36. ASTM - ASTM International; www.astm.org.
37. ATIS - Alliance for Telecommunications Industry Solutions; www.atis.org.
38. AVIXA - Audiovisual and Integrated Experience Association; www.avixa.org.
39. AWI - Architectural Woodwork Institute; www.awinet.org.
40. AWMAC - Architectural Woodwork Manufacturers Association of Canada; www.awmac.com.
41. AWPA - American Wood Protection Association; www.awpa.com.
42. AWS - American Welding Society; www.aws.org.
43. AWWA - American Water Works Association; www.awwa.org.
44. BHMA - Builders Hardware Manufacturers Association;
45. www.buildershardware.com.
46. BIA - Brick Industry Association (The); www.gobrick.com.
47. BICSI - BICSI, Inc.; www.bicsi.org.
48. BIFMA - Business and Institutional Furniture Manufacturer's Association; www.bifma.org.
49. BISSC - Baking Industry Sanitation Standards Committee; www.bissc.org.
50. BWF - Badminton World Federation; www.bwfbadminton.com.
51. CARB - California Air Resources Board; www.arb.ca.gov.
52. CDA - Copper Development Association Inc.; www.copper.org.
53. CE - Conformite Europeenne (European Commission); www.ec.europa.eu/growth/single-market/ce-marking.
54. CEA - Canadian Electricity Association; www.electricity.ca.
55. CFFA - Chemical Fabrics and Film Association, Inc.; www.chemicalfabricsandfilm.com.
56. CFSEI - Cold-Formed Steel Engineers Institute; www.cfsei.org.
57. CGA - Compressed Gas Association; www.cganet.com.
58. CIMA - Cellulose Insulation Manufacturers Association; www.cellulose.org.
59. CISCA - Ceilings & Interior Systems Construction Association; www.cisca.org.
60. CISPI - Cast Iron Soil Pipe Institute; www.cispi.org.
61. CLFMI - Chain Link Fence Manufacturers Institute; www.chainlinkinfo.org.
62. CPA - Composite Panel Association; www.compositepanel.org.
63. CRI - Carpet and Rug Institute (The); www.carpet-rug.org.
64. CRRC - Cool Roof Rating Council; www.coolroofs.org.
65. CRSI - Concrete Reinforcing Steel Institute; www.crsi.org.
66. CSA - CSA Group; www.csagroup.org.
67. CSI - Cast Stone Institute; www.caststone.org.
68. CSI - Construction Specifications Institute (The); www.csiresources.org.
69. CSSB - Cedar Shake & Shingle Bureau; www.cedarbureau.org.
70. CTA - Consumer Technology Association; www.cta.tech.
71. CTI - Cooling Technology Institute; www.coolingtechnology.org.
72. DASMA - Door and Access Systems Manufacturers Association; www.dasma.com.
73. DHA - Decorative Hardwoods Association; www.decorativehardwoods.org.
74. DHI - Door and Hardware Institute; www.dhi.org.
75. ECIA - Electronic Components Industry Association; www.ecianow.org.
76. EIMA - EIFS Industry Members Association; www.eima.com.
77. EJMA - Expansion Joint Manufacturers Association, Inc.; www.ejma.org.
78. EOS/ESD - EOS/ESD Association, Inc.; Electrostatic Discharge Association; www.esda.org.

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79. ESTA - Entertainment Services and Technology Association; www.esta.org.
80. EVO - Efficiency Valuation Organization; www.evo-world.org.
81. FCI - Fluid Controls Institute; www.fluidcontrolsinstitute.org.
82. FGIA - Fenestration and Glazing Industry Alliance; https://fgiaonline.org.
83. FIBA - Federation Internationale de Basketball; (The International Basketball Federation); www.fiba.com.
84. FIVB - Federation Internationale de Volleyball; (The International Volleyball Federation); www.fivb.org.
85. FM Approvals - FM Approvals LLC; www.fmapprovals.com.
86. FM Global - FM Global; www.fmglobal.com.
87. FRSA - Florida Roofing and Sheet Metal Contractors Association, Inc.; www.floridaroof.com.
88. FSA - Fluid Sealing Association; www.fluidsealing.com.
89. FSC - Forest Stewardship Council U.S.; www.fscus.org.
90. GA - Gypsum Association; www.gypsum.org.
91. GS - Green Seal; www.greenseal.org.
92. HI - Hydraulic Institute; www.pumps.org.
93. HMMA - Hollow Metal Manufacturers Association; (see NAAMM).
94. IAPSC - International Association of Professional Security Consultants; www.iapsc.org.
95. IAS - International Accreditation Service; www.iasonline.org.
96. ICC - International Code Council; www.iccsafe.org.
97. ICEA - Insulated Cable Engineers Association, Inc.; www.icea.net.
98. ICPA - International Cast Polymer Association (The); www.theicpa.com.
99. ICRI - International Concrete Repair Institute, Inc.; www.icri.org.
100. IEC - International Electrotechnical Commission; www.iec.ch.
101. IEEE - Institute of Electrical and Electronics Engineers, Inc. (The); www.ieee.org.
102. IES - Illuminating Engineering Society; www.ies.org.
103. IEST - Institute of Environmental Sciences and Technology; www.iest.org.
104. IGMA - Insulating Glass Manufacturers Alliance; (see FGIA).
105. IGSHPA - International Ground Source Heat Pump Association; www.igshpa.org.
106. ILI - Indiana Limestone Institute of America, Inc.; www.iliai.com.
107. Intertek - Intertek Group; www.intertek.com.
108. ISA - International Society of Automation (The); www.isa.org.
109. ISFA - International Surface Fabricators Association; www.isfanow.org.
110. ISO - International Organization for Standardization; www.iso.org.
111. ITU - International Telecommunication Union; www.itu.int.
112. KCMA - Kitchen Cabinet Manufacturers Association; www.kcma.org.
113. LPI - Lightning Protection Institute; www.lightning.org.
114. MBMA - Metal Building Manufacturers Association; www.mbma.com.
115. MCA - Metal Construction Association; www.metalconstruction.org.
116. MFMA - Maple Flooring Manufacturers Association, Inc.; www.maplefloor.org.
117. MFMA - Metal Framing Manufacturers Association, Inc.; www.metalframingmfg.org.
118. MHI - Material Handling Industry; www.mhi.org.
119. MMPA - Moulding & Millwork Producers Association; www.wmmpa.com.
120. MPI - Master Painters Institute; www.paintinfo.com.
121. MSS - Manufacturers Standardization Society of The Valve and Fittings Industry, Inc.; www.msshq.org.
122. NAAMM - National Association of Architectural Metal Manufacturers; www.naamm.org.
123. NACE - NACE International; (National Association of Corrosion Engineers International); (see AMPP).
124. NADCA - National Air Duct Cleaners Association; www.nadca.com.
125. NAIMA - North American Insulation Manufacturers Association; www.insulationinstitute.org.
126. NALP - National Association of Landscape Professionals; www.landscapeprofessionals.org.

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127. NBGQA - National Building Granite Quarries Association, Inc.; www.nbgqa.com.
128. NBI - New Buildings Institute; www.newbuildings.org.
129. NCAA - National Collegiate Athletic Association (The); www.ncaa.org.
130. NCMA - National Concrete Masonry Association; www.ncma.org.
131. NEBB - National Environmental Balancing Bureau; www.nebb.org.
132. NECA - National Electrical Contractors Association; www.necanet.org.
133. NeLMA - Northeastern Lumber Manufacturers Association; www.nelma.org.
134. NEMA - National Electrical Manufacturers Association; www.nema.org.
135. NETA - InterNational Electrical Testing Association; www.netaworld.org.
136. NFHS - National Federation of State High School Associations; www.nfhs.org.
137. NFPA - National Fire Protection Association; www.nfpa.org.
138. NFPA - NFPA International; (see NFPA).
139. NFRC - National Fenestration Rating Council; www.nfrc.org.
140. NGA - National Glass Association; www.glass.org.
141. NHLA - National Hardwood Lumber Association; www.nhla.com.
142. NLGA - National Lumber Grades Authority; www.nlga.org.
143. NOFMA - National Oak Flooring Manufacturers Association; (see NWFA).
144. NOMMA - National Ornamental & Miscellaneous Metals Association; www.nomma.org.
145. NRCA - National Roofing Contractors Association; www.nrca.net.
146. NRMCA - National Ready Mixed Concrete Association; www.nrmca.org.
147. NSF - NSF International; www.nsf.org.
148. NSI - Natural Stone Institute; www.naturalstoneinstitute.org.
149. NSPE - National Society of Professional Engineers; www.nspe.org.
150. NSSGA - National Stone, Sand & Gravel Association; www.nssga.org.
151. NTMA - National Terrazzo & Mosaic Association, Inc. (The); www.ntma.com.
152. NWFA - National Wood Flooring Association; www.nwfa.org.
153. NWRA - National Waste & Recycling Association; www.wasterecycling.org.
154. PCI - Precast/Prestressed Concrete Institute; www.pci.org.
155. PDI - Plumbing & Drainage Institute; www.pdionline.org.
156. PLASA - PLASA; www.plasa.org.
157. PLIB - Pacific Lumber Inspection Bureau; www.plib.org.
158. PVCPA - Uni-Bell PVC Pipe Association; www.uni-bell.org.
159. RCSC - Research Council on Structural Connections; www.boltcouncil.org.
160. RFCI - Resilient Floor Covering Institute; www.rfci.com.
161. RIS - Redwood Inspection Service; (see WWPA).
162. SAE - SAE International; www.sae.org.
163. SCTE - Society of Cable Telecommunications Engineers; www.scte.org.
164. SDI - Steel Deck Institute; www.sdi.org.
165. SDI - Steel Door Institute; www.steeldoor.org.
166. SEFA - Scientific Equipment and Furniture Association (The); www.sefalabs.com.
167. SEI/ASCE - Structural Engineering Institute/American Society of Civil Engineers; (see ASCE).
168. SIA - Security Industry Association; www.securityindustry.org.
169. SJI - Steel Joist Institute; www.steeljoist.org.
170. SMA - Screen Manufacturers Association; www.smainfo.org.
171. SMACNA - Sheet Metal and Air Conditioning Contractors' National Association; www.smacna.org.
172. SMPTE - Society of Motion Picture and Television Engineers; www.smpte.org.
173. SPFA - Spray Polyurethane Foam Alliance; www.sprayfoam.org.
174. SPIB - Southern Pine Inspection Bureau; www.spib.org.
175. SPRI - Single Ply Roofing Industry; www.spri.org.
176. SRCC - Solar Rating & Certification Corporation; www.solar-rating.org.
177. SSINA - Specialty Steel Industry of North America; www.ssina.com.
178. SSPC - SSPC: The Society for Protective Coatings; (see AMPP).
179. STI/SPFA - Steel Tank Institute/Steel Plate Fabricators Association; www.steeltank.com.

180. SWI - Steel Window Institute; www.steelwindows.com.
181. SWPA - Submersible Wastewater Pump Association; www.swpa.org.
182. TCA - Tilt-Up Concrete Association; www.tilt-up.org.
183. TCNA - Tile Council of North America, Inc.; www.tcnatile.com.
184. TEMA - Tubular Exchanger Manufacturers Association, Inc.; www.kbcdco.tema.org.
185. TIA - Telecommunications Industry Association (The); www.tiaonline.org.
186. TMS - The Masonry Society; www.masonrysociety.org.
187. TPI - Truss Plate Institute; www.tpinst.org.
188. TPI - Turfgrass Producers International; www.turfgrasssod.org.
189. TRI - Tile Roofing Industry Alliance; www.tileroofing.org.
190. UL - Underwriters Laboratories Inc.; www.ul.org.
191. UL LLC - UL LLC; www.ul.com.
192. USAV - USA Volleyball; www.usavolleyball.org.
193. USGBC - U.S. Green Building Council; www.usgbc.org.
194. USITT - United States Institute for Theatre Technology, Inc.; www.usitt.org.
195. WA - Wallcoverings Association; www.wallcoverings.org.
196. WCLIB - West Coast Lumber Inspection Bureau; (see PLIB).
197. WCMA - Window Covering Manufacturers Association; www.wcmanet.org.
198. WDMA - Window & Door Manufacturers Association; www.wdma.com.
199. WI - Woodwork Institute; www.woodworkinstitute.com.
200. WSRCA - Western States Roofing Contractors Association; www.wsrca.com.
201. WWPA - Western Wood Products Association; www.wwpa.org.

C. Code Agencies: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they are to 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. DIN - Deutsches Institut fur Normung e.V.; www.din.de.
2. IAPMO - International Association of Plumbing and Mechanical Officials; www.iapmo.org.
3. ICC - International Code Council; www.iccsafe.org.
4. ICC-ES - ICC Evaluation Service, LLC; www.icc-es.org.

D. Federal Government Agencies: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they are to mean the recognized name of the entities in the following list. Information is subject to change and is up to date as of the date of the Contract Documents.

1. CPSC - U.S. Consumer Product Safety Commission; www.cpsc.gov.
2. DOC - U.S. Department of Commerce; www.commerce.gov.
3. DOD - U.S. Department of Defense; www.defense.gov.
4. DOE - U.S. Department of Energy; www.energy.gov. 5.DOJ - U.S. Department of Justice; www.ojp.usdoj.gov 6.DOS - U.S. Department of State; www.state.gov.
5. EPA - United States Environmental Protection Agency; www.epa.gov.
6. FAA - Federal Aviation Administration; www.faa.gov.
7. GPO - U.S. Government Publishing Office; www.gpo.gov.
8. GSA - U.S. General Services Administration; www.gsa.gov.
9. HUD - U.S. Department of Housing and Urban Development; www.hud.gov.
10. LBNL - Lawrence Berkeley National Laboratory; Energy Technologies Area; www.lbl.gov/.
11. NIST - National Institute of Standards and Technology; www.nist.gov.
12. OSHA - Occupational Safety & Health Administration; www.osha.gov.
13. TRB - Transportation Research Board; National Cooperative Highway Research Program; The National Academies; www.trb.org.
14. USACE - U.S. Army Corps of Engineers; www.usace.army.mil.
15. USDA - U.S. Department of Agriculture; Agriculture Research Service; U.S. Salinity Laboratory; www.ars.usda.gov.

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16. USDA - U.S. Department of Agriculture; Rural Utilities Service; www.usda.gov.
17. USP - U.S. Pharmacopeial Convention; www.usp.org.
18. USPS - United States Postal Service; www.usps.com.

E. Standards and Regulations: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they are to mean the recognized name of the standards and regulations in the following list. This information is subject to change and is believed to be accurate as of the date of the Contract Documents.

1. CFR - Code of Federal Regulations; Available from U.S. Government Publishing Office; www.govinfo.gov.
2. DOD - U.S. Department of Defense; Military Specifications and Standards; Available from DLA Document Services;
3. www.dsp.dla.mil/Specs-Standards/.
4. DSCC - Defense Supply Center Columbus; (see FS).
5. FED-STD - Federal Standard; (see FS).
6. FS - Federal Specification; Available from DLA Document Services; www.dsp.dla.mil/Specs-Standards/.
   a. Available from Defense Standardization Program; www.dsp.dla.mil.
   b. Available from U.S. General Services Administration; www.gsa.gov.
   c. Available from National Institute of Building Sciences/Whole Building Design Guide; www.wbdg.org.
7. MILSPEC - Military Specification and Standards; (see DOD).
8. USAB - United States Access Board; www.access-board.gov.
9. USATBCB - U.S. Architectural & Transportation Barriers Compliance Board; (see USAB).

F. State Government Agencies: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they are to mean the recognized name of the entities in the following list. This information is subject to change and is believed to be accurate as of the date of the ContractDocuments.

1. BEARHFTI; California Bureau of Electronic and Appliance Repair, Home Furnishings and Thermal Insulation; (see BHGS).
2. BHGS; State of California Bureau of Household Goods and Services; (Formerly: California Bureau of Electronic and Appliance Repair, Home Furnishings and Thermal Insulation); www.bhgs.dca.ca.gov.
3. CCR; California Code of Regulations; Office of Administrative Law; California Title 24 Energy Code; www.oal.ca.gov/publications/ccr/.
4. CDPH; California Department of Public Health; Indoor Air Quality Program; www.cdph.ca.gov/Programs/CCDPHP/DEODC/EHLB/IAQ/Pages/Main-Pa ge.aspx.
5. CPUC; California Public Utilities Commission; www.cpuc.ca.gov. 6.SCAQMD; South Coast Air Quality Management District; www.aqmd.gov. 7.TFS; Texas A&M Forest Service; Sustainable Forestry and Economic
6. Development; https://tfsweb.tamu.edu/.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION 01 42 00

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SECTION 01 42 13 - ABBREVIATIONS SYMBOLS AND ACRONYMS

PART 1 - GENERAL

1.1 SECTION INCLUDES

A. List of abbreviations, symbols, and acronyms of societies, institutes, and associations generally appearing in the Contract Documents.

1.2 RELATED REQUIREMENTS

A. Division 01 - General Requirements

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION

3.1 ABBREVIATIONS

ac	Alternating current
amp	ampere
C	Degrees Centigrade, Celsius
Cat 6	Category 6, unshielded twisted pair
cabling CFC	Chlorofluorocarbon
cfh	Cubic feet per hour
cfm	Cubic feet per minute
cm	Centimeter
Co.	Company
Corp.	Corporation
d	Penny
db.	Decibel
DB	Dry bulb
dc	Direct current
ePTZ	Digital Pan Tilt Zoom
F	Degrees Fahrenheit
fpm	Feet per minute
FPS	Frames per Second
ft	Foot or feet
GA	Gage
gph	Gallons per hour
gpm	Gallons per minute
HP	Horsepower
Hz	Hertz
ID	Inside Diameter
Inc.	Incorporated
IP	Internet Protocols
IR light	Infrared light
Kbps	Kilobits per Second
KHz	Kilohertz

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Kip	thousand pounds
Ksf	Thousand pounds per square foot
Ksi	Thousand pounds per square inch
Kv	Kilovolt
KVA	Kilovolt amperes
KW	Kilowatt
KWH	Kilowatt hour
LED	Light Emitting Diode
LF	Linear foot
Lb(s)	Pound(s)
LCD	Liquid Crystal Display
Lux	A standard unit of illumination measurement
Max	Maximum
MBH	1000 BTUs per hour
MHz	Mega hertz
mil	Thousandth of an inch
Min	Minimum
mm	Millimeter
mph	Miles per hour
NA	Not Applicable
NIC	Not in Contract
OC	On Center
OD	Outside Dimension
oz.	Ounce
PCF	Pounds per cubic foot
pH	Acidity-alkalinity balance
PoE	Power Over Ethernet – A standard for providing power over network
cable psf	Pounds per square foot
psi	Pounds per square inch
psig	Pounds per square inch, gage
PTS	Pan–Tilt–Zoom
PVC	Polyvinylchloride
QoS	Quality of Service
RF	Radio frequency
rpm	Revolutions per minute
SDK	Software Development Kit
SF	Square foot
SIP	Session Initiation Protocol
SMA	Software Maintenance Agreement
SS	Stainless Steel
SSL	Secure Sockets Layer
SSM	Server Software Module
SY	Square yard
TCP	Transmission Control Protocol
TLS	Transport Layer Security
UI	User Interface
Unicast	Communication between a single sender and single receiver on
network UPnP	Universal Plug and Play
V	Volts
VBR	Variable Bit Rate
VMS	Video Management System
W	Watts
WB	Wet bulb
WDR	Wide dynamic range

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3.2 SYMBOLS

#	Number or pound
'	Foot or feet
"	Inch(es)
%	Percent
°	Degree (Angle or Temperature)

3.3 ACRONYMS

AA	The Aluminum Association, Inc
AABC	Associated Air Balance Council
AAMA	American Architectural Manufacturers Association
AASHTO	American Association of State Highway and Transportation Officials AATCC American Association of Textile Chemists and Colorists
ABMA	American Boiler Manufacturers Association ACI American Concrete Institute
ACS	Access Control System
AEC	Automatic Echo Cancellation
ADA	Americans with Disabilities Act
ADAAG	Americans with Disabilities Act Accessibility Guidelines AFF Above Finish Floor
AGC	Automatic Gain Control
ALPR	License Plate Recognition
AGA	American Gas Association
AGC	Automatic Gain Control
AGCIH	American Conference of Governmental Industrial Hygienists AI Asphalt Institute
AIA	American Institute of Architects
AISC	American Institute of Steel Construction AISI American Iron and Steel Institute
AITC	American Institute of Timber Construction AMCA Air Movement and Control Association, Inc. ANI Automatic Number Identification
ANSI	American National Standards Institute
APA	APA – The Engineered Wood Association
API	Application Programming Interface
ARI	Air-Conditioning and Refrigeration Institute
ARS	Automated Route Selection
ARP	Address Resolution Protocol
ATSC	Advanced Television Systems Committee
ASHRAE	American Society of Heating, Refrigeration and Air Conditioning Engineers

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ASME American Society of Mechanical Engineers ASTM American Society for Testing and Materials
ATBCB Architectural & Transportation Barriers Compliance Board AWI Architectural Woodwork Institute
AWPA American Wood Preservers Association
AWPI American Wood Preservers Institute
AWS American Welding Society
AWWA American Water Works Association BBS Backbone Switch
BGP Border Gateway Protocol
BHMA Builders Hardware Manufacturers Association BIA Brick Institute of America
BICSI Building Industry Consulting Services, International BRI Basic Rate Interface
BOOTP Bootstrap Protocol
BTU British thermal unit
CAL/OSHA California Occupational Safety and Health Administration CAC Call Admission Control
CAS Channel Associated Signaling
CAT 5e Category 5e
CBC California Building Code
CCR California Code of Regulations
CCK Complementary Code Keying
CDR Call Detail Record
CEC California Electrical Code
CESM Compact Edge Switch-Managed
CFR Code of Federal Regulations
CIF Common Intermediate Format
CISPI Cast Iron Soil Pipe Institute
CLFMI Chain Link Fence Manufacturers Institute CLI Command Line Interface
CLID Calling Line Identification
CMAS California Multiple Award Schedule CMC California Mechanical Code
CNG Comfort Noise Generation
CNID Calling Party Name Identification
CQC California Quality Control (CMA Standards) Codec Coder/Decoder
COP Coefficient of performance
COS Class of Service
CPC California Plumbing Code
CRA California Redwood Association
CSA Client Software Application

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CRI	Carpet and Rug Institute
CRSI	Concrete Reinforcing Steel Institute
CS	Commercial Standards, U.S. Department of
Commerce CS	Communications Server
CSFM	California State Fire Marshal
CSI	Construction Specifications
Institute CTIOA	Ceramic Tile Institute of America
CTI	Cooling Tower Institute
DHCP	Dynamic Host Configuration
Protocol DHI	Door and Hardware Institute
DHCP	Dynamic Host Configuration
Protocol DGM	Dynamic Graphical Map
DNS	Domain Name System
DSS	Direct Station Selection
DTMF	Dual Tone Multiple Frequency
DVD	Digital Video Disc
EER	Energy efficiency ratio
EIA	Electronic Industries Alliance
EIS	Electronic Image Stabilization
ESM	Edge Switch-Managed
E&M	Ear and Mouth
FAT	Field Acceptance Testing
FEP	Front End Processor
FEP	Fluorinated Ethylene Propylene
FPS	Frames per Second
FTP	File Transfer Protocol
FXS	Foreign Exchange Station
EPA	Environmental Protection Agency
ETL	ETL Testing Laboratories
FCC	Federal Communication Commission
FDA	Food and Drug Administration
FECC	Far End Camera Control
FPS	Frames per Second
FM	Factory Mutual
FPS	Frames per Second
FS	Federal Specifications
FTP	File Transfer Protocol
FXO	Foreign Exchange Office
FXS	Foreign Exchange Station
GA	Gypsum Association
GANA	Glass Association of North
America GBIC	Gigabit Interface Converter
GUI	Graphical User Interface
GigE	Gigabit Ethernet

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HMMA	Hollow Metal Manufacturer's
Association HPVA	Hardwood Plywood & Veneer
Association HTTP	Hypertext Transfer Protocol
HTTPS	Hypertext Transfer Protocol over SSL
HVAC	Heating, Ventilation, and Air
Conditioning IACS	International Annealed Copper
Standards	
IAMPO	International Association of Plumbing and Mechanical
Officials IC	Intercom
ICBO	International Conference of Building
Officials ICEA	Insulated Cable Engineers Association
ICMP	Internet Control and Message Protocol
ID	Identifier
IDF	Intermediate Distribution Frame
IEEE	Institute of Electrical & Electronic Engineers,
Inc. IDS	Intrusion Detection System
IEC	International Electro technical Commission
IES	Illuminating Engineering Society
IMI	International Masonry Institute
IOR	Inspector of Record
IP	Internet Protocol
IP Router	Internet Protocol Router
IPVC	Internet Protocol Video Conferencing
IPX	Internetwork Packet Exchange
IRI	Industrial Risk Insurers
ISDN	Integrated Services Digital Network
ISO	International Organization for Standardization
ISA	Industry Standard Architecture
ISDN	Integrated Services Digital Network
ISM	Intermediate Switch-Managed (Fiber Switch)
ISMS	Integrated Security Monitoring and Management
System ISP	Internet Service Provider
ITU	International Telecommunication Union
IVR	Interactive Voice Response
JPEG	Joint Photographic Experts Group (image
format) Kbps	Kilobits per Second
LAN	Local Area Network
LCD	Liquid Crystal Display
LDC	Local Distribution - Cabinet
LDF	Local Distribution Frame
LED	Light Emitting Diode
LIU	Light Interconnection Unit
MAC	Media Access Control
MAN	Metropolitan Area Network

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MBR Maximum Bit Rate
MCU Multipoint Conference Unit
MDF Main Distribution Frame
MDF-BBS Main Distribution Frame Backbone
Switch MIB Management Information Base
MIC Message Integrity Check
MLD Multicast Listener Discovery
MLSFA Metal Lath/Steel Framing Association MPOE Main Point of Entry
MPEG Moving Picture Experts Group
MP-BGP Multi-Protocol Border Gateway Protocol MOS Mean Opinion Scale
MSS Manufacturers Standardization Society of the Valve & Fittings Industry. NAAMM National Association of Architectural Metal Manufacturers
NAT Network Address Translation
NAT-PT NAT Protocol Translation
NAS Network Attached Storage
NBFU National Board of Fire Underwriters NBS National Bureau of Standards
NCMA National Concrete Masonry Association NEBB National Environmental Balancing Bureau NEBS Network Equipment Building System NEC National Electrical Code
NEMA National Electrical Manufacturers Association NEC National Electrical Code
NFPA National Fire Protection Association NFPA National Forest Products Association NIC Network Interface Card
NIOSH National Institute for Occupational Safety and Health NIST National Institute of Standards and Technology
NMP Simple Network Management Protocol
NOFMA National Oak Flooring Manufacturers Association NPCA National Paint and Coatings Association
NPDES National Pollutant Discharge Elimination System NRCA National Roofing Contractors Association
NSF National Sanitation Foundation
NTP Network Time Protocol
NTSC National Television System Committee NTMA National Terrazzo & Mosaic Association NTSC National Television System Committee

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NUSIG National Uniform Seismic Installation Guidelines NWMA National Woodwork Manufacturers Association OC-3 Optical Carrier Level-3 (~155 Mbps) OEHS Office of Environmental Health and Safety (LAUSD's) OFNR Optical Fiber Non-Conductive Riser OFNP Optical Fiber Non-Conductive Plenum OID Object Identifier OPX Off Premise Extension OSHA Occupational Safety & Health Administrations OSI Open Systems Interconnection OSPF Open Shortest Path First OTDR Optical Time Domain Reflectometer. ONVIF Open Video Interface Forum OWAN OWNER's Wide Area Network WEST BASIN MUNICIPAL WATER DISTRICT PA Public Address PABX Private Auxiliary Branch Exchange PA/ICPublic Address/Intercommunications PAL Phase Alternating Line PAT Port Address Translation PBX Private Branch Exchange PCA Portland Cement Association PCI Precast/Prestressed Concrete Institute PCM Pulse Code Modulation PDI Plumbing and Drainage Institute PEI Porcelain Enamel Institute PHB Per Hop Behavior (DiffServ) PIC PBX Integration Card PIM Protocol-Independent Multicast PING Packet Internet Groper PINX Private Integrated Services Network Exchange PIP Picture in Picture PMO Project Management Office PoE Power-over-Ethernet POP Point of Presence POTS Plain Old Telephone System PRI Primary Rate Interface PS Product Standard, U.S. Department of Commerce PSIP Program and System Information Protocol PSTN Public Switched Telephone Network PZM Pressure Zone Microphone

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QCIF	Quarter CIF – See CIF
QoS	Quality of Service
QSIG	Q-Signaling
RADIUS	Remote Access Dial-In User
Service RIP	Routing Information Protocol
RIPng	Routing Information Protocol Next
Generation RIS	Redwood Inspection Service
RMON	Remote Network Monitoring
RMON2	Remote Network Monitoring
Version 2 SAN	Storage Area Network
SCAQMD	South Coast Air Quality Management
District SCSI	Small Computer System Interface
SDEI	Steel Deck Institute
SDI	Steel Door Institute
SFM	State Fire Marshal
SFP	Small Form-factor Pluggable transceiver
SFP+	Enhanced Small Form-factor Pluggable
transceiver SFPA	Southern Forest Products Association
SIF	Source input format (NTSC)
SIP	Session Initiation Protocol
SIGMA	Sealed Insulating Glass Manufacturers
Association SJI	Steel Joist Institute
SLC	Small Learning Community
SMACNA	Sheet Metal and Air Conditioning Contractors National
Association SMDI	Simple Message Desk Interface
SMI	Structure of Management Information
SMTP	Simple Mail Transfer Protocol
SMPTE	Society of Motion Picture and Television
Engineers SNA	Systems Network Architecture
SNMP	Simple Network Management
Protocol SSH	Secure Shell
SSID	Service Set Identifier
SSL	Secure Socket Layer
SSPC	Steel Structures Painting
Council S/P DIF	Sony/Philips Digital InterFace
SWI	Steel Window Institute
TEHO	Tail End Hop Off
TCA	Tile Council of America
TCP	Transmission Control Protocol
TFTP	Trivial File Transfer Protocol
TIA	Telecommunications Industry Association
TKIP	Temporal Key Integrity Protocol
TLS	Transport Layer Security
TOS	Type of Service

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UBPPA	Uni-Bell PVC Pipe Association
UCI	Uniform Construction Index
UFAS	Uniform Federal Accessibility Standards
UL	Underwriters' Laboratories, Inc.
UM	Unified Messaging
UPS	Uninterruptible Power Supply
UPnP	Universal Plug and Play
URL	Uniform Resource Locator
USDA	United State Department of Agriculture
UTC	Coordinated Universal Time
UTP	Unshielded Twisted Pair
UPS	Uninterruptible Power Supply
USP	Unified Security Platform
USW	Unified Web Client
VAD	Voice Activity Detection
VBR	Variable Bit Rate
VLAN	Virtual Local Area Network
VM	Voice Mail
VSS	Video Surveillance System
VoD	Video on Demand
VFD	Vacuum Fluorescent Display
VTC	Video Teleconference
WAN	Wide Area Network
WDR	Wide dynamic range
WLAN	Wireless Local Area Network
WCLIB	West Coast Lumber Inspection Bureau
WDMA	Window and Door Manufacturers Association
WWPA	Western Wood Products Association

END OF SECTION

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SECTION 01 42 16 - DEFINITIONS

PART 1 - GENERAL

1.1 SECTION INCLUDES:

A. Definitions of words used by Project Manual.

B. Format and language used by Project Manual.

1.2 ADDITIONAL DEFINITIONS

A. As defined by Conditions of the Contract.

B. Definitions specified by individual Sections of Project Manual.

1.3 DEFINITIONS OF WORDS USED BY PROJECT MANUAL

A. "Approved" and "accepted": Means "consented to by ARCHITECT or OWNER(CM/CDR) in so far as item or action meets or exceeds requirements of Contract Documents". In no case will "approved" or "accepted" be interpreted as assurance to CONTRACTOR that requirements of the Contract Documents have been fulfilled.

B. "For approval" and "as accepted": Means, "for formal consent by OWNER, ARCHITECT, or Consultant".

C. "Or approved", "as approved", "or accepted", "as accepted": Means, "consented to in so far as accepted item or action meets or exceeds requirements of Contract Documents". Where used, ARCHITECT and OWNER (CM/CDR) are sole judge of quality and suitability.

D. "Selected": Means, "as selected by ARCHITECT and/or (CM/CDR)". It is not necessarily limited to manufacturer's standard line of colors, finishes or details, unless otherwise called for.

E. "As instructed": Means, "as instructed by ARCHITECT and/or (CM/CDR)"".

F. "As required", "as needed", "as necessary": Means "As required to suitably complete the Work" and "at the direction of the ARCHITECT and/or (CM/CDR)"".

G. "Furnish" and "supply": Means, "arrange, purchase, and deliver to site ready for intended inclusion into the Work". "Furnish" and "Supply" may be used interchangeably.

H. "Install": Means, "to place in position for service or use", to hook up to utilities or to secure into place.

I. "Provide": Means, "furnish, and install complete, in place, ready for intended operation and use."

J. "Verify": Means "to determine the condition of existing elements at the project prior to beginning work".

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K. "Shown": Means, "where reasonably implied by Drawings of the Contract Documents."

L. "Specified": Means "where reasonably implied by Project Manual".

M. "Indicated": Means, "where reasonably implied and necessary in conformance with work specified, drawn, or required for completion, including written information and drawings of Contract Documents".

N. "Coordinate": Means "coordinate scheduling, submittals, work of Project Manual,

O. Drawings, work of subcontractors, suppliers, and other means and methods as necessary for efficient, sequential, and orderly construction progress."

P. "Product": Means, "materials, equipment, and other items provided by CONTRACTOR, covered under Part 2 of each Section".

Q. "Project Manual": Written portions of Contract Documents, as listed in the Table of Contents, including but not limited to Bidding Requirements, Contracting Requirements, Division 1-General Requirements, and specification Sections under Division 2 through Division 33.

R. "Drawings": As listed in Index to Drawings and other drafted, sketched, or pictorial illustrations included in the Contract Documents.

S. "Work": Means, "construction, installations, applications, demolitions, and other operations as indicated or implied by the Contract Documents". Refers to work of individual Sections for complete and finished systems, and Work to fully complete requirements of the Contract Documents for Project completion as a whole.

T. "Installer", "Erector", and "Applicator": Means, "person or entity engaged by CONTRACTOR, subcontractor, or sub-subcontractor for performance of work indicated by Contract Documents, such as installation, erection, or application of specified products and systems".

U. "Specialist": Means, "person, firm, or entity of established reputation (or if newly organized, whose personnel have previously established a reputation in the same field), regularly engaged in and maintaining an experienced force of skilled workers qualified to perform items of work required by Construction Documents, such as in manufacturing, fabricating, installing, and applying specified products and systems.

V. "Manufacturer's Instructions": Means, "manufacturer's written or verbal directions or recommendations, specifications, product literature, and product data as required to complete work in accordance to manufacturer's system".

1. Unless otherwise noted or instructed, install work in accordance with manufacturer's instructions for best results. Do not omit preparatory steps or installation procedure unless specifically modified or exempted by Contract Documents or approved by ARCHITECTand/or(CM/CDR).
2. Where more than one manufacturer is involved in the work or its component parts, follow requirements that are more stringent by each manufacturer as required to properly complete work. Submit discrepancies or conflicts to ARCHITECT and/or (CM/CDR) for resolution.
3. Install work in accordance with manufacturer's instructions even where not specifically stated by Contract Documents. Where Contract Documents conflict with manufacturer's instructions, notify ARCHITECT and/or (CM/CDR) for resolution. Do not proceed until written authorization is received.

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W. "Project Site": Means, "the space made available to CONTRACTOR for performing construction activities in performing Work of this Project". The extent of the Project Site is shown on the Drawings.

X. "Regulatory Requirements": Means, "codes, laws, statutes, and lawful orders established by governing agencies and other regulatory authorities having jurisdiction over the work as well as rules, conventions, and agreements within the construction industry that controls work performance".

Y. "Days" Means "calendar days" unless otherwise indicated.

1.4 FORMAT USED BY PROJECT MANUAL

A. "Project Manual Organization": Organization is according to Construction Specification Institute (CSI), Project Resource Manual and Master Format 2014.

1. This includes Divisions of related construction information and Sections defining portions of each Division.
2. Divisions and Sections do not define limits of work for each trade.
3. Sections are not intended to define contractual relationships, such as between CONTRACTOR, subcontractors, suppliers, and manufacturers.
4. Therefore, one or more trades may perform work of a single Section and a particular trade may perform work of more than one Section.

B. "Document and Section Format": Based upon CSI MasterFormat, SectionFormat, and PageFormat, organization, titles, and numbering system.

1.5 LANGUAGE USED BY PROJECT MANUAL

A. Singular and Plural: Product referenced, whether as singular or as plural in number, are to be taken to mean as many such Products and systems as required to complete the Work. Singular means plural and plural means singular.

B. Tense: Present tense words include future tense.

C. Gender: Words in masculine gender include feminine and neuter genders.

D. All, each, any, every, (etc): These and similar words are generally omitted, and their meaning is implied. Read implications of these words into requirements of phrases such as, "Balance and adjust [all] dampers".

E. Specifying by Reference: Comply with provisions of Section 014219 for products specified by Reference Standards. Conform to most current revised requirements at time of Bid.

F. Streamlined Language: Language is abbreviated or streamlined and includes short imperative phrases in place of complete sentences.

G. Words and phrases such as "shall", "the CONTRACTOR shall", and "shall be", are generally omitted and are to be inferred.

H. Information is directed to CONTRACTOR, except where specifically stated otherwise.

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I. Where "CONTRACTOR" is used it means CONTRACTOR as defined by the Agreement between OWNER and CONTRACTOR.

J. Where "OWNER" is used it may mean CONSTRUCTION MANAGER as defined by the Agreement between OWNER and CONTRACTOR.

K. Semicolons following Articles mean "shall be", and "shall comply with", and "CONTRACTOR shall.

1. Examples:
   a. Flamespread: ASTM E 84, less than 20 means "Flame spread shall comply with ASTM E 84 and shall be less than 20".
   b. "Base: Pack solid with non-shrink grout." means "CONTRACTOR shall pack base solid with non-shrink grout".

1.6 DIMENSIONS AND MEASUREMENTS ON DRAWINGS:

A. Dimensions govern. Do not scale.

B. Check dimensions and field verify with respect to adjacent or incorporated work. Bring conflicts to ARCHITECT's and/or (CM/CDR) attention for interpretation and resolution.

PART 2 - PRODUCTS - NOT USED

PART 3 - EXECUTION – NOT USED

END OF SECTION

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SECTION 01 43 00 - QUALITY ASSURANCE

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Quality Assurance - Control of Installation
2. CONTRACTOR's Project Manager
3. Tolerances
4. Field Samples and Mock-ups
5. Manufacturer's Instructions
6. Field Quality Control Inspections and Testing
7. Manufacturer's Field Service and Reports
8. Certifications

1.2 QUALITY ASSURANCE - CONTROL OF INSTALLATION

A. CONTRACTOR to confirm all specification criteria is met by individual sub-contractor prior to bid approval. This includes but not limited to the following:

1. Manufacturer, Fabricator, and Installer Qualifications.

B. Schedule, sequence, coordinate, and oversee, as necessary to maintain quality control for the Work and as necessary to make parts of the Work fit together within critical path as defined by Project Schedule.

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

D. Conform to manufacturer's instructions, Reference Standards, Regulatory Authorities, and provisions of Contract Documents to establish minimum level of quality for work of each Section.

1. Where in conflict, assume that provisions of Contract Documents prevail.
2. Verify with ARCHITECT and/or (CM/CDR) before beginning work where other requirements are more stringent than Contract Documents.

E. Perform work by company specializing in and qualified to produce workmanship of specified quality for size and complexity of Project.

F. Maintain project superintendent continually on Project site for duration of Work of this Contract. Do not engage project superintendent in work other than Work ofthis Contract.

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

H. Give persons representing or engaged by COUNTY OF SANTA BARBARA free, safe, and unencumbered access to the Work, and portions of the Work.

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I. Give persons representing or engaged by COUNTY OF SANTA BARBARA access to off-site facilities where components of the Work are stored, work takes place that that will be included into or otherwise affect the Work.

J. J. COUNTY OF SANTA BARBARA reserves right to photograph, videotape, or otherwise to record through visual, audio, electronic, and written means, work- and work-related events in order to track progress and quality of the Work.

1.3 CONTRACTOR'S PROJECT MANAGER

A. Refer to Conditions of the Contract for related requirements.

B. Remain continuously on Project site during working hours until Final completion Work of this Contract. Do not engage in work other than Work of this Contract.

C. Prepare measure and payment documents including Application for Payment, modifications to the Contract, Unit Prices, and Allowances. Prepare and verify coordination with Schedule of Values specified by the Conditions of the Contract.

D. Prepare Submittal Schedule as specified Section 013300 – Submittal Procedures and include Submittals with lead times within Critical Path of Progress Schedule.

E. Review Submittals for clarity, accuracy, completeness, coordination with other work, and conformance to specified requirements.

F. Verify that format, number, and other provisions conform to Section 013300 – Submittal Procedures and other requirements of the Contract Documents.

G. Do not accept or forward for ARCHITECT's review Submittals that contain product substitutions not accepted by Substitution Request procedures specified in Section 012513 – Substitution Procedures.

H. Stamp and certify CONTRACTOR's review of Submittals before submitting to ARCHITECT.

I. Prepare or direct preparation of Coordination Overlay Drawings and Masonry Coordination Drawings as specified in Section 01 31 13 – Project Coordination.

J. Coordinate and facilitate testing and inspections including State, County, City, Health, Labor and Industries and as follow:

1. As specified by other Sections to meet Quality Assurance and Code provisions.

K. Conduct Project Closeout administrative procedures including preparation and Submittals of Operating and Maintenance Manuals, Project Record Documents, Warranties, and other closeout documents.

1.4 TOLERANCES

A. Monitor fabrication and installation tolerance to produce acceptable Work. Do not permit tolerances to accumulate.

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B. Conform to specified tolerances. When manufacturers' tolerances conflict with provisions of Contract Documents, request clarification from ARCHITECT and/or (CM/CDR) before proceeding.

C. Make adjustments to conform to specified tolerances before securing products in place.

1.5 FIELD SAMPLES AND MOCK-UPS

A. Construct specified field samples and mock-ups at designated Project location, or where instructed by ARCHITECT.

B. Provide physical field samples illustrating finishes, coatings, patterns, and systems.

C. Construct full-size mock-ups, as may be requested, for review of construction systems to establish standards by which workmanship will be judged.

D. Provide full scale field samples and mock-ups, as may be requested, with specified attachments, anchorage devices, flashings, sealants, finishes, and colors for a complete and finished system.

E. Provide in dimension as specified, or when not specified, provide in sufficient size and completeness, in consultation with ARCHITECT and/or (CM/CDR) to illustrate each sample.

F. Do not install as part of permanent Work, except as specified or instructed by ARCHITECT.

G. Maintain ease of access to accepted in-place mock-up. Where accepted mock-up is covered, lost, or damaged, arrange with ARCHITECT to provide new accepted mock-up as means to illustrate acceptable quality standards.

H. Demolish and remove field samples and mock-ups when instructed to do so, or if not instructed, at Project completion.

I. Integrated Exterior Mockups: Construct integrated exterior mockup according to approved Shop Drawings or as indicated on Drawings. Coordinate installation of exterior envelope materials and products for which mockups are required in individual Specification Sections, along with supporting materials.

1.6 MANUFACTURERS INSTRUCTIONS

A. Conform to manufacturer's instructions in full detail, including each step-in sequence.

B. Where manufacturer's instructions conflict with provisions of Contract Documents, including Regulatory Requirements and Reference Standards, request written clarification from ARCHITECT before proceeding with work.

1.7 FIELD QUALITY CONTROL INSPECTIONS AND TESTING

A. Submit Quality Control Plan within 15 days of Notice of Award. Identify personnel, procedures, controls, instructions, tests, records and forms to be used to carry out the Contractor's quality-assurance and quality-control responsibilities.

B. Conduct specified field quality control testing of in-place work as required to verify conformance to specified air, water, thermal, structural, tolerances, and other performance and design requirements.

C. Conduct inspections and testing that conform to testing procedures and criteria published by specified reference standards, testing and laboratory agencies, and building codes.

D. Where initial tests fail to pass specified testing requirements, provide work needed to meet or exceed inspection and testing criteria and conduct additional testing to verify conformance.

E. Independent inspection, testing, and laboratory services may be retained by COUNTY OF SANTA BARBARA to conduct field quality control inspection testing services.

1. Make provisions as needed to aid testing agency in scheduling, accessing, and performing services requested by COUNTY OF SANTA BARBARA.
2. Cost of initial inspections and tests at COUNTY OF SANTA BARBARA request will be born by COUNTY OF SANTA BARBARA.
3. Costs of subsequent inspections and tests, needed to rectify failed initial inspection and test results, will be paid by the COUNTY OF SANTA BARBARA and deducted from Contract Sum.

F. Independent inspection and testing services are to be certified, accredited, approved, or recognized by qualifying agencies, organizations, or institutions as specialists in conducting these services, or accepted by ARCHITECTand/or(CM/CDR).

1.8 MANUFACTURERS FIELD SERVICES

A. Require manufacturers to supply field services as specified and as necessary to verify conformance to manufacturer's instructions, to achieve manufacturer's warranty, and to conform to other provisions of Contract Documents and Regulatory Authorities.

B. Require manufacturer's trained and qualified personnel to inspect site conditions, surfaces, installation, quality of workmanship, start-up of equipment, testing adjusting and balancing of equipment, and other field services as necessary to maintain quality assurance of Work.

C. Require manufacturers and suppliers to provide and assist in initiating instructions when necessary.

D. For non-conforming work, submit manufacturer's written report to ARCHITECT within 10 days of observation. List observations and recommendations.

E. When site decisions and instructions are received, that are contrary to manufacturers' published instructions, promptly report to ARCHITECT and/or (CM/CDR) and verify acceptance before continuing with work.

F. Manufacturer's Reports: Submit under provisions of 01 33 00 – Submittal Procedures.

1.9 CERTIFICATIONS

A. Submit 2 copies of written certifications. Sign and date by authorized representative, officer, or other person legally entitled to represent business, firm, or organization submitting certification.

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B. Provide backup data, testing procedures by independent testing agency, and other information as necessary to confirm that content of written certification meets or exceeds that required by Contract Documents.

C. Indicate conformance to, meeting or exceeding, that specified by individual Sections.

1.10 TEST DATA

A. Submit two copies of test data including calculations from independent inspection agencies, testing laboratories, professional engineers, and as specified for each Section.

B. Conform to requirements of Regulatory Requirements for code related certifications.

C. Indicate acceptance or results of testing.

D. Certify test data in letter signed by authorized representative.

PART 2 - PRODUCTS (NOT APPLICABLE TO THIS SECTION).

PART 3 - EXECUTION (NOT APPLICABLE TO THIS SECTION).

END OF SECTION

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SECTION 01 45 19 - CONTRACTOR CONSTRUCTION QUALITY CONTROL

PART 1 - GENERAL

1.1 SUMMARY

A. The intent of this specification is to delineate a plan and procedure to be used by CONTRACTOR, working in partnership with COUNTY OF SANTA BARBARA and its agents, to assure the quality control necessary to provide for a complete, fully functional, high-quality facility in accordance with the intent and meaning of the Contract Documents.

B. CONTRACTOR shall be totally responsible for Contractor Construction Quality Control (CQC) – which is verification by CONTRACTOR that work performed by CONTRACTOR forces is in compliance with the Contract Documents.

C. COUNTY OF SANTA BARBARA shall be responsible for Construction Quality Assurance (CQA) – which is the verification by Construction Manager (CM), ARCHITECT of Record (ARCHITECT), Project Inspector (PROJECT INSPECTOR), and Deputy Inspectors that CONTRACTOR has taken the actions and steps defined in the Construction Documents and Contractor Construction Quality Control Plan accepted by COUNTY OF SANTA BARBARA. Verification shall consist of the Inspection of the Work in place by the ARCHITECT, PROJECT INSPECTOR, and deputy inspectors using established inspection, sampling, testing, and observational techniques.

D. Specification includes definition of:

1. CONTRACTOR requirements for establishing, administering and maintaining Quality Control (QC) over the Work and ancillary functions though Contract Closeout.
2. Required elements of a Construction Quality Control program.

E. Related Requirements:

1. Section 01 1100 - Summary of the Work.
2. Section 01 31 13 - Project Coordination.
3. Section 01 31 19 - Project Meetings.
4. Section 01 32 13 - Construction Schedule.
5. Section 01 33 00 - Submittal Procedures.
6. Section 01 45 24 - Environmental Import/Export Materials Testing.
7. Section 01 74 16 - Storm Water Pollution Prevention Plan.
8. Section 01 74 19 - Construction and Demolition Waste Management.
9. Section 01 77 00 - Contract Closeout.
10. Section 01 78 36 - Warranties.

1.2 OBJECTIVES

A. Require CONTRACTOR to establish and maintain a CQC program as described in this section.

B. Require CONTRACTOR to provide a qualified, full-time Construction Quality Control Manager to direct, manage, control, and document a CQC Plan for the Project that includes a:

1. CQC Manager reporting directly to the person authorized to sign the Contract or an Officer of CONTRACTOR's firm and not be subordinate to CONTRACTOR's Project Superintendent or Project Manager.
2. Adequately staffed CQC organization.
3. CQC plan for the project, keyed to the work sequence, addressing site logistics, planning, submittals, design issue and interpretation coordination, and on-site and off-site Work.
4. Procedure:
   a. To ensure no construction work or testing is performed unless CQC Manager is on the work site unless otherwise approved by COUNTY OF SANTA BARBARA.
   b. By which the CQC Manager certifies that submittals, namely: RFCs, shop drawings, etcetera for project materials, equipment, fabrication, construction and construction operations provided by CONTRACTOR comply with the requirements of the CONTRACT.
   c. By which the CQC Manager certifies that project materials, equipment, fabrication, construction and construction operations provided by CONTRACTOR comply with the requirements of this CONTRACT.
   d. To ensure coordination drawings have been prepared and reviewed by impacted subcontractors and trades.
   e. To ensure an activity hazard analysis is conducted for operations specifically identified as having special safety considerations.
   f. For quality control during project commissioning (if applicable).
   g. For expediting project closeout.
5. Schedule and format/agenda for CQC review meetings.
6. Site specific Safety Plan/Injury and Illness Prevention Plan (IIPP) reviewed and accepted by COUNTY OF SANTA BARBARA.
7. System to report on the CONTRACTOR's Quality Control activities.

C. Ensure that Work is performed in accordance with the approved Construction Documents at the specified construction quality level.

1.3 SUBMITTALS

A. For the purposes of the CQC Plan, the term "Submittals" shall include, but not be limited to, required engineering, administrative and material submittals, inspection requests, Requests for Clarification (RFCs), Change Order Proposals (COPs), Requests for Proposals (RFPs) and other project documents. The CQC Manager is responsible for the timelines of each submittal, and shall certify in writing the quality, accuracy, and completeness of submittals.

B. CQC Manager. CONTRACTOR shall submit the resume of the proposed CQC Manager to COUNTY OF SANTA BARBARA upon receiving Notice of Award. The proposed CQC Manager shall be approved in writing by COUNTY OF SANTA BARBARA. The CQC Manager shall be assigned to work on the project full-time through the completion of the Contract Administrative Closeout period and be available at the project site location whenever construction work occurs.

C. CONTRACTOR shall submit a draft Construction Quality Control (CQC) Plan to COUNTY OF SANTA BARBARA within fifteen days after issuance of Notice to Proceed. The CQC plan shall include, but not be limited to:

1. A letter from the person authorized to sign the Contract or an Officer of CONTRACTOR's firm clearly identifying:
   a. CONTRACTOR's CQC Manager.

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b. CQC Manager as having responsibility and authority to implement and manage CONTRACTOR's CQC Program.
c. Lines of authority and reporting for the CQC Manager. (Note: The CQC Manager shall report directly to the person authorized to sign the Contract or an Officer of the CONTRACTOR's firm. The person signing the letter shall not be the Project Manager or the Superintendent for the project nor report to the Project Manager, Superintendent or persons other than those defined heretofore.)
d. CQC Manager's authority to direct stoppage, removal and/or replacement of non-conforming Work.
e. CQC Manager (or staff reporting directly to CQC Manager) as the direct and only line of contact with COUNTY OF SANTA BARBARA's PROJECT INSPECTOR with sole responsibility for submitting and documenting inspection requests (IRs) to the PROJECT INSPECTOR.

2. Organization Chart identifying CQC positions, names of assigned staff, duties and responsibilities, dedicated hours per week assigned to the project, and qualifications. As a minimum, there shall be, in addition to the CQC Manager:
   a. One full-time administrative assistant and one full-time Assistant CQC Manager.
   b. One Assistant CQC manager for every $75 million increment (or increment thereof) of Construction Contract value over $50 million of base Construction Contract value OR for every "stand-alone" building greater than 50,000 square feet.

3. Staff shall be assigned to work at (and be located on) the project site when performing project-related duties. COUNTY OF SANTA BARBARA shall assess scheduled payment amounts for required CQC positions not staffed against invoiced Contract amount for the corresponding month.
4. Proposed formats for meeting agendas, minutes and required reports
5. Procedures for managing the submittal process, as described in Section 01 33 00, Submittals, including:
   a. Reviews and approvals.
   b. List of required submittals and certifications cross-referenced to the construction drawings and specifications.
   c. Scheduled date of submittals.
   d. Names of CONTRACTOR's staff authorized to review and certify submittals prior to submission to ARCHITECT/ENGINEER.

6. Procedure for ensuring Construction Coordination Drawings is coordinated with (and reflect) the Contract's Construction Drawings and Specifications.
7. Procedure for preparing an Activity Hazard Analysis (AHA) Plan identifying operations requiring special safety considerations and defining the policy, procedure, and administrative steps to be taken to ensure the preparation and submittal of an AHA during each of the three phases of Construction Quality Control.
8. Testing Plan and Log that identifies tests required (referencing the specification section and/or drawing requiring the test), subcontractor responsible for each test, scheduled date of test and actual date performed and approved.
9. A plan for coordinating with COUNTY OF SANTA BARBARA's designated commissioning agent to ensure that documentation, measurements and calibration of systems necessary to complete the Commissioning Plan defined in Section 01 91 13 are performed prior to requesting COUNTY OF SANTA BARBARA's designated commissioning agent verify and/or observe Contractor and/or Subcontractor demonstration of operations and/or testing. COUNTY OF SANTA BARBARA or ARCHITECT of Record may act as Commissioning Agent for this project as allowed in Section 01 91 13.
10. Procedure and documentation required to ensure CONTRACTOR compliance with sustainable building practices during construction and when considering materials for substitutions.

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11. Contract Closeout Plan compliant with requirements of Section 01 77 00, Contract Closeout.
12. Procedures and requirements for above-ceiling coordination and installation.
13. Procedures to identify, record and track completion and clearing of rework items (including deviations and corrections to deviations).
14. List of outside firms CONTRACTOR may employ pursuant to executing CONTRACTOR responsibilities identified in the CQC Plan and description of their respective services.

D. CONTRACTOR shall submit the final Construction Quality Control (CQC) Plan to COUNTY OF SANTA BARBARA within forty-five (45) days after issuance of Notice to Proceed 1 for review and acceptance.

1. COUNTY OF SANTA BARBARA reserves the right to require changes in the final CQC Plan and operations as necessary to ensure quality of Work.
2. CONTRACTOR must receive COUNTY OF SANTA BARBARA's approval prior to implementing changes to the final CQC Plan or operations.

E. CQC Manager Responsibilities and Qualifications

1. CQC Manager shall be designated as person responsible for directing, managing, coordinating, documenting, and reporting CONTRACTOR quality control activities in accordance with CONTRACTOR's CQC Plan including, if applicable, required CONTRACTOR materials testing and certifications.
2. CONTRACTOR's CQC Manager shall have significant, relevant documentable training and field experience on building construction projects of a similar scale and be one of the following:
   a. ENGINEER or ARCHITECT currently licensed in the State of California.
   b. PROJECT INSPECTOR Class 1 or Class 2 with a current California State Certification.
   c. Construction Contractor or superintendent (or similar position/function) with a minimum of 10 years of documentable training and field experience on building construction.

1.4 APPROVALS

A. COUNTY OF SANTA BARBARA shall approve in writing the proposed CONTRACTOR CQC Manager prior to start of any Work requiring quality control.

B. COUNTY OF SANTA BARBARA shall review and respond to CONTRACTOR's CQC Plan within fifteen days of receipt.

1. Response shall be in writing.
2. CONTRACTOR shall be assessed COUNTY OF SANTA BARBARA's actual incurred costs to provide quality control services by COUNTY OF SANTA BARBARA should CONTRACTOR fail to have an accepted CQC Plan within ninety days of Notice to Proceed 1.

C. COUNTY OF SANTA BARBARA reserves the right to require changes in the approved CQC Plan and operations as necessary to ensure quality of the Work.

D. CONTRACTOR shall submit a written request to CONSTRUCTION MANAGER for approval of any proposed change in the CQC Manager, CQC staff or CQC Plan or Procedures a minimum of seven days prior to the proposed change.

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E. COUNTY OF SANTA BARBARA shall have the right to require the removal and replacement of the CQC Manager or any member of the CQC staff following a minimum of seven (7) days written notice.

F. CONTRACTOR shall receive CONSTRUCTION MANAGER's acceptance of any proposed changes to the CQC Plan prior to any implementing changes.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION

3.1 QUALITY CONTROL RESPONSIBILITY

A. The CONTRACTOR's CQC Manager, Project Superintendent, and Project Manager shall work together effectively. While the CQC Manager shall be the primary individual responsible for quality control, CONTRACTOR personnel, Subcontractor personnel and material suppliers shall be responsible for the quality of their work on the project.

B. Work of the CONTRACT shall not commence prior to COUNTY OF SANTA BARBARA approval of CQC Manager and acceptance of CQC Plan unless otherwise specifically authorized in writing by CONSTRUCTION MANAGER.

3.2 MEETINGS

A. Weekly CQC Meetings: Upon the start of construction, the CQC Manager shall conduct weekly CQC meetings at the Project Site with the project superintendent, Safety Officer and pertinent subcontractors starting with the Preconstruction Phase and continuing through completion of the construction. The COUNTY OF SANTA BARBARA, PROJECT INSPECTOR, and ARCHITECT may attend these meetings.

1. The CQC Manager shall prepare the minutes of the meeting and provide a copy to the COUNTY OF SANTA BARBARA and the PROJECT INSPECTOR within two working days after the meeting.
2. As a minimum, the meetings will address the following:
   a. Minutes of the previous meeting.
   b. Status of submittals.
   c. Schedule and the status of the Work scheduled during the next two weeks relative to submittals needed for that Work.
   d. Status of inspection requests and identify pre-inspection requirements.
   e. Work to be accomplished in the next fourteen days and the related required documentation.
   f. Current and upcoming activities requiring special safety training, resources and/or activity hazard analyses including:
      1) The activity hazard analyses prepared and submitted.
      2) Fourteen (14) day safety look-ahead schedule.
      3) Safety audit findings.
      4) Safety deficiency/corrective action log.
   g. Resolve CQC and production problems, including open deviations and rework items.
   h. Address items that may require revising the CQC Plan.

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B. Preconstruction Submittal Phase

1. CONSTRUCTION MANAGER shall schedule a Presubmittal Meeting within twenty-one (21) days following Notice of Award. The Presubmittal Meeting will include key representatives of COUNTY OF SANTA BARBARA (CONSTRUCTION MANAGER, PROJECT INSPECTOR, key specialty inspectors, key testing agency representatives), CONTRACTOR (and key subcontractors), and ARCHITECT/ENGINEER (and key sub consultants).
2. Purpose of this meeting is to:
   a. Develop a mutual understanding of CONTRACT and the COUNTY OF SANTA BARBARA's CQC Plan requirements prior to Plan development and submittal.
   b. Establish the Project Quality approach.
   c. Define the scope, content and documentation required for submittals.
   d. Establish the quality requirements for submittals, with a goal of no "Revise and Resubmit" responses to submittals.
   e. Define review criteria for each of the submittals.
   f. Set timeframes for the preparation, transmittal and review of the submittals.
   g. Establish the framework for a Project Quality Assurance/Quality Control Team and the associated quality culture for the life of the project.
   h. Foster teamwork between CONSTRUCTION MANAGER, CONTRACTOR (including CQC Manager and subcontractors), PROJECT INSPECTOR (and subordinate specialty inspectors and testing entities), and the ARCHITECT/ENGINEER (and sub consultants) and will function as an initial teambuilding intervention.
   i. Schedule follow-on meetings between each of the subcontractors and their respective counterpart sub consultants for the purpose of defining in detail the scope, content and documentation required for submittals.
3. The results of this meeting shall be incorporated into the CONTRACTOR's Construction Quality Control Plan submittal.

C. Partnering Meetings: CQC Manager shall schedule and coordinate the attendance of required CONTRACTOR and Subcontractor personnel and participate in "Partnering" sessions required by the appropriate Division 01 Specification in the Contract or CONSTRUCTION MANAGER.

3.3 THREE-PHASE CONSTRUCTION QUALITY CONTROL PROCESS

A. For each project activity and each trade associated with that activity, CONTRACTOR shall perform a three-phase construction quality control process with that activity to ensure each trade's Work complies with CONTRACT requirements and is coordinated with other trades. The three-phase quality control process shall address both on-site and off-site Work and include:

B. Preparatory Phase: CONTRACTOR shall conduct a Preparatory Phase meeting with the superintendent, CONTRACTOR's Safety Officer, subcontractor, and the foreman responsible for that portion of Work.

1. A Preparatory Phase meeting shall be conducted a minimum of five working days and maximum of ten working days prior to the scheduled start of the Work.
2. CONSTRUCTION MANAGER and PROJECT INSPECTOR shall be notified at least two working days prior to each Preparatory Phase meeting.
3. The CQC Manager shall prepare and distribute an agenda to attendees at least two working days prior to each Preparatory Phase meeting.
4. At each Preparatory Phase meeting, the following tasks shall be performed:

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a. Review the applicable Contract Document specification sections.
b. Review the applicable Contract Document and trade coordination drawings.
c. Review codes, jurisdictional requirements and COUNTY OF SANTA BARBARA standards relative to execution of the applicable portion of the Work.
d. Verify that appropriate shop drawings and submittals for materials and equipment have been submitted and reviewed.
e. Verify, when required, the receipt of approved factory test results.
f. Review the testing plan and testing schedule to ensure that provisions have been made to provide the required QC testing.
g. Review the safety plan and appropriate activity hazard analysis to ensure applicable safety requirements are met.
h. Examine the work areas to ensure the required preliminary Work has been completed.
i. Discuss construction methods, as necessary.
j. Confirm coordination with other trades.
k. Confirm above-ceiling coordination is completed.
l. Confirm service accessibility for installed systems.
m. Confirm PROJECT INSPECTOR inspection requirements of the WORK and Inspection Request timing and submittal requirements.

5. The CQC Manager shall prepare minutes of Preparatory Phase meetings and provide a copy to attendees of the meeting within two (2) working days after each meeting.
6. Results of preparatory phase meeting and actions shall be documented in the weekly CONTRACTOR Quality Control Report.

C. Initial Phase: When construction crews are ready to start work, the CQC Manager shall coordinate with the superintendent, CONTRACTOR's Safety Officer and foreman responsible for the Work and:

1. Notify CONSTRUCTION MANAGER and PROJECT INSPECTOR at least two working days in advance of starting the Work.
2. Observe the initial Work activities to ensure compliance with Contract requirements including Safety.
3. Perform the following:
   a. Confirm that the quality of materials, fabrication, and execution provided meets requirements.
   b. Resolve potential conflicts.
   c. Review the Safety Plan and appropriate activity hazard analysis and verify that the applicable safety requirements are met.
   d. Ensure that testing is performed by the approved laboratory.

4. Repeat the Initial Phase for each new crew assigned to work on-site or when compliance falls below acceptable levels when so notified by COUNTY OF SANTA BARBARA.
5. Document observations and results of Initial Phase coordination and activities in the weekly CONTRACTOR Quality Control Report and Contractor Safety Report.

D. Follow-Up Phase: After the work has begun, perform the following:

1. Document results and observations in the weekly CONTRACTOR Quality Control Report.
2. Daily, or more frequently as necessary, until completion of Work:
   a. Ensure the Work is in compliance with Contract requirements.
   b. Identify and document subcontractor Work requiring rework or correction.
   c. Ensure that rework items are documented and are corrected.
   d. Ensure that the quality of materials, fabrication, and execution provided complies with the requirements of the Contract Documents.

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e. Review and sign off on Inspection Requests prior to issuance to PROJECT INSPECTOR.
f. Ensure that testing is performed by the approved laboratory.
g. Ensure safety requirements and practices are observed.

E. Notify CONSTRUCTION MANAGER, PROJECT INSPECTOR and involved local regulatory agencies or utilities at least fourteen days prior to the start of Preparatory and Start-Up Phases for Off-Site Work.

3.4 ACTIVITY HAZARD ANALYSIS – CONTRACTOR SAFETY PROGRAM

A. Before beginning each Work activity, CONTRACTOR shall prepare and utilize for each task an AHA or Job Safety Analysis (JSA). The AHA/JSA shall be reviewed by each work crew prior to the activity and re-addressed any time there are changes in that activity. A sample of an AHA can be found on the COUNTY OF SANTA BARBARA Website or in the COUNTY OF SANTA BARBARA Safety Standards.

1. Activity Hazard Analyses will define the activities being performed and identify the sequences of work, specific hazards anticipated, site conditions, materials and control measures to be implemented to eliminate or reduce each hazard.
2. Work shall not begin until the AHA/JSA for the work activity has been accepted by COUNTY OF SANTA BARBARA and discussed with parties engaged in the work activity (CONTRACTOR, subcontractors, COUNTY OF SANTA BARBARA representatives) at the preparatory and initial phase meetings required by the Construction Quality Control process.
3. The names of the competent/qualified person(s) required to be present during a particular activity (e.g., excavations, fall protection, other activities required by OSHA or similar jurisdictions) shall be identified and included in the AHA/JSA. Proof of their competency shall be submitted to the COUNTY OF SANTA BARBARA for acceptance prior to the start of that work activity.
   a. If more than one competent/qualified person will be used on the AHA/JSA activity, a list of names shall be submitted as an attachment to the AHA form. Those listed shall be competent/qualified for the type of work involved in the AHA and familiar with current site safety policies, procedures and issues.
   b. If a new competent/qualified person is added to the staff, the original list attached to the AHA form shall be updated. The new person shall acknowledge in writing that he/she has reviewed the AHA/JSA and is familiar with the current site safety issues.
4. The AHA/JSA shall be reviewed and modified as necessary to address changing site conditions, operations, or change of competent/qualified person(s).

B. An AHA/JSA shall be prepared and documented for each project work activity as warranted by the hazards associated with the activity. Generally, an AHA shall be prepared for field work activities.

3.5 REQUIRED CONTRACTOR QUALITY CONTROL CERTIFICATIONS

A. Submittal Certification: The CQC Manager shall certify in writing as to the adequacy and completeness of submittals.

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B. Contractor Quality Control Report Certification: Furnish weekly CONTRACTOR Quality Control Reports signed by CQC Manager containing the following statement: "On behalf of CONTRACTOR, I certify that this report is complete, correct and equipment and material used and work performed during this reporting period is in compliance with the Contract Documents to the best of my knowledge, except as noted in this report."

C. Invoice Certification: Include a certificate with each payment request, signed by CQC Manager, attesting that record drawings are current and the Work for which payment is requested, including stored material, is in compliance with Contract requirements.

D. Completion Certification: Upon completion of designated portion of the Work, furnish a certificate to COUNTY OF SANTA BARBARA, signed by the CQC Manager, attesting that "...the Work has been completed, inspected, tested and is in compliance with the Contract requirements."

E. Commissioning Certification. In coordination with COUNTY OF SANTA BARBARA's designated Commissioning Agent, furnish a certification to COUNTY OF SANTA BARBARA, signed by the CQC Manager, attesting that the Work of CONTRACTOR, in support of the project commissioning activities, "...has been completed in compliance with the approved Project Commissioning Plan and Contract requirements."

F. Submittals: CQC Manager shall attest in writing as to the adequacy and completeness of submittals.

G. Drawing Certification: The CQC Manager shall certify in writing as to the accuracy and completeness of submitted CONTRACTOR "As-Built" and trade coordination drawings.

H. Punch List Certification: The CQC Manager shall attest in writing as to the accuracy and completeness of rework and punch list corrective activities.

3.6 PROJECT CLOSEOUT

A. The CQC Manager shall be responsible for ensuring the quality and completeness of CONTRACTOR closeout activities as they relate to the Work of the contract including, but not limited to, remedial work, final submittals, as-built and coordination drawings, maintenance and operations manuals and training, stacks of spare parts and materials, and the like.

B. Prior to CONTRACTOR submission of the Request for Certificate of Completion, CQC Manager shall:

1. Ensure completion of Work except those minor items on CONTRACTOR's Punch List.
2. Conduct a CONTRACTOR Pre- Completion Inspection of the entire Work to:
   a. Identify any additional items of construction requiring correction to comply with the project documents.
   b. Cause trades to promptly correct identified defects in their respective Work.
   c. Re-inspect the Work to ensure compliance with project documents.
3. Certify that items, except those minor Work items on CONTRACTOR's Punch List, have been completed in accordance with the contract plans and specifications.
4. Ensure required closeout documents, as outlined in Section 01 77 00, have been submitted to COUNTY OF SANTA BARBARA.

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C. CONTRACTOR's Request for notice of Completion shall have attached the Punch List prepared by CONTRACTOR with known corrective items indicated and be certified by the CQC Manager that items listed and on the Inspector List or with a Deviation/Corrective Notice as needing rework or correction have been corrected in accordance with the plans and specifications.

D. Upon determination by COUNTY OF SANTA BARBARA that the Work is Complete and ready for inspection, the PROJECT INSPECTOR shall conduct a Completion Inspection and prepare an Inspector List (Working Copy) incorporating input from the ARCHITECT, its subconsultants and other COUNTY OF SANTA BARBARA representatives. The CQC Manager and other CONTRACTOR representatives may participate in this Completion Inspection.

E. COUNTY OF SANTA BARBARA will provide a notice of Completion with Inspector List (Working Copy) attached. The Inspector Punch List (Master Copy) shall be provided within five days of COUNTY OF SANTA BARBARA's provision of the notice of Completion.

F. Within the time allowed for Administrative Closeout of the contract, CONTRACTOR shall correct the deficient Work indicated on the Inspector Punch List (Master Copy). The CQC Manager shall certify that the Work of the Inspector Punch List (Master Copy) has been completed and ask for a Final Inspection of the Work. COUNTY OF SANTA BARBARA will re-inspect the Work and identify any items still requiring correction.

G. Upon correction of items on the Inspector Punch List (Master Copy) or at the end of the Administrative Closeout period, COUNTY OF SANTA BARBARA shall issue a Notice of Contract Completion to CONTRACTOR directing the cessation of CONTRACTOR and Subcontractor activities and advising of any assessment of monies for uncorrected Punch List items or undelivered Record Documents.

3.7 DOCUMENTATION

CQC Manager shall maintain current and complete records of on-site and off-site construction and CQC program operations and activities including, but not limited to:

A. CONTRACTOR Daily Construction Report

1. The CONTRACTOR Daily Construction Report shall be generated as required in Section 01 50 00, Construction Facilities and Temporary Controls, and shall include the following information:
    1) Date of report, name of Contractor, and superintendent present.
    2) Weather conditions in the morning and in the afternoon including maximum and minimum temperatures.
    3) List of Contractor and subcontractor personnel on the Project site, their trades, employer, Work location, description of work performed (corresponding to schedule activity numbers) and hours worked.
    4) List of job safety actions taken and safety inspections conducted. Indicate that identified safety deficiencies have been corrected and provide related documentation of the following:
    5) Job safety meetings held (including sign-in sheets).
        a) Lotiaccidents/inciden(includiwitnestatemenand photographs).
    6) Daily written safety inspections conducted including, as a minimum when applicable:
        a) Fire extinguishers.
        b) Crane certification/equipment operator licenses.
        c) Trenching/shoring/scaffold/high voltage electrical/ elevated work.

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d) Personal Fall Arrest System (PFAS) equipment/harnesses, spider boxes.

7) Hazardous material/waste released into the environment.

8) Meetings held, including CQC preparatory and initial phase meetings.

a) List of equipment/material received that day and which is incorporated into the project.

b) List of construction and plant equipment on the Project site including number of hours used, idle and down for repair. Identify whether equipment is CONTRACTOR-owned or rental.

c) Include a "remarks" section in this report for directions, problems and delays, drawing coordination and conflicts, field changes, records of visitors, and any other relevant issues.

d) List of items, generated by CQC staff, observed as requiring correction or having been corrected.

2. Terminology used for reporting of Work in the CONTRACTOR Daily Construction Report shall be consistent with terminology in the construction schedule.

3. Reports shall be prepared, signed and dated by Contractor's project superintendent. CQC Manager shall review and initial CONTRACTOR Daily Construction Reports, add comments as necessary and attach to the Contractor Quality Control Report prepared for the same day.

B. CONTRACTOR Quality Control Report:

1. Weekly reports shall be prepared, certified and submitted on the first Monday following the reporting period to CONSTRUCTION MANAGER and PROJECT INSPECTOR for each day Work was performed during the week and/or weekly for every period of no-work.

2. Terminology used for reporting of Work shall be consistent with terminology in the construction schedule or contract documents.

3. Reports shall be prepared, signed, and dated by the CQC Manager and include the following information:

a. identification of the Work and its associated construction quality control phase (Preparatory, Initial, Follow-up) including:

1) Results of Preparatory Phase meetings held during the reporting week, including location of the Work and list of personnel present at the meeting and that tasks listed in 3.03.A.4 were addressed and performed.

2) Results from Initial Phase meetings held during the week, including location of the Work, list of trades involved, and personnel present at the meeting. Indicate in the report that:

a) Preliminary Work was done correctly.

b) Work is in compliance with CONTRACT and jurisdictional requirements.

c) Materials, fabrication, and execution are satisfactory.

d) Safety requirements were met.

e) Samples have been prepared and approved.

f) Required testing to be performed, by whom and verify that the results are in compliance with requirements.

g) Required tests were performed by the approved testing laboratory.

3) Results of Follow-Up Phase observations and inspections conducted during the week including verifying:

a) Location of the Work.

b) Work was done correctly.

c) Work complies with CONTRACT requirements.

d) Materials, fabrication, and execution are satisfactory.

e) Required testing has been performed, by whom and verify that the results are in compliance with requirements.
f) Required tests were performed by the approved testing laboratory and individual responsible for performing the tests.

b. Safety-related activities including operations, incidents, analyses, and lessons learned.
c. List of corrected rework items along with the corrective action taken.
d. List of rework items identified by CQC staff and/or PROJECT INSPECTOR but not corrected by close of business for the reporting period.
e. Results of the three phases of quality control for off-site Work, if applicable, including actions taken.
f. Status of submittals, namely: RFCs, materials, project schedules, activity hazard analyses, etc.
g. Status of Change Order Proposals, pending and submitted.
h. "Lessons learned" from the identification and resolution of issues during the reporting week.
i. Results of the three phases of construction quality control meetings for off-site Work (if applicable) including actions taken.

4. Include a "remarks" section listing directions received, problem areas, any deviation from the CQC Plan, other meetings, as-built drawing updates reports, corrective direction and action, and other relevant information.

C. Testing Plan and Log

1. As tests are performed, the CQC Manager shall record in the "Testing Plan and Log":
   a. Date the test was conducted and recorded results.
   b. Date the test results were received by CONTRACTOR.
   c. Date the test results were received by PROJECT INSPECTOR.
   d. Verification and identification of the approved testing laboratory that was used.

2. Attach a current, updated copy of the "Testing Plan and Log" to the last weekly CONTRACTOR Quality Control Report of each month.

D. Correction/Deviation Items List: The CQC Manager shall:

1. Maintain a list identifying items/Work observed by the CQC Manager and/or CQC staff that does not comply with CONTRACT requirements.
2. Maintain a status list of items identified by CONSTRUCTION MANAGER or by PROJECT INSPECTOR on the Inspector List or with a Deviation/Corrective Notice as needing correction and:
   a. The date the item was originally identified.
   b. The date the item was corrected.
   c. The date PROJECT INSPECTOR was notified items on the Inspector List or having a Deviation/Corrective Notice were corrected.

3. CQC Manager shall attach the most current "Rework Items List" to the last weekly CONTRACTOR Quality Control Report of each month.
4. CONTRACTOR shall be responsible for including on this list items requiring rework including those identified by COUNTY OF SANTA BARBARA, PROJECT INSPECTOR or ARCHITECT.

E. Storm Water Pollution Prevention Plan (SWPPP): CQC Manager is required to:

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1. Review the SWPPP for compliance in accordance with Section 01 33 00 prior to submission.
2. Prepare and submit to CONSTRUCTION MANAGER in accordance with the date established in the Notice to Proceed 1
3. Review and ensure timely submission of required monitoring and final reports.
    a) Construction and Demolition (C and D) Waste ManagemenThe CQC Manager is required to:

4. Review the C and D Waste Management plan for compliance in accordance with Section 01 74 19 prior to submission.
5. Within fifteen (15) days after Notice to Proceed 1, and prior to any waste removal, submit the plan to the CONSTRUCTION MANAGER for review and approval.
6. Review and ensure timely submission of required monitoring and final reports.

F. California Environmental Quality Act (CEQA) Report: The CQC Manager is required to:

1. Verify compliance with CEQA requirements at the project site.
2. Review and ensure timely submission of required monitoring and final reports.

G. Environmental Import/Export Materials: The CQC Manager is required to:

1. Review the import/export Sampling Strategy Plan (SSP) prepared by the CONTRACTOR'S licensed environmental professional as outlined in Section 01 45 24.
2. Review the Draft Certification Report prepared by the CONTRACTOR's licensed environmental professional as outlined in Section 01 45 24.
3. Provide required certifications and manifests.

H. Test and Balance: The CQC Manager is required to:

1. Review the qualifications of the Test and Balance agency directly subcontracted to the CONTRACTOR.
2. Review the Work of the Test and Balance agency as part of the CQC program.

I. Trade Coordination Drawings: The CQC Manager shall:

1. Facilitate the preparation and utilization of trade coordination drawings as required under Section 01 31 13.
2. Ensure and certify that the trade coordination drawings are complete and are continuously updated to reflect changes in the Work.
3. Ensure that the trade coordination drawings are used during the Preparatory Phase for each scheduled construction operation such that the Work of trades is properly coordinated and free from interference and conflict.
4. Field changes arising from the coordination of the respective trades will be reflected in revised trade coordination drawings.
5. Trade coordination drawings will be updated and certified monthly by the CQC Manager as to their accuracy and completeness precedent to review by COUNTY OF SANTA BARBARA.

J. As-Built Drawings: CQC Manager shall review the as-built drawings required by Section 01 77 00, CONTRACTOR's AS-BUILT DOCUMENTS, to ensure as-built drawings are:

1. Kept current on a weekly basis.
2. Marked to show precise, referenced locations of any deviations made from the Contract Document drawings or specifications.

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K. As part of the Request for Completion, the CQC Manager shall attest to the accuracy of the as-built drawings and submit the as-built drawings to the CONSTRUCTION MANAGER with a certificate attesting to the accuracy of the As-Built drawings prior to Administrative Closeout.

END OF SECTION

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SECTION 01 45 23 - TESTING AND INSPECTION

PART 1 - GENERAL

1.1 SECTION INCLUDES

A. Testing and inspection services to meet requirements of the California Building Code (CBC) and COUNTY OF SANTA BARBARA.

B. Related Requirements:

1. DIVISION 3 - Concrete.
2. DIVISION 4 - Masonry.
3. DIVISION 6 - Metals.

1.2 REFERENCES

A. American Concrete Institute (ACI):

1. ACI 318 – Building Code Requirements for Structural Concrete and Commentary.

B. American Institute of Steel Construction (AISC):

1. AISC 360 – Specification for Structural Steel Buildings.
2. AISC 341 – Seismic Provisions for Structural Steel Buildings.

C. ASTM International (ASTM):

1. ASTM A108 – Standard Specification for Steel Bar, Carbon and Alloy, Cold-Finished.
2. ASTM A370 – Standard Test Methods and Definitions for Mechanical Testing of Steel Products.
3. ASTM A706 – Standard Specification for Deformed and Plain Low-Alloy Steel Bars for Concrete Reinforcement.
4. ASTM C31 - Standard Practice for Making and Curing Concrete Test Specimens in the Field.
5. ASTM C172 - Standard Practice for Sampling Freshly Mixed Concrete.
6. ASTM C780 - Standard Test Method for Preconstruction and Construction Evaluation of Mortars for Plain and Reinforced Unit Masonry.
7. ASTM C1140 - Standard Practice for Preparing and Testing Specimens from Shotcrete Test Panels.
8. ASTM C1314 - Standard Test Method for Compressive Strength of Masonry Prisms.
9. ASTM C1604 - Standard Test Method for Obtaining and Testing Drilled Cores of Shotcrete.
10. ASTM E164 - Standard Practice for Contact Ultrasonic Testing of Weldments.
11. ASTM E488 - Standard Test Methods for Strength of Anchors in Concrete Elements.
12. ASTM E543 - Standard Specification for Agencies Performing Nondestructive Testing.
13. ASTM E605 - Standard Test Methods for Thickness and Density of Sprayed Fire-Resistive Material (SFRM) Applied to Structural Members.
14. ASTM E1444 - Standard Practice for Magnetic Particle Testing.

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15. ASTM F606 - Standard Test Methods for Determining the Mechanical Properties of Externally and Internally Threaded Fasteners, Washers, Direct Tension Indicators, and Rivets.

D. Association of the Wall and Ceiling Industry (AWCI):

1. AWCI Technical Manual 12-B - Standard Practice for the Testing and Inspection of Field Applied Thin Film Intumescent Fire-Resistive Materials; an Annotated Guide.

E. American Welding Society (AWS):

1. AWS D1.1 – Structural Welding Code.
2. AWS D1.4 – Structural Welding Code – Reinforcing Steel.
3. AWS D1.8 – Structural Welding Code – Seismic Supplement.

F. Any COUNTY OF SANTA BARBARA Interpretation Regulations (IR).

1.3 REGULATORY REQUIREMENTS

A. Laboratories performing testing shall have COUNTY OF SANTA BARBARA's Laboratory Evaluation and Acceptance Program approval prior to providing material testing or special inspection services.

B. Tests of materials and inspections shall be in accordance of Section 4-213 through 4-219 of the California Building Standards Commission's, California Administrative Code.

C. Required material testing, inspections and special inspections are indicated on COUNTY OF SANTA BARBARA listing of Structural Tests & Special Inspections (T&I List).

1.4 TESTS

A. COUNTY OF SANTA BARBARA will contract with an approved testing laboratory to perform the testing indicated on the Contract Documents, including the Tests and Special Inspections (T&I) list.

B. Selection of material to be tested shall be by the Testing Laboratory and not by CONTRACTOR.

C. Any material shipped from the source of supply prior to having satisfactorily passed such testing and inspection, or prior to the receipt of notice from Project Inspector such testing and inspection is not required, shall not be incorporated into the Work.

D. COUNTY OF SANTA BARBARA will select, and directly reimburse, the Testing Laboratory for costs of all required tests and inspections; however, the Testing Laboratory may be reimbursed by CONTRACTOR for such costs as specified or noted in related sections of the Contract Documents.

E. The Testing Laboratory is not authorized to release, revoke, alter, or enlarge requirements of the Contract Documents or approve or accept any portion of the Work.

F. The Testing Laboratory shall not perform any duties of CONTRACTOR.

G. CONTRACTOR shall provide an insulated curing box with the capacity for twenty concrete cylinders and will relocate said box and cylinders as rapidly as required in order to provide for progress of the Work.

1.5 TEST REPORTS

A. Test reports shall include all tests performed, regardless of whether such tests indicate the material is satisfactory or unsatisfactory. Samples taken but not tested shall also be reported. Records of special sampling operations, when and as required, shall also be reported. Reports shall indicate the material (or materials) was sampled and tested in accordance with requirements of CBC, Title 24, Parts 1 and 2, as indicated on the Contract Documents. Test reports shall indicate specified design strength and specifically state whether or not the material (or materials) tested comply with the specified requirements.

1.6 VERIFICATION OF TEST REPORTS

A. Each Testing Laboratory shall submit in duplicate, a verified report covering all tests required to be performed by that agency during the progress of the Work. Such report, covering all required tests, shall be furnished prior to Substantial Completion and/or, when construction on the Work is suspended, covering all tests up to the time of Work suspension.

1.7 INSPECTION BY COUNTY OF SANTA BARBARA

A. COUNTY OF SANTA BARBARA, and its representatives, shall have access, for purposes of inspection, at all times to all parts of the Work and to all shops wherein the Work is in preparation. CONTRACTOR shall, at all times, maintain proper facilities and provide safe access for such inspection.

B. CONSTRUCTION MANAGER (CM/CDR) shall have the right to reject materials and/or workmanship deemed defective Work and to require correction. Defective workmanship shall be corrected in a satisfactory manner and defective materials shall be removed from the premises and legally disposed of without charge to COUNTY OF SANTA BARBARA. If CONTRACTOR does not correct such defective Work within a reasonable time, fixed by written notice and in accordance with the terms and conditions of the Contract Documents, COUNTY OF SANTA BARBARA may correct such defective Work and proceed in accordance with related Articles of the Contract Documents.

C. CONTRACTOR is responsible for compliance to all applicable local, state, and federal regulations regarding codes, regulations, ordinances, restrictions, and requirements.

1.8 PROJECT INSPECTOR

A. A PROJECT INSPECTOR will be employed by COUNTY OF SANTA BARBARA in accordance with requirements of Title 24 of the California Code of Regulations with their duties specifically defined therein. Additional Special Inspectors may be employed and assigned to the Work by COUNTY OF SANTA BARBARA in accordance with the requirements of the CBC and COUNTY OF SANTA BARBARA.

B. Inspection of Work shall not relieve CONTRACTOR from any obligation to fulfill all terms and conditions of the Contract Documents.

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C. CONTRACTOR shall be responsible for scheduling times of inspection, tests, sample taking, and similar activities of the Work.

1.9 STRUCTURAL TESTS AND SPECIAL INSPECTIONS

A. Soils:

1. General: Periodic inspection by Geotechnical Engineer for verification of the following construction activities in conformance to CBC Table 1705A.6:
   a. Site has been prepared properly prior to placement of controlled fill and/or excavations for foundations.
   b. Foundation excavations are extended to proper depth and have reached proper material.
   c. Materials below footings are adequate to achieve the design bearing capacity.

2. Compacted Fills: Testing and inspections shall be in conformance to Table 1705A.6:
   a. Geotechnical Engineer will continuously verify the use of proper materials and inspect lift thicknesses, placement, and compaction during placement of fill.
   b. Testing Laboratory under the supervision of the Geotechnical Engineer will:
      1) Perform qualification testing of fill materials.
      2) Test the compaction of fill.

3. Driven Deep Foundations (Piles): Testing and inspections shall be in conformance to Table 1705A.7:
   a. Continuous inspections by Geotechnical Engineer:
      1) Verify pile materials, sizes and lengths comply with the requirements.
      2) Inspect driving operations and maintain complete and accurate records for each pile.
      3) Verify locations of piles and their plumbness, confirm type and size of hammer, record number of blows per foot of penetration, determine required penetrations to achieve design capacity, record tip and butt elevations and record any pile damage.
   b. Testing Laboratory under the supervision of the Geotechnical Engineer will determine capacities of test piles and conduct additional load tests as required.
   c. Steel piles: Tests and inspections will be as indicated on paragraphs below for structural steel.
   d. Concrete piles and concrete filled piles: Tests and inspections will be as indicated on paragraphs below for concrete.

4. Cast-in-place Deep Foundations (Piers): Continuous inspections by Geotechnical Engineer in conformance to Table 1705A.8:
   a. Inspect drilling operations and maintain complete and accurate records for each pier.
   b. Verify placement locations and plumbness, confirm element diameters, bell diameters (if applicable), lengths, and embedment into bedrock (if applicable). Record concrete or grout volumes.
   c. Confirm adequate end strata bearing capacity.
   d. Concrete Piers: Tests and inspections will be as indicated on paragraphs below for concrete.

5. Retaining Walls:
   a. Continuous inspections by Geotechnical Engineer:

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1) Placement, compaction, and inspection of soil per CBC Section 1705A.6.1 for fills supporting foundations.
2) Segmental retaining walls; inspect placement of units, dowels, connectors, etc.

b. Concrete Retaining Walls: Provide tests and inspections as indicated on paragraphs below for concrete.

c. Masonry Retaining Walls: Provide tests and inspections as indicated on paragraphs below for masonry.

B. Concrete:

1. Cast in Place Concrete: Inspection and testing in conformance to CBC Table 1705A.3:
   a. Inspection of reinforcement, including prestressing tendons and verification of placement, per ACI 318, sections 25.2, 25.2, 25.5.1 through 26.5.3.
   b. Reinforcing bar welding: Inspect per AWS D1.4, ACI 318 26.5.4.
      1) Verification of weldability of reinforcing bars other than ASTM A706.
      2) Inspect single-pass fillet welds, maximum 5/16".
      3) Inspect all other welds.
   c. Inspect anchors cast in concrete per ACI 318, section 17.8.2.
   d. Inspect anchors post-installed in hardened concrete members:
      1) Continuous inspection of adhesive anchors installed in horizontally or upwardly inclined orientations to resist sustained tension loads, per ACI 318, section 17.8.2.4.
      2) Mechanical anchors and adhesive anchors, not defined in previous paragraph, per ACI 318, section 17.8.2.
   e. Design Mix:
      1) Verify use of required mix, per ACI 318, chapter 19 and sections 26.4.3 and 26.4.4.
      2) Batch Plant Inspection: The quality and quantity of materials used in transit-mixed concrete and in batched aggregates shall be continuously inspected as required by CBC section 1705A.3.2. If approved by COUNTY OF SANTA BARBARA, batch plant inspection may be reduced to periodic if plant complies with CBC section 1705A3.3.1, item 1, and requires first batch inspection, weighmaster, and batch tickets.
   f. Prior to concrete placement, fabricate specimens for strength tests, perform slump and air content tests, and determine the temperature of the concrete, per ASTM C172, ASTM C31, ACI 318, sections 26.4.5 and 26.12.
   g. Inspect concrete and shotcrete placement for proper application techniques, per ACI 318, section 26.4.5.
   h. Verify maintenance of specified curing temperature and techniques per ACI 318 sections 26.4.7 through 26.4.9 and CBC section 1908.9.
   i. Inspect prestressed concrete for:
      1) Application of prestressing forces, per ACI 318 section 26.9.2.1
      2) Grouting of bonded prestressing tendons per ACI 318 section 26.9.2.3.
   j. Inspection of erection of precast concrete members per ACI 318 chapter 26.8.
   k. Verify in-situ concrete strength, prior to stressing of tendons in post-tensioned concrete and prior to removal of shores and forms from beams and structural slabs per ACI 318 section 26.10.1.b.
   l. Sampling and testing of reinforcing steel per ASTM A370 and CBC section 1910A.2. CONTRACTOR shall submit mill certificate indicating compliance with requirements for reinforcement, anchors, ties, and metal accessories.

2. Prestressed Concrete: In addition to the tests and inspections required for concrete listed above, the following tests and inspections will performed:

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a. Testing Laboratory will test prestressing tendons and anchorages per CBC section 1910A.3 and ASTM A370.
b. Special Inspector will check the materials, equipment, tensioning procedure and inspect placement of prestressing tendons and construction, per CBC section 1705A.3.4.
c. Special Inspector will verify in-situ adequate concrete strength prior to stressing tendons.
d. Continuous inspection by Special Inspector of application of prestressing forces and grouting of bonded prestressing tendons, per CBC section 1705A.3.4.

3. Precast Concrete: In addition to the tests and inspections required for concrete listed above, the following tests and inspections will performed:
   a. Continuous inspection by Special Inspector of fabrication of precast concrete members.
   b. Inspection of erection of precast concrete members per ACI 318, chapter 26.8.

4. Shotcrete: In addition to the tests and inspections required for concrete listed above, the following tests and inspections will performed:
   a. Continuous inspection by Special Inspector of placement of shotcrete per ACI 318 section 26.4.5.
   b. Testing Laboratory will test strength of shotcrete in accordance to ASTM C1140 and ASTM C1604.

5. Post-installed Anchors:
   a. Special Inspector will inspect installation of post-installed anchors in hardened concrete members as required by CBC table 1705A.3, item 4.
      1) Adhesive anchors installed in horizontally or upwardly inclined orientations to resist sustained tension loads, per ACI 318, section 17.8.2.4.
      2) Mechanical anchors and adhesive anchors not defined above, per ACI 318, section 17.8.2.
   b. Testing Laboratory will test post-installed anchors in conformance to CBC section 1905A and ASTM E488.

C. Structural Masonry:

1. Material Verification and Testing:
   a. Sampling and testing of reinforcing steel per ASTM A370 and CBC section 1910A.2. CONTRACTOR shall submit mill certificate indicating compliance with requirements for reinforcement, anchors, ties, and metal accessories.
   b. Submit manufacturer's certificate of compliance for masonry units, mortar and grout materials. Test masonry units, mortar and grout (unit strength method).
   c. Testing Laboratory will test masonry prisms in conformance with ASTM C1314.
   d. Special Inspector will verify proportions of site-prepared, premixed or preblended mortar and grout, per ASTM C780.
   e. Testing Laboratory will test core-drilled samples in conformance with CBC 2114.6.2.

2. Inspection:
   a. Special Inspector will continuously inspect preparation of prisms per ASTM C1314.
   b. Special inspector will verify size, location and condition of dowels and construction supporting masonry.
   c. Special inspector will verify size specified size, grade and type of reinforcement.
   d. Special inspector will verify weldability of reinforcing bars other than ASTM A706. Special inspector to inspect reinforcing bar welding: Inspection to be in conformance with AWS D1.4, ACI 318 26.5.4.

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e. Special inspector will inspect placement of reinforcement, connectors, masonry units and construction of mortar joints.
f. Special inspector will verify protection of masonry during cold weather temperature (temperature below 40° F) or hot weather (temperature above 90° F).
g. Special inspector will inspect type, size and location of anchors and all other items to be embedded in masonry, including other details of anchorage of masonry to structural members, frames and other construction.
h. Special inspector will inspect grout space prior to grouting and placement of grout.

3. Post-installed Anchors in Masonry:
   a. Special inspector will inspect anchors cast in concrete per ACI 318, section 17.8.2.
   b. Special inspector will inspect anchors post-installed in hardened concrete members:
      1) Continuous inspection of adhesive anchors installed in horizontally or upwardly inclined orientations to resist sustained tension loads, per ACI 318, section 17.8.2.4.
      2) Mechanical anchors and adhesive anchors, not defined in previous paragraph, per ACI 318, section 17.8.2.
   c. Testing Laboratory will test post-installed anchors in conformance to CBC section 1905A and ASTM E488.

D. Structural Steel:

1. Special inspector will verify that all materials are properly marked in conformance with AISC 360, Section 3.3 and applicable ASTM standards.
   a. Mill certificates indicating material properties that comply with requirements.
   b. Materials, sizes, types and grades complying with requirements.
2. Testing Laboratory will test unidentified materials in conformance with ASTM A370.
3. Special inspector will examine seam welds of HSS shapes.
4. Special inspections and non-destructive testing of structural steel elements shall be in conformance to CBC section 1705A.2.1.

E. High Strength Bolts:

1. Special inspector will verify identification markings and manufacturer's certificates of compliance conform to ASTM standards specified in the Contract Documents.
2. Testing Laboratory will test high-strength bolts, nuts and washers in conformance with ASTM F606, ASTM A370 and all applicable Codes.
3. Special inspector will inspect bearing-type ("snug tight") bolt connections in conformance with AISC 360, section M2.5 and all applicable Codes.
4. Special inspector will inspect slip-critical bolt connections in conformance with AISC 360, section M2.5.

F. Welding:

1. Verification of Materials, Equipment and Welders:
   a. Special inspector will verify weld filler material identification markings per AWS designation listed on the Contract Documents and the WPS.
   b. Special inspector will verify material manufacturer's certificate of compliance.
   c. Special inspector will verify WPS, welder qualifications and equipment in conformance to and all applicable Codes and Regulations.

2. Shop Welding: Special inspector will inspect the following, per CBC 1705A.2.1 and AISC 360 (and AISC 341, as applicable):
   a. Groove, multi-pass fillet welds larger than 5/16", plug and slot welds.
   b. Single-pass fillet welds equal or less than 5/16".
   c. Inspect welding of stairs and railing systems.
   d. Verification of reinforcing steel weldability.
   e. Welding of reinforcing steel, per AWS D1.4.

3. Field Welding: Special inspector will inspect the following, per CBC 1705A.2.1, AISC 360 (and AISC 341, as applicable) and all applicable Codes:
   a. Groove, multi-pass fillet welds larger than 5/16", plug and slot welds.
   b. Single-pass fillet welds equal or less than 5/16".
   c. End welded studs (ASTM A108) installation, including bend test.
   d. Floor and roof deck welds.
   e. Welding of structural cold-formed steel.
   f. Welding of stairs and railing systems.
   g. Verification of reinforcing steel weldability.
   h. Inspect welding of reinforcing steel.

4. Non-Destructive Testing: Testing Laboratory will test perform ultrasonic and magnetic particle testing in conformance to AISC 360 section N5.5, AISC 341 appendix Q5.2, AWS D1.1, AWS D1.8, ASTM E543, ASTM E1444, ASTM E164 and all applicable Codes and Regulations.

G. Steel Joists and Trusses: Continuous inspection, special inspector will verify size, type and grade for all chord and web members as well as connectors and weld filler material, verify joist profile, dimensions and chamber (if applicable); verify all weld locations, lengths and profiles; mark or tag each joist, in conformance with CBC section 2207.1 and all applicable Codes and Regulations.

H. Fire-Proofing:

1. Spray Applied:
   a. Project inspector will examine structural steel surface conditions, inspect application, take samples, measure thickness, and verify compliance of all aspects of application with Construction Documents, in conformance with CBC sections and ASTM E.605.
   b. Testing Laboratory will test bond strength in conformance with ASTM E605, per CBC section 1705A.14.6.
   c. Testing Laboratory will test density in accordance with ASTM E605, per CBC section 1705A.14.5.

2. Intumescent Fire-Resistant Coatings: Special inspector will inspect and test in accordance with AWCI 12-B, per CBC section 1705A.15.

I. Anchor Bolts, Anchor Rods and Other Steel:

1. Testing Laboratory will sample and test not readily identifiable anchor bolts and anchor rods in accordance with and all applicable Codes and Regulations.
2. Testing Laboratory will sample and test not readily identifiable threaded rod not used for foundation anchorage per procedures and all applicable Codes and Regulations.

J. Prefabricated Wood Structural Elements:

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1. Special inspector will continuously inspect fabrication of glued-laminated timber in accordance with CBC section 1704A2.5.
2. Special inspector will continuously inspect fabrication of manufactured open-web trusses in accordance with CBC 1704A2.5 and all applicable Codes and Regulations.
3. Special inspector will continuously inspect fabrication of manufactured metal plate connected trusses in accordance with CBC 1704A2.5 and all applicable Codes and Regulations.

PART 2 - PRODUCTS (NOT USED).

PART 3 - EXECUTION (NOT USED).

END OF SECTION

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SECTION 01 45 24 - ENVIRONMENTAL IMPORT EXPORT MATERIAL TESTING

PART 1 - GENERAL

1.1 SUMMARY

A. This Section specifies the requirements for the sampling, testing, transportation, and certification of imported fill materials or exported fill materials from COUNTY OF SANTA BARBARA site.

B. This Section defines:

1. CONTRACTOR requirements for use of existing, imported, or generated materials on site.
2. CONTRACTOR requirements for stockpiling materials for use on site.
3. CONTRACTOR requirements for exporting materials from a site including transportation.
4. Testing requirements for all materials imported, exported, stockpiled, or generated for use on a site.
5. CONTRACTOR testing and reporting requirements.
6. CONTRACTOR submittal requirements.

C. Related Requirements:

1. Division 1: General Requirements.
2. Section 01 11 00: Summary of Work.
3. Section 01 31 13: Project Coordination.
4. Section 01 32 13: Construction Schedule.
5. Section 01 33 00: Submittal Procedures.
6. Section 01 77 00: Contract Closeout.

1.2 OBJECTIVES

A. Ensure that fill materials imported to site are safe for the maintenance crew.

B. Ensure that materials exported from site for use or offsite disposal/recycling are adequately characterized for lawful disposition.

C. Ensure that representative data be collected so that analytical determinations can be made regarding the first two objectives.

D. If required by authorities having jurisdiction, the CONTRACTOR shall contract with and pay for the services of a licensed environmental professional (licensed State of California Professional Engineer [PE Civil] or Professional Geologist [PG]) familiar with environmental site assessment and waste classification and disposal requirements to perform such services.

E. If required by authorities having jurisdiction, the CONTRACTOR shall contract with and pay for an independent, approved California Department of Health Services certified testing laboratory to perform analytical testing of imported, exported and site generated fill materials.

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F. Require CONTRACTOR to pay all fees required by authorities having jurisdiction over area.

G. Require CONTRACTOR to post bonds required by authorities having jurisdiction over area.

1.3 DEFINITIONS

A. Definitions not furnished in text of this section:

1. CEQA: California Environmental Quality Act.
2. EIR: Environmental Impact Report.
3. OWNER REPRESENTATIVEOWNER REPRESENTATIVELicensed Environmental Professional: Person licensed in the State of California and with sufficient knowledge and experience to competently perform environmentally-related work, including (but necessarily limited to) environmental site investigations, remedial projects, and other tasks involving the collection of soil, soil vapor, and groundwater samples; the selection of analytical methods for said samples; the interpretation of analytical data; the preparation of work plans, reports, and other relevant documents; and the supervision and/or oversight of remedial contractors. For the purposes of this Section, a licensed environmental professional shall include a Professional Geologist or "P.G." or a Civil Professional Engineer or "P.E."
4. ug/kg: micrograms/kilogram.
5. mg/kg: milligrams/kilogram.
6. NA: Not Applicable.
7. RCRA: Federal Resource Conservation and Recovery Act.
8. Soil Certification/Sample Data Report: Report documenting location, volume, sampling procedures, analytical methods, chemical test results, and recommendations for either disposing or re-using stockpiled soil excavated from COUNTY OF SANTA BARBARA sites or proposed for import to same. Preparation of report is to follow the procedures given in Article 1.04 of this Section.
9. Soil Sampling Plan (SSP): As described in Article 1.04 of this Section, a document providing sufficient guidance with which to adequately characterize soil proposed for import to, or export from . Guidance in this document is to be in accordance with the procedures described in Article1.04 of this Section.
10. 1STLC: Soluble Threshold Limit Concentrations as defined in Tables II and III, Chapter 11, Article 3, § 66261.24-1 of Title 22 of the California Code of Regulations (CCR).
11. 1TCLP: Toxicity Characteristic Leaching Procedure, test Method 1311, documented in Title 40, Part 261, Subpart C, § 261.24 of the Code of Federal Regulations (CFR).
12. 1TPH: Total Petroleum Hydrocarbons.
13. 1TTLC: Total Threshold Limit Concentrations, as defined in Tables II and III, Chapter 11, Article 3, § 66261.24-1 of Title 22 of the CCR.
14. 1USEPA or EPA: United States Environmental Protection Agency.
15. 1VOCs: Volatile Organic Compounds.
16. 1WET: Waste Extraction Test, as defined in Appendix II-1, Chapter 11 of Title 22 of the CCR.

1.4 SUBMITTALS

A. CONTRACTOR shall submit to OWNER REPRESENTATIVE for transmittal if pothole sampling is utilized. In addition, the draft SSP shall contain all necessary contact information for the import/export site and a proposed schedule for the sampling activities. OWNER REPRESENTATIVE will either approve the document or request that revisions be made. This process shall continue until OWNER REPRESENTATIVE approves the draft SSP.

1. Draft Soil Certification/Sample Data Report:
   a. A draft Soil Certification/Sample Data Report prepared by CONTRACTOR's licensed environmental professional for review and concurrence. At a minimum, the draft Soil Certification/Sample Data Report shall contain:
      1) A site map showing the location of the in-situ sampling locations or the stockpile(s) and stockpile sample locations.
      2) A detailed discussion and evaluation of the laboratory results.
      3) A summary of findings and recommendations that provide a determination on the waste classification of the subject materials, based on the representative sample results.
      4) Recommendations for additional step-out samples, if any.
      5) Chain-of-custody forms and all laboratory data with respective QA/QC sheets.
   b. CONTRACTOR must allow OWNER REPRESENTATIVE a minimum of 72 hours to review the draft Soil Certification/Sample Data Report. OWNER REPRESENTATIVE will either approve the document or request that revisions be made. This shall continue until OWNER REPRESENTATIVE approves the draft Soil Certification/Sampling Data Report.
   c. Upon revision of the draft Soil Certification/Sample Data Report by the CONTRACTOR'S licensed environmental professional and acceptance by OWNER REPRESENTATIVE, the final report, signed and stamped by the licensed professional, shall be submitted to the OWNER REPRESENTATIVE. If the soil is to be exported to or imported from, a COUNTY OF SANTA BARBARA site, if it satisfied the requirements of paragraphs 3.02.F and 3.02.G of this Section, then a PG or civil PE must sign and stamp the final report.
      1) The OWNER REPRESENTATIVE, COUNTY OF SANTA BARBARA ENVIRONMENTAL CONSULTANT will confirm that the proposed waste classification for the proposed import/export material is appropriate. For materials designated unacceptable for export except to a licensed facility, or for those materials sent electively by CONTRACTOR to a licensed facility, the OWNER REPRESENTATIVE, COUNTY OF SANTA BARBARA ENVIRONMENTAL CONSULTANT will provide information on the necessary waste manifest documentation.
      2) If an OWNER REPRESENTATIVE would like to conduct the soil sampling and/or soil removal, the CONTRACTOR will facilitate the OWNER REPRESENTATIVE request.

2. Written documentation, e-mail is acceptable, verifying that all export soil data for any soils exported for use at a site, including the final Certification Report prepared by CONTRACTOR's licensed environmental professional, were provided to the proposed recipient prior to export and delivery.
3. Prior to import/export, written documentation in the form of a letter sent by the transporter to the CONTRACTOR, who must in turn submit it to OWNER REPRESENTATIVE, to verify the following:
   a. The hauling contract for each load imported to, or exported from, the site specifies the use of "clean" trucks and/or trailer beds, in which the material will be carried.
   b. The actual trucks and/or trailer beds utilized for import/export activities will be clear of visible contamination or deleterious materials.
   c. The trucks will go directly from the source location to the recipient location with no detours or stops at other locations; and
   d. Short loads will not be augmented by other materials that were not tested as part of the final SSP.
   e. All import/export transportation activities shall be conducted in accordance with all applicable local, state, and federal rules and regulations.

4. Certification, in the form of haul tickets or completed waste manifests, documenting the volume and recipient of all import/export materials and activities. This documentation shall be coordinated through the OWNER REPRESENTATIVE.
   a. For approved import/export to unregulated facilities (landfill) sites, haul tickets may be utilized, but shall contain the following minimum information:
      1) Date(s) of haul activity.
      2) Address of source site.
      3) Address of recipient.
      4) Load volume.
      5) Time of departure from source.
      6) Time of arrival at recipient site.
      7) Signature of recipient or recipient's agent.
      8) It is the CONTRACTOR's responsibility to confirm that no other trips or short-load augmentation occurred and submit documentation to the OWNER REPRESENTATIVE.
   b. For export to regulated facilities (landfills, recyclers, etc.), the appropriate waste manifest as determined by the OWNER REPRESENTATIVE or COUNTY OF SANTA BARBARA'S ENVIRONMENTAL CONSULTANT in paragraph 1.04.A.3 must be completed and a copy of the executed manifest, signed by the receiving site, must be provided to the OWNER REPRESENTATIVE. The waste manifest copy, signed by the receiving facility and based on the manifest address, will be sent directly to OWNER REPRESENTATIVE.

1.5 APPROVALS

A. No import or export of earth or geotechnical grading or filling materials can occur at COUNTY OF SANTA BARBARA sites without prior approval by OWNER REPRESENTATIVE.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Imported:

1. Soils: Soils proposed for import shall be tested pursuant to the requirements of this Section (01 45 24) unless a variance has been requested by CONTRACTOR and approved by OWNER REPRESENTATIVE prior to the import of the subject materials.
2. Gravels: Clean gravel, consisting of native rock from a commercial source, may be granted a variance from the testing requirements of this Section provided a request for variance is submitted by CONTRACTOR for review and approval at least 72 hours prior to import. CONTRACTOR shall provide written documentation, which identifies the source, volume, and proposed transport date(s) of the material for review.
   a. Furthermore, a letter signed and stamped by either a Civil PE or PG and originating from the commercial source must state the following:
      1) The quarry does not mine ultramafic (i.e., natural asbestos containing) materials.
      2) The gravel is produced from virgin aggregate materials and does not contain any contaminated or reclaimed or recycled materials.
   b. Additionally, a letter from the material transporter and signed by the same must state the following:

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1) Haul truck and/or trailer beds transferring the material are clear of visible contamination and deleterious materials.
2) Haul trucks will go directly from the quarry source to the site with no trips or augmentation of short loads with other materials.

c. The request for variance requires approval by OWNER REPRESENTATIVE prior to CONTRACTOR importing the materials.

3. Sands: Clean sand from a commercial source may be granted a variance from the testing requirements of this Section provided a request for variance is submitted by CONTRACTOR for review and approval at least 72 hours prior to import. CONTRACTOR shall provide written documentation, which identifies the source, volume, and proposed transport date of the material for review.
   a. Furthermore, a letter signed and stamped by either a Civil PE or PG and originating from the commercial source must state the following:
      1) The source does not mine ultramafic (i.e., natural asbestos containing) materials.
      2) The sand is produced from virgin materials and does not contain any contaminated or reclaimed or recycled materials.
   b. Additionally, a letter from the material transporter and signed by the same must state the following:
      1) Haul truck and/or trailer beds transferring the material are clear of visible contamination or deleterious materials.
      2) Haul trucks will go directly from the commercial source to the site with no trips or augmentation of short loads with other materials.
   c. The request for variance requires approval by OWNER REPRESENTATIVE prior to CONTRACTOR importing the materials.

4. Miscellaneous Material: No miscellaneous material containing crushed concrete, asphalt, construction debris, recycled, or other potential deleterious materials may be utilized or imported to a COUNTY OF SANTA BARBARA project site for use as fill or grading material.

B. Exported/Site Generated:

1. Soils: Soils proposed for export shall be tested pursuant to the requirements of the subject section unless a variance has been requested by CONTRACTOR and approved by OWNER REPRESENTATIVE prior to the import of the subject materials. Once soils or other materials for export have been tested, they cannot be disturbed or reused for any purpose without prior approval by OWNER REPRESENTATIVE.
2. Gravels/Sands: Gravels, sands, or other natural rock materials shall not be exported from a COUNTY OF SANTA BARBARA project site without prior testing by CONTRACTOR pursuant to this Section (01 45 24) and/or approval by OWNER REPRESENTATIVE. An exception to this provision is gravel adhering to concrete or asphalt pavement. In this instance and in consultation with OWNER REPRESENTATIVE, which shall make the final decision, CONTRACTOR may dispose of said materials and construction debris without sampling and analytical testing required under this Section.
3. Miscellaneous Material. No miscellaneous material or other similar materials shall be exported from a COUNTY OF SANTA BARBARA project site without prior testing by CONTRACTOR pursuant to this Section (01 45 24) and/or approval by OWNER REPRESENTATIVE. No crushed miscellaneous material containing concrete, asphalt, construction debris, or other potential deleterious materials that is generated onsite may be used as fill or grading material of any sort at a COUNTY OF SANTA BARBARA project site. Crushed asphalt shall be segregated and stockpiled separately. The onsite use of crushing equipment is not permitted.

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PART 3 - EXECUTION

3.1 GRADING/EXCAVATION

A. If the CONTRACTOR encounters an area with discolored, stained, and/or odorous soils or any other evidence of contamination during excavation/grading work, CONTRACTOR must immediately notify the OWNER REPRESENTATIVE, cease work in the aforementioned area, and secure the area with fencing, tape, stakes, or other suitable means to prevent entry by personnel or equipment. In turn, the OWNER REPRESENTATIVE will immediately notify OWNER REPRESENTATIVE, which will initiate a construction response to address the contamination, in accordance with pertinent regulatory requirements.

3.2 SAMPLING AND TESTING

A. CONTRACTOR shall contract with, and pay for, the services of a licensed environmental professional, licensed State of California Professional Civil Engineer (PE) or Professional Geologist (PG), to oversee or perform sampling of Materials that are subject to this Section.

B. CONTRACTOR shall contract with, and pay for, an independent, approved California Department of Health Services certified testing laboratory to perform testing of imported, exported and site generated fill materials.

C. All fill/grading material, unless otherwise specified in writing by OWNER REPRESENTATIVE, whether imported or exported, must be tested at the site of origin. Import/export testing and certification process shall include the steps listed below. COUNTY OF SANTA BARBARA retains the right to refuse any fill material proposed for use at a site.

1. Stockpile all materials for sampling (standard stockpile or backhoe pothole stockpile). Crushed fill materials generated by CONTRACTOR at a site must be segregated by material.
2. Submit draft SSP for review and concurrence by OWNER REPRESENTATIVE. SSP must include figures identifying the site location, the in-situ sampling boundary or stockpile location, the sampling locations, and a brief site history including the type of remedial activity that occurred at the source site, if any.
3. Collect and analyze samples (see Table 1 for number of samples per volume) per the SSP. Samples must include both discrete samples and composite samples.
    a. Discrete samples correspond to a single sample depth at a single sampling/boring location. Discrete samples are to be used for producing composite samples, as described in subparagraph b. below, and for analysis, in accordance with paragraph 3.02.E.1, which applies only to VOCs and TPH-g. For analysis of these compounds, the licensed professional shall collect one discrete sample from each sampling location and samples should be collected at different depths between these locations, so that all stockpile depths are equally represented.
    b. Composite samples correspond to three sample depths from a single sampling location (this includes in situ samples). Each composite sample shall consist of three discrete samples collected near the top, middle, and bottom of the stockpile or in situ boring location at each sampling location. The licensed environmental professional shall then have the analytical laboratory combine the discrete samples into a single composite sample. The laboratory should be directed to retain a sufficient quantity of each discrete sample for further analysis, as necessary. The composite sample shall be analyzed, in accordance with paragraph 3.02.E.2, which describes required testing other than for VOCs and

TPH-g. Once materials for export have been stockpiled and tested, they may not be used onsite for any purpose without prior approval by OWNER REPRESENTATIVE.

1) Composite samples with analyte concentrations approximating or exceeding acceptable screening criteria, as specified below in paragraphs F through H, may be attributed to constituents within one or more discrete samples. Analyzing the discrete comprising the composite may reveal the discrete samples with elevated analyte concentrations and, thus, better isolate (and minimize) the volume of soils within the stockpile requiring removal and licensed disposal.

4. Submit draft Soil Certification/Sample Data Report for review and concurrence by OWNER REPRESENTATIVE.
5. Submit final Soil Certification/Sample Data Report to the OWNER REPRESENTATIVE. All certified material not utilized or exported within a period of 90 days will be subject to retesting unless a variance is requested by CONTRACTOR and is approved by OWNER REPRESENTATIVE prior to use or import/export of the subject materials.
6. Submit required pre import/export documentation/record to the OWNER REPRESENTATIVE, e-mail is acceptable.
7. Submit post import/export certifications to the OWNER REPRESENTATIVE, e-mail is acceptable.

3.3 IN ADDITION TO THE PRECEDING, REQUIREMENTS, AND AS NECESSARY OR AS SPECIFIED BY OWNER REPRESENTATIVE, CERTIFICATIONS AND SUBMITTALS AS INDICATED IN PREVIOUS ARTICLES OF PART 3 OR IN THE REMAINDER OF THIS SECTION MAY BE REQUIRED.

A. Import/export fill materials shall be samples in situ or stockpiled by CONTRACTOR (or at export site) and are deemed acceptable for import/export or reuse only when it is demonstrated to the satisfaction of OWNER REPRESENTATIVE that the subject materials meet the requirements of this Section.

B. As described in paragraph 1.04.A.2.b, lacking site-specific data or sample rationale to support a more focused analytical approach; the CONTRACTOR shall analyze all samples for the following substances according to the methods indicated below. Table 3 is a waste classification flowchart for use by CONTRACTORs licensed environmental professional. In all cases, detection levels and quality assurance/quality control methods shall be in accordance with standard method reporting limits, best laboratory practices and the following USEPA (EPA) methods for discrete and composite samples:

1. Discrete samples shall be analyzed for Volatile Organic Compounds (VOCs), utilizing EPA Method 8260B/5035 and for Total Petroleum Hydrocarbons (TPH) gasoline (TPH-g), utilizing EPA Method 8015M [with EPA Method 5035 extraction using either volatile organic analysis (VOA) kits, EnCores®, or an equivalent soil collection device].
2. Composite samples shall be analyzed for the following:
   a. TPH, utilizing EPA Method 8015M, for full carbon-chain speciation (including diesel, oil, and other long-chain hydrocarbons).
   b. Polychlorinated biphenyls, utilizing EPA Method 8082.
   c. Semi-Volatile Compounds (SVOCs), utilizing EPA Method 8270C.
   d. Organochlorine Pesticides (OCPs), utilizing EPA Method 8081A.
   e. Organophosphorus Pesticides (OPPs), utilizing EPA Method 8141A.
   f. Chlorinated Herbicides, utilizing EPA Method 8151A.
   g. California Code of Regulations Title 22 (CAM 17) Metals, utilizing EPA Method 6010B/7470A.

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h. Hexavalent Chromium, utilizing EPA Method 7199.
i. Arsenic/Thallium, utilizing EPA Method 6020.

3. For EPA Method 8270C, a Method Detection Limit (MDL) of 250 ug/kg in addition to the Practical Quantitation Limit (PQL) or equivalent. This requirement is due to a recent DTSC directive requiring MDLs or PQLs to be sufficiently low to detect Carcinogenic Polycyclic Aromatic Hydrocarbons (CPAHs) in the composite sample, even if these compounds exceed actionable concentrations (900 ug/kg) in only one of the three discrete samples comprising the composite.
4. The certified laboratory may also need to analyze the composite samples for polycyclic aromatic hydrocarbons (PAHs), a component of semi-volatile compounds, if the data evaluation performed in accordance with paragraph 3.02.G of this Section (01 45 24) does not meet DTSC requirements. The analytical methods to be used for this purpose are EPA Method 8270 SIM, if the samples contain relatively high concentrations of hydrocarbons, or EPA Method 8310, if the samples contain low concentrations of hydrocarbons.

C. Import/export fill materialmay be deemed defective for use by OWNER REPRESENTATIVE at a site if any of the following results are obtained:

1. TPH are present at concentrations exceeding 100 milligrams per kilogram (mg/kg) for gasoline and/or 1,000 mg/kg for oil/diesel and long-chain hydrocarbons.
2. Solvents and other VOCs are present at concentrations exceeding the laboratory reporting limit. Detections between the laboratory reporting limit and the practical quantitation limit (J-flags) should not be reported.
3. PCBs are present at concentrations exceeding the laboratory reporting limit. Detections between the laboratory reporting limit and the practical quantitation limit (J-flags) should not be reported.
4. SVOCs are present at concentrations exceeding the laboratory reporting limit. Detections between the laboratory reporting limit and the practical quantitation limit (J-flags) should not be reported.
5. OCPs are present at concentrations exceeding the laboratory reporting limit. Detections between the laboratory reporting limit and the practical quantitation limit (J-flags) should not be reported.
6. OPPs are present at concentrations exceeding the laboratory reporting limit. Detections between the laboratory reporting limit and the practical quantitation limit (J-flags) should not be reported.
7. Chlorinated herbicides are present at concentrations exceeding the laboratory reporting limit. Detections between the laboratory reporting limit and the practical quantitation limit (J-flags) should not be reported.
8. California Code of Regulations Title 22 (CAM 17) Metals at concentrations exceeding site-specific background. Detections between the laboratory reporting limit and the practical quantitation limit (J-flags) should not be reported.
9. Hexavalent chromium is present at concentrations exceeding 300 ug/kg.

D. As mentioned in paragraph 3.02.E, evaluate concentrations of CPAHs, a subset of SVOCs, in the import/export material by conducting the analyses set forth below.

1. Comparing CPAH concentrations with the benzo(a)pyrene [b(a)p] equivalent concentration of 900 ug/kg, the background concentration for CPAHs defined in "A Methodology for Using Background PAHs To Support Remediation Decisions," prepared by the Environ Corporation for the Southern California Gas Company and Southern California Edison, January 24, 2002 (referred to as "document"). In this document, CPAHs are defined in Table 2, and Potency Equivalency Factors (PEFs) for each CPAH are listed in Table 3. Using the correct PEF for each CPAH, the licensed environmental

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professional shall convert the concentration of each CPAH into its b(a)p equivalent concentration. The summation of these b(a)p equivalents for each CPAH must not exceed 900 ug/kg. If CPAHs do not exceed the laboratory reporting limit, then the licensed environmental professional must perform the procedure described above, using the PEF and the laboratory reporting limit (LRL) for each CPAH. The result will be the LRL for each CPAH converted to b(a)p equivalent concentrations. The summation of these b(a)p equivalent concentrations (representing the LRL for each CPAH) must not exceed 900 ug/kg.

E. Evaluate concentrations of metals in import fill by conducting the analysis set forth below.

1. Compare the maximum detected metal concentrations in import/export material samples to either DTSC or US EPA regulatory action levels for either residential or site, whichever is more conservative. If any metal concentration exceeds its listed regulatory action level, the fill material fails and shall be deemed defective and unacceptable for use.
2. In addition to paragraph 3.02.G.1, import/export fill shall be deemed defective and unacceptable for use if any of the following results are obtained:
   a. Arsenic concentrations greater than or equal to12.0 mg/kg.
   b. Lead concentration greater than or equal to 80 mg/kg.
   c. Import/Export materials at site with total lead concentrations greater than or equal to 50 mg/kg shall be analyzed for leachability (STLC) prior to export. Materials exceeding STLC limits identified in Table 2 are deemed defective and unacceptable for use at site.
   d. Import/Export materials at site with total chromium concentrations greater than or equal to 100 mg/kg shall be tested for hexavalent chromium.

F. All export/import material shall be characterized, handled, and documented in accordance with applicable US EPA and State of California hazardous waste and hazardous materials regulations (See Table 2). For the purpose of this specification, "contaminated" shall mean any soil or geotechnical material with constituent concentrations, which would require disposal at a regulated facility (i.e., California hazardous waste or RCRA hazardous waste). Refer to Article 3.03 and 3.04 which outline the disposal fee requirements for excavated contaminated soil. OWNER REPRESENTATIVE must be notified at least 72 hours prior to the disposal of hazardous waste or hazardous material and its disposal fee cost for excavated contaminated soil. No material disposal or reuse can take place without prior written approval of OWNER REPRESENTATIVE.

G. Specification test results and OWNER REPRESENTATIVE approvals are valid for a period of 90 days from the date of the subject testing unless a variance is requested by CONTRACTOR and approved by OWNER REPRESENTATIVE. Previously approved materials shall not be utilized or disposed offsite after the 90-day limit without prior review and approval by OWNER REPRESENTATIVE.

H. Requests for variances to this Specification Section shall be submitted in writing to OWNER REPRESENTATIVE a minimum of two weeks in advance of need for review and approval. The request for a variance from soil sampling for export must state the following: "The soil for export is less than 10 cubic yards, has no visible staining, is not odorous, and appears native". A photograph of the stockpiled soil must be included in the variance request. The photograph must have a representative scale within it in order for OWNER REPRESENTATIVE to determine the volume of soil to be exported. The request for variance must provide all available testing data, and a rationale to support the request. OWNER REPRESENTATIVE will review the request for variance and will provide its preliminary determination within 72 hours. Once OWNER REPRESENTATIVE approves the variance from sampling, the soil stockpile may be removed as "construction related debris". Certain requests may require final approval by the DTSC.

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3.4 TRANSPORTATION

A. Details of the samples and testing must be submitted to and approved by OWNER REPRESENTATIVE or COUNTY OF SANTA BARBARA ENVIRONMENTAL CONSULTANT before the materials from which the samples were collected undergo transportation.

B. Haul Routes and Regulations/Restrictions: CONTRACTOR must comply with requirements of project environmental disclosure documents (i.e., CEQA EIR) and authorities having jurisdiction over the project area and the proposed activities (e.g., Regional Water Quality Control Board, DTSC, etc.).

3.5 COSTS

A. CONTRACTOR shall pay all fees required by authorities having jurisdiction over area.

B. Contractor shall pay all fees for disposal and/or processing of impacted and/or hazardous fill materials at a regulated facility.

C. CONTRACTOR shall post and pay for all bonds required by authorities having jurisdiction over area.

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TABLE 1: MINIMUM SAMPLING FREQUENCY	
Volume (Cubic Yards)*	Sampling Frequency*
0 - 500	1 per 100 CY
501 - 1,000	1 per 250 CY
1,001 - 5,000	1 per 250 CY for first 1000 CY 1 per 500 CY thereafter
> 5,000	12 samples for first 5000 CY 1 per 1000 CY thereafter

All samples are to be collected, analyzed, and accepted before import/export: materials going to licensed facilities must meet sampling criteria from that facility. The rationale for sample approach should be discussed in the draft SSP.

Pothole stockpile sampling may require discrete depth supplemental sampling in order to achieve representative results. The rationale for sample approach should be discussed in the draft SSP. In-situ (in place) sampling by mechanical boring or a hand auger method is acceptable if no space exists to store the soil stockpile at the site with prior OWNER REPRESENTATIVE approval.

*Discuss alternative screening & sampling approaches with OWNER REPRESENTATIVE for project.

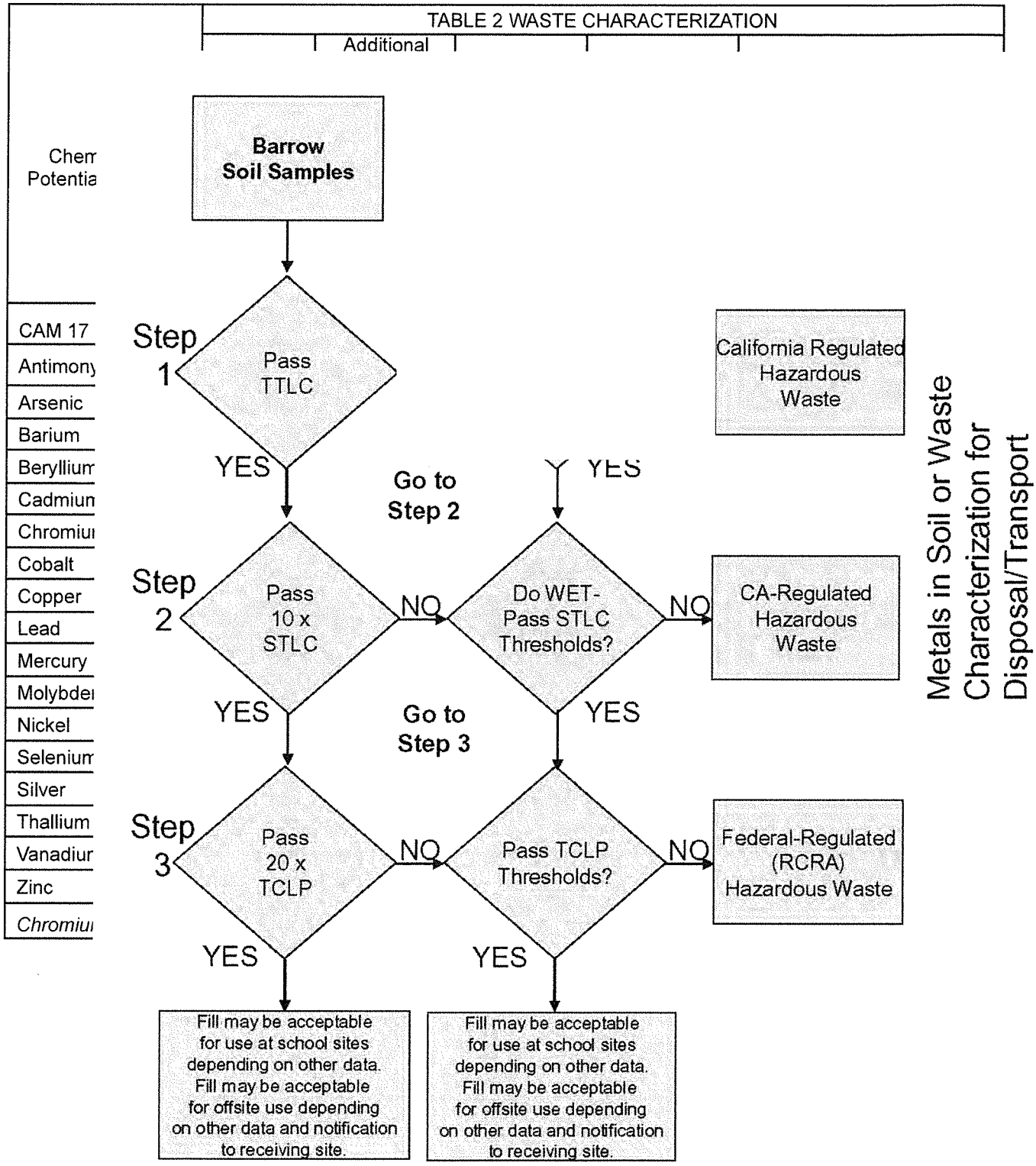
TABLE 2 WASTE CHARACTERIZATION
Additional
Chem
Potentia
CAM 17
Antimony
Arsenic
Barium
Beryllium
Cadmiun
Chromiu
Cobalt
Copper
Lead
Mercury
Molybde
Nickel
Selenium
Silver
Thallium
Vanadiur
Zinc
Chromiu
Barrow Soil Samples
Step 1
Pass TTLC
YES
California Regulated Hazardous Waste
Go to Step 2
YES
Step 2
Pass 10 x STLC
NO
Do WET-Pass STLC Thresholds?
NO
CA-Regulated Hazardous Waste
YES
Go to Step 3
YES
Step 3
Pass 20 x TCLP
NO
Pass TCLP Thresholds?
NO
Federal-Regulated (RCRA) Hazardous Waste
YES
YES
Fill may be acceptable for use at school sites depending on other data. Fill may be acceptable for offsite use depending on other data and notification to receiving site.
Fill may be acceptable for use at school sites depending on other data. Fill may be acceptable for offsite use depending on other data and notification to receiving site.
Metals in Soil or Waste Characterization for Disposal/Transport

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SECTION 01 45 27 - ROOFING AND WATERPROOFING INSPECTION SERVICES

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes: Independent roofing and waterproofing inspection under contract with the CONTRACTOR and approved by the COUNTY OF SANTA BARBARA.

B. Related Sections:

1. DIVISION 7 – Thermal and Moisture Protection.

1.2 SELECTION AND PAYMENT

A. Independent Roofing and Waterproofing Inspection Firm: Employed and paid for by CONTRACTOR to perform monitoring, inspections, and tests of roofing and associated work.

B. Employment of inspection firm does not relieve CONTRACTOR of obligation to perform Work in accordance with requirements of Contract Documents.

1.3 ROOFING AND WATERPROOFING INSPECTOR RESPONSIBILITIES

A. Inspector will examine demolition procedures, substrates before roofing and waterproofing, make interim inspections as work progresses, monitor environmental/weather conditions, and inspect methods and materials for conformance to Contract Documents, manufacturer's instructions, and good roofing and waterproofing practices.

B. Tests and laboratory services may be performed to verify roofing and waterproofing conformance to Contract Documents and for weather tightness, including cut tests and analysis of roofing and waterproofing materials.

C. Perform additional inspections and tests as necessary to confirm results and as instructed by Architect. Perform additional testing when initial testing shows non-compliance with Contract Documents.

1.4 INSPECTION REPORT

A. Inspector will submit written Inspection Report indicating results of each inspection and test conducted. Address reports to CONTRACTOR, Architect, OWNER REPRESENTATIVE and COUNTY OF SANTA BARBARA.

B. Inspection Reports will Include:

1. Date issued.
2. Project title and number.
3. Name of Roofing and Waterproofing Inspector.
4. Date and time of inspection.

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5. Identification of products and appropriate specification Section.
6. Location in the Project.
7. Type of inspection.
8. Conformance with Contract Documents, manufacturer's instructions, and good roofing and waterproofing practices.

1.5 REINSPECTION FEES

A. Where re-inspection is necessary, due to CONTRACTOR's non-compliance with provisions of Contract Documents, COUNTY OF SANTA BARBARA will reimburse Roofing and Waterproofing Inspector at CONTRACTOR's expense, deducted from Contract Sum.

1.6 LIMITS ON AUTHORITY OF ROOFING WATERPROOFING INSPECTOR

A. May not release, revoke, alter, or enlarge on requirements of Contract Documents.

B. May not approve or accept roofing and waterproofing work.

C. May not assume duties of COUNTY OF SANTA BARBARA, Architect, or CONTRACTOR.

D. May not stop the Work.

1.7 CONTRACTOR RESPONSIBILITIES

A. Coordinate work with and cooperate with Roofing and Waterproofing Inspector.

B. Provide access to Work, including utilization of products and personnel as requested by Roofing and Waterproofing Inspector to gain access and to facilitate inspections and tests.

C. Provide test sample storage as requested by Roofing and Waterproofing Inspector, COUNTY OF SANTA BARBARA, or Architect.

D. Notify Roofing and Waterproofing Inspector, minimum 72 hours, before beginning roofing and waterproofing work.

E. Provide and Patch roof cuts for inspection and testing when taken at no increase to Contract Sum.

F. Distribute Roofing and Waterproofing Inspection Reports and other information to subcontractors and other parties as appropriate.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

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SECTION 01 50 00 - TEMPORARY FACILITIES AND CONTROLS

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes requirements for temporary utilities, support facilities, and security and protection facilities.

B. Related Requirements:

1. Section 011000 "Summary" for work restrictions and limitations on utility interruptions.
2. Section 011200 "Multiple Contract Summary" for responsibilities for temporary facilities and controls for projects utilizing multiple contracts.
3. Section 012100 "Allowances" for allowance for metered use of temporary utilities.

1.2 USE CHARGES

A. Installation, removal, and use charges for temporary facilities shall be included in the Contract Sum unless otherwise indicated. Allow other entities engaged in the Project to use temporary services and facilities without cost, including, but not limited to, Owner's construction forces, Construction Manager, Architect, occupants of Project, 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.

E. Water and Sewer Service from Existing System: Water from Owner's existing water system is available for use with metering. Provide connections and extensions of services and metering as required for construction operations.

F. Electric Power Service from Existing System: Electric power from Owner's existing system is available for use with metering. Provide connections and extensions of services and metering as required for construction operations.

G. Sewer, Water, and Electric Power Service: Use charges are specified in Section 011200 "Multiple Contract Summary."

1.3 INFORMATIONAL SUBMITTALS

A. Site Utilization Plan: Show temporary facilities, temporary utility lines and connections, staging areas, construction site entrances, vehicle circulation, and parking areas for construction personnel.

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B. Implementation and Termination Schedule: Within 15 calendar days of date established for commencement of the Work, submit schedule indicating implementation and termination dates of each temporary utility.

C. Project Identification and Temporary Signs: Show fabrication and installation details, including plans, elevations, details, layouts, typestyles, graphic elements, and message content.

D. Fire-Safety Program: Show compliance with requirements of NFPA 241 and authorities having jurisdiction. Indicate Contractor personnel responsible for management of fire-prevention program.

E. Moisture- and Mold-Protection Plan: Describe procedures and controls for protecting materials and construction from water absorption and damage and mold. Describe delivery, handling, storage, installation, and protection provisions for materials subject to water absorption or water damage.

1. Indicate procedures for discarding water-damaged materials, protocols for mitigating water intrusion into completed Work, and requirements for replacing water-damaged Work.
2. 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.
3. Indicate methods to be used to avoid trapping water in finished work.

F. 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. 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.
4. Waste-handling procedures.
5. Other dust-control measures.

G. Noise and Vibration Control Plan: Identify construction activities that may impact the occupancy and use of existing spaces within the building or adjacent existing buildings, whether occupied by others, or occupied by the Owner. Include the following:

1. Methods used to meet the goals and requirements of the Owner.
2. Concrete cutting method(s) to be used.
3. Location of construction devices on the site.
4. Show compliance with the use and maintenance of quieted construction devices for the duration of the Project.
5. Indicate activities that may disturb building occupants and that are planned to be performed during non-standard working hours as coordinated with the Owner.
6. Indicate locations of sensitive areas or other areas requiring special attention as identified by Owner. Indicate means for complying with Owner's requirements.

1.4 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.

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B. Tests and Inspections: Arrange for authorities having jurisdiction to test and inspect each temporary utility before use. Obtain required certifications and permits.

C. Accessible Temporary Egress: Comply with applicable provisions in the United States Access Board's ADA-ABA Accessibility Guidelines and ICC/ANSI A117.1.

1.5 PROJECT CONDITIONS

A. Temporary Use of Permanent Facilities: Engage Installer of each permanent service to 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

PART 3 - EXECUTION

3.1 TEMPORARY FACILITIES, GENERAL

A. Conservation: Coordinate construction and use of temporary facilities with consideration given to conservation of energy, water, and materials. Coordinate use of temporary utilities to minimize waste.

1. Salvage materials and equipment involved in performance of, but not actually incorporated into, the Work. See other Sections for disposition of salvaged materials that are designated as Owner's property.

3.2 INSTALLATION, GENERAL

A. Locate facilities where they will serve Project adequately and result in minimum interference with performance of the Work. Relocate and modify facilities as required by progress of the Work.

1. Locate facilities to limit site disturbance as specified in Section 011000 "Summary."

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.

3.3 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.

B. Sewers and Drainage: Provide temporary utilities to remove effluent lawfully.

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1. Connect temporary sewers to municipal system as directed by authorities having jurisdiction.

C. Water Service: Install water service and distribution piping in sizes and pressures adequate for construction.

D. Water Service: Connect to Owner's existing water service facilities. Clean and maintain water service facilities in a condition acceptable to Owner. At Substantial Completion, restore these facilities to condition existing before initial use.

E. Sanitary Facilities: Provide temporary toilets, wash facilities, safety shower and eyewash facilities, and drinking water for use of construction personnel. Comply with requirements of authorities having jurisdiction for type, number, location, operation, and maintenance of fixtures and facilities.

1. Use of Permanent Toilets: Use of Owner's existing or new toilet facilities is not permitted.

F. Temporary 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.

1. Provide temporary dehumidification systems when required to reduce ambient and substrate moisture levels to level required to allow installation or application of finishes and their proper curing or drying.

G. Electric Power Service: Connect to Owner's existing electric power service. Maintain equipment in a condition acceptable to Owner.

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.

J. Telephone Service: Provide temporary telephone service in common-use facilities for use by all construction personnel. Install WiFi cell phone access equipment for each field office.

1. Post a list of important telephone numbers.
   a. Police and fire departments.
   b. Ambulance service.
   c. Contractor's home office.
   d. Contractor's emergency after-hours telephone number.
   e. Architect's office.
   f. Construction Manager's.
   g. Engineers' offices.
   h. Owner's office.
   i. Principal subcontractors' field and home offices.

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K. Electronic Communication Service: Provide secure WiFi wireless connection to internet with provisions for access by Architect and Owner.

L. Project Computer: Provide a desktop computer in the primary field office adequate for use by Architect, Construction Manager, and Owner to access Project electronic documents and maintain electronic communications. Equip computer with not less than the following:

1. Processor: Intel Core i5 or i7.
2. Memory: 32 gigabyte.
3. Disk Storage: 1 -terabyte hard-disk drive.
4. Display: 24-inch LCD monitor with 256-Mb dedicated video RAM.
5. Full-size keyboard and mouse.
6. Network Connectivity: 10/100BaseT Ethernet Gigabit. 7.Operating System: Microsoft Windows 10 Professional. 8.Productivity Software:
   a. Microsoft Office Professional, 2013 or higher, including Word, Excel, and Outlook.
   b. Adobe Reader DC.
   c. WinZip 10.0 or higher.
7. Printer: "All-in-one" unit equipped with printer server, combining color printing, photocopying, scanning, and faxing, or separate units for each of these three functions.
8. 1Internet Service: Broadband modem, router, and ISP, equipped with hardware firewall, providing minimum 10 -Mbps upload and 15-Mbps download speeds at each computer.
9. 1Internet Security: Integrated software, providing software firewall, virus, spyware, phishing, and spam protection in a combined application.
10. 1Backup: External hard drive, minimum 2 terabytes, with automated backup software providing daily backups.

3.4 SUPPORT FACILITIES INSTALLATION

A. Comply with the following:

1. Provide construction for temporary field offices, shops, and sheds located within construction area or within 30 feet of building lines that is noncombustible in accordance with ASTM E136. Comply with NFPA 241.
2. Maintain support facilities until Construction Manager schedules 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..

1. Provide dust-control treatment that is nonpolluting and non-tracking. Reapply treatment as required to minimize dust.

C. Temporary Use of Planned Permanent Roads and Paved Areas: Locate temporary roads and paved areas in same location as permanent roads and paved areas. Construct and maintain temporary roads and paved areas adequate for construction operations. Extend temporary roads and paved areas, within construction limits indicated, as necessary for construction operations.

1. Coordinate elevations of temporary roads and paved areas with permanent roads and paved areas.

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2. Prepare subgrade and install subbase and base for temporary roads and paved areas in accordance with Section 312000 "Earth Moving."
3. Recondition base after temporary use, including removing contaminated material, regrading, proofrolling, compacting, and testing.
4. Delay installation of final course of permanent hot-mix asphalt pavement until immediately before Substantial Completion. Repair hot-mix asphalt base-course pavement before installation of final course in accordance with Section 321216 "Asphalt Paving."

D. 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.

E. Parking: Use designated areas of Owner's existing parking areas for construction personnel.

F. Storage and Staging: Use designated areas of Project site for storage and staging needs.

G. 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 or endanger permanent Work or temporary facilities.
2. Remove snow and ice as required to minimize accumulations.

H. Project Signs: Provide Project signs as indicated. Unauthorized signs are not permitted.

1. Identification Signs: Provide Project identification signs as indicated on Drawings.
2. 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.

3. Maintain and touch up signs, so they are legible at all times.

I. Waste Disposal Facilities: Comply with requirements specified in Section 017419 "Construction Waste Management and Disposal."

J. 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 progress cleaning requirements in Section 017300 "Execution."

K. 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.

L. Temporary Elevator Use: Use of elevators is not permitted

M. 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.

N. Temporary Stairs: Until permanent stairs are available, provide temporary stairs where ladders are not adequate.

O. 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 stairs become damaged, restore damaged areas, so no evidence remains of correction work.

P. 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.

3.5 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.

1. Where access to adjacent properties is required in order to affect protection of existing facilities, obtain written permission from adjacent property owner to access property for that purpose.

B. Environmental Protection: Provide protection, operate temporary facilities, and conduct construction as required to comply with environmental regulations and that minimize possible air, waterway, and subsoil contamination or pollution or other undesirable effects.

1. Comply with work restrictions specified in Section 011000 "Summary."

C. Stormwater Control: Comply with requirements of authorities having jurisdiction. Provide barriers in and around excavations and subgrade construction to prevent flooding by runoff of stormwater from heavy rains.

D. Tree and Plant Protection: Comply with requirements specified in Section 015639 "Temporary Tree and Plant Protection."

E. Tree and Plant Protection: Install temporary fencing located as indicated or outside the drip line of trees to protect vegetation from damage from construction operations. Protect tree root systems from damage, flooding, and erosion.

F. Pest Control: Engage pest-control service to recommend practices to minimize attraction and harboring of 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. Perform control operations lawfully, using materials approved by authorities having jurisdiction.

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G. Site Enclosure Fence: Before construction operations begin, furnish and install site enclosure fence in a manner that will prevent people from easily entering site except by entrance gates.

1. Extent of Fence: As required to enclose entire Project site.
2. Maintain security by limiting number of keys and restricting distribution to authorized personnel

H. Security Enclosure and Lockup: Install 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 workday.

I. Barricades, Warning Signs, and Lights: Comply with requirements of authorities having jurisdiction for erecting structurally adequate barricades, including warning signs and lighting.

J. Temporary Egress: Provide temporary egress from existing occupied facilities as indicated and as required by authorities having jurisdiction. Provide signage directing occupants to temporary egress.

K. Covered Walkway: Erect 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. Provide overhead decking, protective enclosure walls, handrails, barricades, warning signs, exit signs, lights, safe and well-drained walkways, and similar provisions for protection and safe passage.
2. Paint and maintain appearance of walkway for duration of the Work.

L. 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 incomplete, insulate temporary enclosures.

M. Temporary Partitions: Provide floor-to-ceiling dustproof partitions to limit dust and dirt migration and to separate areas occupied by from fumes and noise.

1. Construct dustproof partitions with gypsum wallboard, with joints taped on occupied side, and fire-retardant-treated plywood on construction operations side.
2. Construct dustproof partitions with two layers of 6-mil polyethylene sheet on each side. Cover floor with two layers of 6-mil polyethylene sheet, extending sheets 18 inches up the sidewalls. Overlap and tape full length of joints. Cover floor with fire-retardant-treated 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.
3. Where fire-resistance-rated temporary partitions are indicated or are required by authorities having jurisdiction, construct partitions according to the rated assemblies.
4. Insulate partitions to control noise transmission to occupied areas.
5. Seal joints and perimeter. Equip partitions with gasketed dustproof doors and security locks where openings are required.
6. Protect air-handling equipment.
7. Provide walk-off mats at each entrance through temporary partition.

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N. 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. Comply with additional limits on smoking specified in other Sections.
2. Supervise welding operations, combustion-type temporary heating units, and similar sources of fire ignition in accordance with requirements of authorities having jurisdiction.
3. Develop and supervise an overall fire-prevention and -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.

3.6 MOISTURE AND MOLD CONTROL

A. Moisture and Mold Protection: Protect stored materials and installed Work in accordance with Moisture and Mold Protection Plan.

B. Exposed Construction Period: 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 Period: 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 reasonably 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 and replace stored or installed material that begins to grow mold.
7. Perform work in a sequence that allows wet materials adequate time to dry before enclosing the material in gypsum board or other interior finishes.

D. Controlled Construction Period: 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 temporary or permanent HVAC system to control humidity within ranges specified for installed and stored materials.
3. Comply with manufacturer's written instructions for temperature, relative humidity, and exposure to water limits.

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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 and require replacing.
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 and replace materials that cannot be completely restored to their manufactured moisture level within 48 hours.

3.7 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. Temporary Facility Changeover: Do not change over from using temporary security and protection facilities to permanent facilities until Substantial Completion.

D. 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 017700 "Closeout Procedures."

END OF SECTION 01 50 00

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SECTION 01 54 10 - SECURITY AND SAFETY MEASURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Construction Drawings, Technical Specifications, Addenda, and general provisions of the Contract, including Contract General Conditions Division 0 and Special Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SECTION INCLUDES

A. CONTRACTOR Security requirements.

1.3 RELATED SECTIONS

A. Section 01 11 00 - Summary of the Work: CONTRACTOR'S use of site and premises

B. Section 01 55 00 - Site Logistics Plan

1.4 SECURITY AND SAFETY MEASURES

A. In addition to security requirements contained in the Contract General Conditions, CONTRACTOR shall adhere to the following requirements for security:

1. CONTRACTOR shall protect the Work from theft, vandalism an unauthorized entry. CONTRACTOR shall have sole responsibility for job site security.
2. CONTRACTOR shall employ and maintain sufficient security and safety measures to effectively prevent vandalism, vagrancy, theft, arson, and all other such negative impacts to the Work. Any impacts to the progress of the Work of CONTRACTOR, COUNTY OF SANTA BARBARA, or COUNTY OF SANTA BARBARA'S forces, due to loss from inadequate security, will be the responsibility of CONTRACTOR.
3. Until Substantial Completion of the Work, CONTRACTOR shall employ appropriate means to remove all graffiti from buildings, equipment, fences and all other temporary and/or permanent improvements on the Project site within twenty-four (24) hours from the date of report or forty-eight (48) hours of each occurrence.
4. Keying. CONTRACTOR shall provide construction keying different from permanent keying of locks and include organized, locked, and supervised storage for receiving and dispensing items of finish hardware throughout the construction.
5. Provide INSPECTOR Access. Contractor shall provide the Project INSPECTOR with keys necessary to gain access to locked areas of the Work. The Project INSPECTOR will be responsible for such keys and will return them to the Contractor upon acceptance of the project or area as complete.

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B. Penal Code Sections 290 and 290.4 commonly known as "Megan's Law", require, among other things, individuals convicted of sexually oriented crimes, to register with the chief of police where the convicted individual resides or with a county sheriff or other law enforcement officials. CONTRACTOR shall check its own employees and require each Subcontractor to check its employees and report to CONTRACTOR if any such employees are registered sex offenders. CONTRACTOR shall check monthly during the life of the Contract to ascertain this information and report same to OWNER REPRESENTATIVE. Before starting the Work, and monthly thereafter during the life of Contract, CONTRACTOR shall notify COUNTY OF SANTA BARBARA in writing if any of its employees and/or if any Subcontractor's employee is a registered sex offender. If so, CONTRACTOR shall proceed in accordance with paragraph B above.

1.5 PERMANENT KEYS

A. If permanent keys are required for longer than a daily basis, CONTRACTOR must request keys in writing for approval by the COUNTY OF SANTA BARBARA.

B. Immediately upon receipt of permanent keys for whatever purpose (finish hardware, mechanical equipment, casework, dispensers, lockers, switches, equipment items, etc.), CONTRACTOR shall tag or otherwise clearly identify keys according to one approved system and turn them over to the OWNER REPRESENTATIVE prior to any opportunity of access to keys by parties other than the COUNTY OF SANTA BARBARA.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

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SECTION 01 55 00 - SITE LOGISTICS PLAN

PART 1 - GENERAL

1.1 SUMMARY

A. Provide all material, labor, and equipment necessary to perform the work as shown on Drawings and as specified herein.

B. This SECTION includes:

1. Approved access roads to and from the project site and work areas.
2. Approved equipment staging and parking areas.

1.2 REFERENCES

A. General

1. The publication listed below forms a part of this specification to the extent referenced.
2. Refer to the latest edition available on the date of the Notice Inviting Bids shall be used.
3. CONTRACTOR shall abide by Authority Having Jurisdiction (AHJ) for all Traffic Controls and regulations requirements.

1.3 SUBMITTALS

A. Site Logistics Plan. See Specifications Section 01 33 00, Submittal Procedures. CONTRACTOR shall prepare and submit for review by CONSTRUCTION MANAGER a site logistics plan indicating detailed layout of CONTRACTOR Staging Area, including:

1. Temporary utilities
2. Temporary fencing and gates
3. Temporary offices and sheds
4. Construction aids
5. Vehicular accessways and on-site parking
6. Temporary barriers and enclosures
7. Storm water pollution prevention measures

B. Provide a traffic control plan prior to commencement of construction. This plan shall outline flagging procedures and delivery/movement timing so as to avoid peak traffic periods. The plan shall also outline procedures for notifying the COUNTY OF SANTA BARBARA Security of forthcoming lane or roadway closures. Allow COUNTY OF SANTA BARBARA Security to modify emergency response plans and notify other public service providers (such as The City's Fire Department) of closures as required.

1.4 ACCESS TO THE WORK SITE

A. CONTRACTOR shall coordinate with CONSTRUCTION MANAGER regarding site access. CONTRACTOR shall provide contact information for a representative during construction and

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for the COUNTY OF SANTA BARBARA during long-term maintenance. CONTRACTOR shall provide a construction and site access schedule to CONSTRUCTION MANAGER.

B. The CONTRACTOR'S use of existing access roads will be prohibited or limited where shown on Drawings.

C. CONTRACTOR shall coordinate with CONSTRUCTION MANAGER to become familiar with the terms of the use permit and shall comply with the use permit for the duration of the work.

D. Working hours are generally 7 AM to 5 PM, Monday through Friday. Weekend hours may be allowed when approved by COUNTY OF SANTA BARBARA and in compliance with local requirements.

E. The CONTRACTOR'S employees shall park within the worksite as shown on Site Logistic Plan or as directed by the COUNTY OF SANTA BARBARA. All deliveries shall be coordinated through the CONSTRUCTION MANAGER.

F. CONTRACTOR shall provide legal access to and maintain CONTRACTOR designated areas for the legal parking, loading, off-loading and delivery of all vehicles associated with the Work.

G. CONTRACTOR shall be solely responsible for providing and maintaining these requirements whether on or off the Project site. CONTRACTOR shall provide and maintain ample on-site parking spaces designated for the exclusive use of COUNTY OF SANTA BARBARA and CONSTRUCTION MANAGER team. CONTRACTOR shall erect signs as required by CONSTRUCTION MANAGER each of these spaces and prevent all unauthorized vehicles from parking in the COUNTY OF SANTA BARBARA and CONSTRUCTION MANAGER team - reserved spaces.

H. CONTRACTOR shall provide unimpeded access for emergency vehicles. CONTRACTOR shall maintain 20-foot (6 m) width driveways with turning space between and around combustible materials.

I. CONTRACTOR shall provide and maintain access to fire hydrants free of obstructions.

1.5 TRAFFIC CONTROL

A. The CONTRACTOR shall be responsible for the safe movement of vehicular traffic to and from the worksite and during operations, including traffic control measures required to ensure safe passage of vehicles and equipment.

B. The control shall be in accordance with CCR Title 8.

1. At least 1 flagman shall be provided at the entrance and Exit during periods when the CONTRACTOR'S vehicular activity may conflict with other traffic along roads.
2. The flagman shall ensure that the right-of-way is granted to loaded vehicles and shall provide for safety of all users of the road.

C. The Traffic control and signage shall be in accordance with Manual of Traffic Controls for Construction and Maintenance Work Zones.

D. CONTRACTOR shall provide temporary signs and signals as required by authorities having jurisdiction and in compliance with COUNTY OF SANTA BARBARA'S requirements transmitted

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through CONSTRUCTION MANAGER. CONTRACTOR shall relocate signs and signals as necessary during construction.

1.6 HAUL ROUTES

A. If a permit is required by local authorities for off-site hauling of materials, the CONTRACTOR shall prepare the truck-routing plan, obtain the permit, and submit a copy of the permit to the CONSTRUCTION MANAGER before off-site hauling begins.

B. The plan shall include provisions for cleaning soil and rock from adjacent and nearby streets, and other paved roads that may become dirty due to hauling operations, and disposal of those items.

C. Comply with weight restrictions on all roads.

D. The CONTRACTOR shall inform the CONSTRUCTION MANAGER and local authorities when hauling operations are to begin and end.

1.7 TIRE DECONTAMINATION

A. See Erosion Control Plan.

B. Vehicles, excavation, and hand-held equipment will be decontaminated prior to leaving the site.

C. A decontamination area will be prepared on site prior to impacted-soil excavation. This area will be designed to contain liquids and residue generated during the decontamination process. The decontamination area will be in an area easily accessible to incoming and outgoing vehicles and equipment and within proximity to the excavation areas.

D. Decontamination procedures will include methods for removing soil from vehicle tires, such as shaker plates located at the site exit and hand-brushing of tires. In addition, personnel overseeing decontamination procedures will be responsible for ensuring soil is not tracked off site.

1.8 ACCESS ROADS

A. Throughout the entire Contract period, the CONTRACTOR shall share access roads, both those constructed by the CONTRACTOR or otherwise provided for CONTRACTOR'S use whose work is adjacent to the CONTRACTOR'S work.

1. Coordination with others shall be the responsibility of the CONTRACTOR. In case of conflicts or disputes, the CONSTRUCTION MANAGER'S decision will be final.
2. The CONTRACTOR shall not construct new access roads.
3. The CONTRACTOR shall provide dust control on access roads used in CONTRACTOR operations and on those roads subject to dust because of conditions created by the work.
   a. Roads shall be sprayed by water truck at least twice daily or more frequently during haul operations.
   b. CONTRACTOR shall limit driving speed on access roads to keep dust down.
4. If on-site access roads become damaged during the work, the CONTRACTOR shall promptly repair them with equivalent surfacing.

1.9 PARKING

A. On-site parking areas for CONTRACTOR personnel shall be limited to the staging areas shown on Drawings.

1. The CONTRACTOR'S personnel, suppliers, and delivery vehicles shall not block access roads.

1.10 CONTRACTOR STAGING AREA REQUIREMENTS

A. CONTRACTOR Staging Areas: Refer to reference drawings included in the set of Contract Drawings for location of CONTRACTOR Staging Areas.

1. CONTRACTOR shall use only site areas designated specifically by CONSTRUCTION MANAGER as CONTRACTOR Staging Area for the Project.
2. CONTRACTOR Staging Area for the Project shall be clearly delineated by means of signage. CONTRACTOR shall remove equipment placed or located outside of areas designated for CONTRACTOR Staging Area to within CONTRACTOR Staging Area at no change in Contract Time and Contract Sum.
3. CONTRACTOR shall keep access to CONTRACTOR Staging Areas and other construction access ways and thoroughfares clear at all times. CONTRACTOR shall provide traffic and parking control signage acceptable to CONSTRUCTION MANAGER.

B. Cleanliness: CONTRACTOR shall keep CONTRACTOR Staging Area clear of trash and debris and in neat order. CONTRACTOR shall be responsible for cleanliness and order of assigned CONTRACTOR Staging Areas, as acceptable to CONSTRUCTION MANAGER.

1.11 REMOVAL OF CONSTRUCTION FACILITIES AND TEMPORARY CONTROLS

A. Removal of Construction Facilities and Temporary Controls: Unless otherwise mutually agreed by CONSTRUCTION MANAGER and CONTRACTOR, CONTRACTOR shall remove temporary materials, equipment, services, and construction prior to Contract Completion review.

B. Cleaning and Repairs: CONTRACTOR shall clean, and repair damage caused by installation or use of temporary facilities on public and private rights-of-way.

C. Removal of Temporary Utilities and Restoration: CONTRACTOR shall remove temporary underground utility installations to a depth of two feet. Backfill, compact, and regrade site as necessary to restore areas or to prepare for indicated paving and landscaping.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

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SECTION 01 56 39 - TEMPORARY TREE AND PLANT PROTECTION

PART 1 - GENERAL

1.1 SUMMARY

A. The Work of this Section Includes: General protection and pruning of existing trees and plants that are affected by execution of the Work, whether temporary or permanent construction.

B. Related Requirements:

1. Section 015000 "Temporary Facilities and Controls" for temporary site fencing.
2. Section 311000 "Site Clearing" for removing existing trees and shrubs.

1.2 DEFINITIONS

A. Caliper: Diameter of a trunk measured by a diameter tape at a height 6 inches above the ground for trees up to and including 4-inch size at this height and as measured at a height of 12 inches above the ground for trees larger than 4-inch size.

B. Caliper (DBH): Diameter breast height; diameter of a trunk as measured by a diameter tape at a height 54 inches above the ground line[for trees with caliper of 8 inches or greater as measured at a height of 12 inches above the ground.

C. Plant-Protection Zone: Area surrounding individual trees, groups of trees, shrubs, or other vegetation to be protected during construction and indicated on Drawings.

D. Tree-Protection Zone: Area surrounding individual trees or groups of trees to be protected during construction and indicated on Drawings.

E. Vegetation: Trees, shrubs, groundcovers, grass, and other plants.

1.3 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at Project sit.

1. Review methods and procedures related to temporary tree and plant protection including, but not limited to, the following:
   a. Tree-service firm's personnel, and equipment needed to make progress and avoid delays.
   b. Arborist's responsibilities.
   c. Quality-control program.
   d. Coordination of Work and equipment movement with the locations of protection zones.
   e. Trenching by hand or with air spade within protection zones.
   f. Field quality control.

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1.4 ACTION SUBMITTALS

A. Product Data: For each type of product.

B. Shop Drawings:

1. Include plans, elevations, sections, and locations of protection-zone fencing and signage, showing relation of equipment-movement routes and material storage locations with protection zones.
2. Detail fabrication and assembly of protection-zone fencing and signage.
3. Indicate extent of trenching by hand or with air spade within protection zones.

C. Tree Pruning Schedule: Written schedule detailing scope and extent of pruning of trees to remain that interfere with or are affected by construction.

1. Species and size of tree.
2. Location on site plan. Include unique identifier for each.
3. Reason for pruning.
4. Description of pruning to be performed.
5. Description of maintenance following pruning.

1.5 3INFORMATIONAL SUBMITTALS

A. Qualification Data: For arborist and tree service firm.

B. Certification: From arborist, certifying that trees indicated to remain have been protected during construction according to recognized standards and that trees were promptly and properly treated and repaired when damaged.

C. Maintenance Recommendations: From arborist, for care and protection of trees affected by construction during and after completing the Work.

D. Existing Conditions: Documentation of existing trees and plantings indicated to remain, which establishes preconstruction conditions that might be misconstrued as damage caused by construction activities.

1. Use sufficiently detailed photographs or video recordings.
2. Include plans and notations to indicate specific wounds and damage conditions of each tree or other plants designated to remain.

E. Quality-control program.

1.6 QUALITY ASSURANCE

A. Arborist Qualifications: Certified Arborist as certified by ISA.

B. Tree Service Firm Qualifications: An experienced tree service firm that has successfully completed temporary tree and plant protection work similar to that required for this Project and that will assign an experienced, qualified arborist to Project site during execution of the Work.

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C. Quality-Control Program: Prepare a written program to systematically demonstrate the ability of personnel to properly follow procedures and handle materials and equipment during the Work without damaging trees and plantings. Include dimensioned diagrams for placement of protection zone fencing and signage, the arborist's and tree-service firm's responsibilities, instructions given to workers on the use and care of protection zones, and enforcement of requirements for protection zones.

1.7 FIELD CONDITIONS

A. The following practices are prohibited within protection zones:

1. Storage of construction materials, debris, or excavated material.
2. Moving or parking vehicles or equipment.
3. Foot traffic.
4. Erection of sheds or structures.
5. Impoundment of water.
6. Excavation or other digging unless otherwise indicated.
7. Attachment of signs to or wrapping materials around trees or plants unless otherwise indicated.

B. Do not direct vehicle or equipment exhaust toward protection zones.

C. Prohibit heat sources, flames, ignition sources, and smoking within or near protection zones and organic mulch.

PART 2 - PRODUCTS

PART 3 - EXECUTION

3.1 EXAMINATION

A. Erosion and Sedimentation Control: Examine the site to verify that temporary erosion- and sedimentation-control measures are in place. Verify that flows of water redirected from construction areas or generated by construction activity do not enter or cross protection zones.

B. Prepare written report, endorsed by arborist, listing conditions detrimental to tree and plant protection.

3.2 PREPARATION

A. Locate and clearly identify trees, shrubs, and other vegetation to remain. Flag each tree trunk at 54 inches above the ground.

B. Protect tree root systems from damage caused by runoff or spillage of noxious materials while mixing, placing, or storing construction materials. Protect root systems from ponding, eroding, or excessive wetting caused by dewatering operations.

C. Trunk Protection: Protect the trunk of each tree to remain as follows:

D. Install 2-by-6-inch wood planks around trunk at maximum 3 inches apart. Minimum three planks per tree. Band together with no less than three steel bands stapled to the planks to hold them securely in place.
   a. Height: 48 inches from lowest branch

2. Wrap trunk with orange plastic construction fencing to 2 inches in thickness minimum 1/4-inch closed-cell foam pad]. Install 2-by-6-inch wood planks around trunk over wrap at maximum 3 inches apart. Minimum three planks per tree. Band together with no less than three steel bands stapled to the planks to hold them securely in place.
   a. Height: 48 inches.
   b. Trunk protection to remain in place for construction duration.

3.3 PROTECTION ZONES

A. Protection-Zone Fencing: Install protection-zone fencing along edges of protection zones in a manner that will prevent people and animals from easily entering protected areas except by entrance gates. Construct fencing so as not to obstruct safe passage or visibility at vehicle intersections where fencing is located adjacent to pedestrian walkways or in close proximity to street intersections, drives, or other vehicular circulation.

1. Chain-Link Fencing: Install to comply with ASTM F567 and with manufacturer's written instructions.
2. Posts: Set or drive posts into ground one-third the total height of the fence without concrete footings. Where a post is located on existing paving or concrete to remain, provide appropriate means of post support acceptable to Architect.
3. Access Gates: Install[where indicated; adjust to operate smoothly, easily, and quietly; free of binding, warp, excessive deflection, distortion, nonalignment, misplacement, disruption, or malfunction throughout entire operational range. Confirm that latches and locks engage accurately and securely without forcing or binding.

B. Protection-Zone Signage: Install protection-zone signage in visibly prominent locations in a manner approved by Construction Manager.

C. Maintain protection zones free of weeds and trash.

D. Maintain protection-zone fencing and signage in good condition as acceptable to Architect and remove when construction operations are complete and equipment has been removed from the site.

1. Do not remove protection-zone fencing, even temporarily, to allow deliveries or equipment access through the protection zone.
2. Temporary access is permitted subject to preapproval in writing by arborist if a root buffer effective against soil compaction is constructed as directed by arborist. Maintain root buffer so long as access is permitted.

3.4 EXCAVATION

A. General: Excavate at edge of protection zones and for trenches indicated within protection zones according to requirements in Section 312000 "Earth Moving" unless otherwise indicated.

B. Trenching within Protection Zones: Where utility trenches are required within protection zones, excavate under or around tree roots by hand or with air spade, or tunnel under the roots by

drilling, auger boring, or pipe jacking. Do not cut main lateral tree roots or taproots; cut only smaller roots that interfere with installation of utilities. Cut roots as required for root pruning. If excavating by hand, use narrow-tine spading forks to comb soil and expose roots.

C. Redirect roots in backfill areas where possible. If encountering large, main lateral roots, expose roots beyond excavation limits as required to bend and redirect them without breaking. If encountered immediately adjacent to location of new construction and redirection is not practical, cut roots approximately 3 inches back from new construction and as required for root pruning.

D. Do not allow exposed roots to dry out before placing permanent backfill. Provide temporary earth cover or pack with peat moss and wrap with burlap. Water and maintain in a moist condition. Temporarily support and protect roots from damage until they are permanently relocated and covered with soil.

3.5 ROOT PRUNING

A. Prune tree roots that are affected by temporary and permanent construction.

B. Root Pruning at Edge of Protection Zone: Prune tree roots by cleanly cutting all roots to the depth of the required excavation.

C. Root Pruning within Protection Zone: Clear and excavate by hand or with air spade to the depth of the required excavation to minimize damage to tree root systems. If excavating by hand, use narrow-tine spading forks to comb soil to expose roots. Cleanly cut roots as close to excavation as possible.

3.6 CROWN PRUNING

A. Prune branches that are affected by temporary and permanent construction.

1. Prune to remove only broken, dying, or dead branches unless otherwise indicated. Do not prune for shape unless otherwise indicated.
2. Do not remove or reduce living branches to compensate for root loss caused by damaging or cutting root system.
3. Pruning Standards: Prune trees according to ANSI A300 (Part 1).

B. Unless otherwise directed by arborist and acceptable to Architect, do not cut tree leaders.

C. Cut branches with sharp pruning instruments; do not break or chop.

D. Do not paint or apply sealants to wounds.

E. Provide subsequent maintenance pruning during Contract period as recommended by arborist.

F. Chip removed branches.

3.7 REGRADING

A. Lowering Grade: Where new finish grade is indicated below existing grade around trees, slope grade beyond the protection zone. Maintain existing grades within the protection zone.

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B. Lowering Grade within Protection Zone: Where new finish grade is indicated below existing grade around trees, slope grade away from trees as recommended by arborist unless otherwise indicated.

1. Root Pruning: Prune tree roots exposed by lowering the grade. Do not cut main lateral roots or taproots; cut only smaller roots. Cut roots as required for root pruning.

C. Raising Grade: Where new finish grade is indicated above existing grade around trees, slope grade beyond the protection zone. Maintain existing grades within the protection zone.

D. Minor Fill within Protection Zone: Where existing grade is 2 inches or less below elevation of finish grade, fill with backfill soil. Place backfill soil in a single uncompacted layer and hand grade to required finish elevations.

3.8 FIELD QUALITY CONTROL

A. Inspections: Engage a qualified arborist to direct plant-protection measures in the vicinity of trees, shrubs, and other vegetation indicated to remain and to prepare inspection reports.

3.9 REPAIR AND REPLACEMENT

A. General: Repair or replace trees, shrubs, and other vegetation indicated to remain or to be relocated that are damaged by construction operations, in a manner approved by Architect.

1. Submit details of proposed pruning and repairs.
2. Perform repairs of damaged trunks, branches, and roots within 24 hours according to arborist's written instructions.
3. Replace trees and other plants that cannot be repaired and restored to full-growth status, as determined by Architect.

B. Trees: Remove and replace trees indicated to remain that are more than 25 percent dead or in an unhealthy condition or are damaged during construction operations that Architect determines are incapable of restoring to normal growth pattern.

1. Small Trees: Provide new trees of same size and species as those being replaced.
2. Large Trees: Provide two new tree(s) for each tree being replaced that measures more than 6 inches in caliper size.
   a. Species: As selected by Architect

3. Plant and maintain new trees as specified in Section 329300 "Plants."

C. Soil Aeration: Where directed by Architect, aerate surface soil compacted during construction.

3.10 DISPOSAL OF SURPLUS AND WASTE MATERIALS

A. Disposal: Remove excess excavated material, displaced trees, trash, and debris and legally dispose of them off Owner's property.

END OF SECTION 01 56 39

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SECTION 01 57 19 - CEQA MITIGATIONS

PART 1 - GENERAL

1.1 SECTION INCLUDES

A. Mitigation procedures to minimize environmental impact.

1.2 RELATED SECTIONS

A. Section 01 35 00 – Special Procedures

B. Section 01 74 16 – Storm Water Pollution Prevention Plan.

C. Section 01 45 24 – Environmental Import / Export Materials Testing.

D. Section 01 50 00 - Temporary Facilities and Controls.

E. Section 01 74 19 - Construction Waste Management and Disposal.

1.3 SUBMITTALS

A. CONTRACTOR shall submit monthly the form "Certification of Compliance with CEQA Mitigations", found in Section 01 57 19, certifying compliance to CEQA mitigations.

1.4 CEQA MITIGATIONS - MITIGATION MONITORING AND REPORTING PROGRAM -

A. CONTRACTOR shall comply with the EIR Mitigation Monitoring and Reporting Program and all other CEQA requirements included in **Exhibit G – Environmental Impact Report**. Tribal Monitoring (Cultural Resource Consulting) may be required.

B. Following installation of exterior lighting CONTRACTOR shall adjust light fixtures to reduce the lighting intensity from the new sources on adjacent residences to no more than two foot-candles, measured at the property line.

C. CONTRACTOR shall ensure that construction equipment is properly tuned and maintained in accordance with manufacturer's specifications, to ensure that excessive emissions are not generated by unmaintained equipment.

D. CONTRACTOR shall comply with the following requirements:

1. Maintain slow speeds with all vehicles.
2. Load impacted soil directly into transportation trucks to minimize soil handling.
3. Water/mist soil as it is being excavated and loaded onto the transportation trucks.
4. Water/mist and/or apply surfactants to soil placed in transportation trucks prior to exiting the site.
5. Minimize soil drop height into transportation trucks or stockpiles during dumping.

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6. During transport, cover or enclose trucks transporting soils, increase freeboard requirements, and repair trucks exhibiting spillage due to leaks.
7. Cover the bottom of the excavated area with polyethylene sheeting when work is not being performed.
8. Place stockpiled soil on polyethylene sheeting and cover with similar material.
9. Place stockpiled soil in areas shielded from prevailing winds.

E. When using large, heavy or noisy construction equipment CONTRACTOR shall implement all feasible measures to reduce air emissions below the South Coast Air Quality Management (SCAQMD) regional and localized significance thresholds.

1. Exhaust Emissions:
   a. Schedule construction activities that affect traffic flow to off-peak hours .
   b. Consolidate truck deliveries and/or limit the number of haul trips per day.
   c. Route construction trucks of congested streets.
   d. Employ high pressure fuel injection systems or engine timing retardation.
   e. Utilize ultra-low sulfur diesel fuel, containing 15 ppm sulfur or less (ULSD) in all diesel construction equipment.
   f. Use construction equipment rated by the United States Environmental Protection Agency as having Tier 3 (model year 2006 or newer) or Tier 4 (model year 2008 or newer) emission limits for engines between 50 and 750 horsepower.
   g. Restrict non-essential diesel engine idle time, to not more than five consecutive minutes.
   h. Utilize electrical power rather than internal combustion engine power generators as soon as feasible during construction.
   i. Utilize electric or alternatively fueled equipment, if feasible.
   j. Utilize construction equipment with the minimum practical engine size.
   k. Utilize low-emission on-road construction fleet vehicles.
   l. Ensure construction equipment is properly serviced and maintained to the manufacturer's standards.

2. Fugitive Dust:
   a. Apply non-toxic soil stabilizers according to manufacturers' specification to all inactive construction areas (previously graded areas inactive for ten days or more).
   b. Replace ground cover in disturbed areas as quickly as possible.
   c. Sweep streets at the end of the day if visible soil material is carried onto adjacent public paved roads (recommend water sweepers with reclaimed water).
   d. Install wheel washers where vehicles enter and exit unpaved roads onto paved roads, or wash off trucks and any equipment leaving the site each trip.
   e. Water the disturbed areas of the active construction site at least three times per day, except during periods of rainfall.
   f. Enclose, cover, water twice daily, or apply non-toxic soil binders according to manufacturers' specifications to exposed piles (i.e., gravel, dirt, and sand) with a five percent or greater silt content.
   g. Suspend all excavating and grading operations when wind speeds (as instantaneous gusts) exceed 25 miles per hour (mph).
   h. Apply water at least three times daily, except during periods of rainfall, to all unpaved road surfaces.
   i. Limit traffic speeds on unpaved road to 10 mph or less.
   j. Prohibit high emission causing fugitive dust activities on days where violations of the ambient air quality standard have been forecast by SCAQMD.
   k. Tarp and/or maintain a minimum of 24 inches of freeboard on trucks hauling dirt, sand, soil, or other loose materials.
   l. Limit the amount of daily soil and/or demolition debris loaded and hauled per day.

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3. General Construction:
   a. Utilize ultra-low VOC or zero-VOC surface coatings.
   b. Phase construction activities to minimize maximum daily emissions.
   c. Configure construction parking to minimize traffic interference.
   d. Provide temporary traffic control during construction activities to improve traffic flow (e.g., flag person).
   e. Develop a trip reduction plan for construction employees.
   f. Increase distance between emission sources to reduce near-field emission impacts.
   g. Require construction contractors to document compliance with the identified mitigation measures.

F. CONTRACTOR shall consult and coordinate with the COUNTY OF SANTA BARBARA REPRESENTATIVE and COUNTY OF SANTA BARBARA, prior to construction to schedule high noise or vibration producing activities to minimize disruption. Coordination shall continue on an as-needed basis throughout the construction phase of the project.

G. CONTRACTOR shall minimize blasting for all construction and demolition activities, where feasible. If demolition is necessary adjacent to residential uses or fragile structures, the COUNTY OF SANTA BARBARA REPRESENTATIVE will require the CONTRACTOR to avoid using impact tools. Alternatives that shall be considered include mechanical methods using hydraulic crushers or deconstruction techniques.

H. Where pile driving activities are required within 150 feet of a structure, a detailed vibration assessment shall be provided by an acoustical engineer to analyze potential impacts related to vibration to nearby structures and to determine feasible mitigation measures to eliminate potential risk of architectural damage.

I. Specific noise reduction measures include, but are not limited to, those listed below.

1. Source Controls:
   a. Time Constraints: It is prohibited work during nighttime hours.
   b. Scheduling: Perform noisy work during less sensitive time periods as directed by the COUNTY.
   c. Equipment Restrictions: Restrict the type of equipment used.
   d. Noise Restrictions: Comply with local and state noise levels ordinances. Substitute Methods: Use quieter methods and/or equipment.
   e. Exhaust Mufflers: Ensure equipment have quality mufflers installed.
   f. Lubrication & Maintenance: Well-maintained equipment is quieter.
   g. Reduced Power Operation: Use only necessary size and power.
   h. Limit Equipment On-Site: Only have necessary equipment on-site.
   i. Noise Compliance Monitoring: Technician on site shall ensure compliance.
   j. Quieter Backup Alarms: Manually-adjustable or ambient sensitive types.

2. Path Controls:
   a. Noise Barriers: Semi-permanent or portable wooden or concrete barriers.
   b. Noise Curtains: Flexible intervening curtain systems hung from supports.
   c. Enclosures: Encase localized and stationary noise sources.
   d. Increased Distance: Perform noisy activities farther away from receptors, including operation of portable equipment, storage, and maintenance of equipment.

3. Receptor Controls:
   a. Community Participation – open dialogue to involve affected residents.

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b. Noise Complaint Process: CONTRACTOR shall log and respond to noise complaints. Advance notice of the start of construction shall be delivered to all noise sensitive receptors adjacent to the project area. The notice shall state specifically where and when construction activities will occur and provide contact information for filing noise complaints with the CONTRACTOR and the COUNTY OF SANTA BARBARA. In the event of noise complaints, the COUNTY OF SANTA BARBARA will monitor noise from the construction activity to ensure that construction noise does not exceed limits specified in the noise ordinance.

c. Construction Equipment for Use on Public Roadways: CONTRACTOR shall submit a construction worksite traffic control plan to the COUNTY OF SANTA BARBARA REPRESENTATIVE for review prior to construction. The plan shall show the location of haul routes, hours of operation, protective devices, warning signs, and access to abutting properties COUNTY OF SANTA BARBARA encourages CONTRACTOR to limit construction-related trucks to off-peak commute periods.

END OF SECTION

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SECTION 01 57 23 - TEMPORARY STORM WATER POLLUTION CONTROL

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Temporary stormwater pollution controls.

1.2 STORMWATER POLLUTION PREVENTION PLAN

A. The Stormwater Pollution Prevention Plan (SWPPP) is part of the Contract Documents and is bound into this Project Manual.

1.3 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at Project site

1. Meet with Owner, Architect, Construction Manager, and earthwork subcontractor.
2. Review requirements of the SWPPP, including permitting process, worker training, and inspection and maintenance requirements.

1.4 INFORMATIONAL SUBMITTALS

A. Stormwater Pollution Prevention Plan (SWPP): Within 15 calendar days of date established for commencement of the Work, submit completed SWPPP.

B. EPA authorization under the EPA's "2017 Construction General Permit (CGP)."

C. Stormwater Pollution Prevention (SWPP) Training Log: For each individual performing Work under the SWPPP.

D. Inspection reports.

1.5 QUALITY ASSURANCE

A. Stormwater Pollution Prevention Plan (SWPPP) Coordinator: Experienced individual or firm with a record of successful water pollution control management coordination of projects with similar requirements.

1. SWPPP Coordinator shall complete and finalize the SWPPP form.
2. SWPPP Coordinator shall be responsible for inspections and maintaining of all requirements of the SWPPP.

B. Installers: Trained as indicated in the SWPPP.

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PART 2 - PRODUCTS

PART 3 - EXECUTION

3.1 INSTALLATION

A. Comply with all best management practices, general requirements, performance requirements, reporting requirements, and all other requirements included in the SWPPP.

B. Locate stormwater pollution controls in accordance with the SWPPP.

C. Conduct construction as required to comply with the SWPPP and that minimize possible contamination or pollution or other undesirable effects.

1. Inspect, repair, and maintain SWPPP controls during construction.
   a. Inspect all SWPPP controls not less than every seven days, and after each occurrence of a storm event, as outlined inthe SWPPP.

D. Remove SWPPP controls at completion of construction and restore and stabilize areas disturbed during construction.

END OF SECTION 01 57 23

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SECTION 02 41 19 - SELECTIVE DEMOLITION

PART 1 - SUMMARY

1.1 SECTION INCLUDES:

A. Demolition and removal of selected portions of building or structure.

1.2 MATERIALS OWNERSHIP

A. Unless otherwise indicated, demolition waste becomes property of Contractor.

1.3 FIELD CONDITIONS

A. Conditions existing at time of inspection for bidding purpose will be maintained by Owner as far as practical.
B. Notify Architect and/or (CM/CDR) of discrepancies between existing conditions and Drawings before proceeding with selective demolition.
C. Storage or sale of removed items or materials on-site is not permitted.
D. No owner operations currently on site.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Regulatory Requirements: Comply with governing EPA notification regulations before beginning selective demolition. Comply with hauling and disposal regulations of authorities having jurisdiction.

B. Standards: Comply with ANSI/ASSP A10.6 and NFPA241.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Verify that utilities have been disconnected and capped before starting selective demolition operations.

3.2 UTILITY SERVICES AND MECHANICAL/ELECTRICAL SYSTEMS

A. Existing Services/Systems to Remain: Maintain services/systems indicated to remain and protect them against damage.

B. Existing Services/Systems to Be Removed, Relocated, or Abandoned: Locate, identify, disconnect, and seal or cap off utility services and mechanical/electrical systems serving areas to be selectively demolished.

1. Owner will arrange to shut off indicated services/systems when requested by Contractor.
2. Arrange to shut off utilities with utility companies.
3. Disconnect, demolish, and remove plumbing, HVAC systems, equipment, and components indicated on Drawings to be removed.
   a. Piping to Be Removed: Remove portion of piping indicated to be removed and cap or plug remaining piping with same or compatible piping material.
   b. Piping to Be Abandoned in Place: Drain piping and cap or plug piping with same or compatible piping material and leave in place.
   c. Equipment to Be Removed: Disconnect and cap services and remove equipment.
   d. Equipment to Be Removed and Reinstalled: Disconnect and cap services and remove, clean, and store equipment; when appropriate, reinstall, reconnect, and make equipment operational.

3.3 PROTECTION

A. Temporary Protection: Provide temporary barricades and other protection required to prevent injury to people and damage to adjacent buildings and facilities to remain.

B. Temporary Shoring: Design, provide, and maintain shoring, bracing, and structural supports as required to preserve stability and prevent movement, settlement, or collapse of construction and finishes to remain, and to prevent unexpected or uncontrolled movement or collapse of construction being demolished.

C. Remove temporary barricades and protections where hazards no longer exist.

3.4 SELECTIVE DEMOLITION

A. General: Demolish and remove existing construction only to the extent required by new construction and as indicated. Use methods required to complete the Work within limitations of governing regulations and as follows:

1. Neatly cut openings and holes plumb, square, and true to dimensions required. Use cutting methods least likely to damage construction to remain or adjoining construction. Use hand tools or small power tools designed for sawing or grinding, not hammering and chopping. Temporarily cover openings to remain.
2. Cut or drill from the exposed or finished side into concealed surfaces to avoid marring existing finished surfaces.
3. Do not use cutting torches until work area is cleared of flammable materials. At concealed spaces, such as duct and pipe interiors, verify condition and contents of hidden space before starting flame-cutting operations. Maintain portable fire-suppression devices during flame-cutting operations.
4. Locate selective demolition equipment and remove debris and materials so as not to impose excessive loads on supporting walls, floors, or framing.
5. Dispose of demolished items and materials promptly. Comply with requirements in Section 01 74 19 "Construction Waste Management and Disposal."

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B. Site Access and Temporary Controls: Conduct selective demolition and debris-removal operations to ensure minimum interference with roads, streets, walks, walkways, and other adjacent occupied and used facilities.

3.5 CLEANING

A. Remove demolition waste materials from Project site and dispose of them in an EPA-approved construction and demolition waste landfill acceptable to authorities having jurisdiction.

1. Do not allow demolished materials to accumulate on-site.
2. Remove and transport debris in a manner that will prevent spillage on adjacent surfaces and areas.
3. Comply with requirements specified in Section 01 74 19 "Construction Waste Management and Disposal."

B. Burning: Do not burn demolished materials.

C. Clean adjacent structures and improvements of dust, dirt, and debris caused by selective demolition operations. Return adjacent areas to conditions existing before selective demolition operations began.

END OF SECTION 02 41 19

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SECTION 230000 - GENERAL MECHANICAL REQUIREMENTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SCNOEOPE

A. Basic mechanical requirements specifically applicable to Division 23 Sections.

B. Work includes but is not necessarily limited to the following:

1. Labor, materials, services, equipment, and appliances required for completion of tasks as indicated on drawing or in specification or as inherently necessary to prepare spaces and systems for new installations as follows:
   a. Heating, ventilating and air conditioning systems and equipment
   b. Testing, adjusting and balancing

1.3 DRAWINGS AND SPECIFICATIONS

A. Drawings accompanying these Specifications show intent of Work to be done. Specifications shall identify quality and grade of installation and where equipment and hardware is not particularly specified, Contractor shall provide submittals for all products and install them per manufacturers' recommendations, and in a workmanlike manner.

B. Examine Drawings and Specifications for elements in connection with this Work; determine existing and new general construction conditions and be familiar with all limitations caused by such conditions.

C. Plans are intended to show general arrangement and extent of Work contemplated. Exact location and arrangement of parts shall be determined after the Owner has reviewed equipment, as Work progresses, to conform in best possible manner with surroundings, and as directed by the Owner's Representative.

D. Contract Documents are in part diagrammatic and intended to show the scope and general arrangement of the Work under this Contract. The Contractor shall follow these drawings in laying out the equipment, piping and ductwork. Drawings are not intended to be scaled for roughing in measurements or to serve as shop drawings. Where job conditions require minor changes or adjustments in the indicated locations or arrangement of the Work, such changes shall be made without change in the Contract amount.

E. Follow dimensions without regard to scale. Where no figures or notations are given, the Plans shall be followed.

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1.4 UTILITIES

A. The location and sizes of electrical, mechanical, and plumbing service facilities are shown in accordance with data secured from existing record drawings and site observations. Data shown are offered as an estimating guide without guarantee of accuracy. Check and verify all data given, and verify the exact location of all utility services pertaining to Work before excavation or performing Work. Verify supply and return piping before making the connection to existing utilities.

1.5 APPLICABLE REFERENCE STANDARDS, CODES AND REGULATIONS

A. Meet requirements of all state codes having jurisdiction.

B. State of California Code of Regulations:

1. Title 8, Industrial Relations
2. Title 19, State Fire Marshal Regulations
3. Current California Building Code (CBC), Title 24, Part 2
4. Current California Electrical Code, Title 24, Part 3
5. Current California Mechanical Code, Title 24, Part 4
6. Current California Plumbing Code, Title 24, Part 5
7. Current California Energy Code, Title 24, Part 6
8. Current California Fire Code, Title 24, Part 9
9. Current California Standards Code, Title 24, Part 12

C. Additional Referenced Standards:

1. AABC Associated Air Balance Council
2. AMCA Air Moving and Conditioning Association
3. AHRI Air-Conditioning, Heating and Refrigeration Institute
4. ASHRAE American Society of Heating, Refrigeration and Air Conditioning Engineers
5. ASME American Society of Mechanical Engineers
6. ASTM American Society for Testing and Materials
7. NEMA National Electrical Manufacturer's Association
8. NFPA National Fire Protection Association Standards
9. PDI Plumbing and Drainage Institute
10. UL Underwriters Laboratories

D. Codes and ordinances having jurisdiction over Work are minimum requirements; but, if Contract Documents indicate requirements, which are in excess of those minimum requirements, then requirements of the Contract Documents shall be followed. Should there be any conflicts between Contract Documents or codes or any ordinances having jurisdiction, report these to the Owner's Representative.

E. Obtain permits, and request inspections from authority having jurisdiction.

1.6 PROJECT AND SITE CONDITIONS

A. The arrangement of and connection to equipment shown on the Drawings is based upon information available and is not intended to show exact dimensions peculiar to a specific manufacturer. The Drawings are, in part, diagrammatic and some features of the illustrated equipment installations may require revision to meet actual equipment installation requirements. Structural supports, housekeeping pads, piping connections and adjacent equipment may have to be altered to

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accommodate the equipment provided. No additional payment will be made for such revisions or alterations.

B. Examine all Drawings and Specifications to be fully cognizant of all work required under this Division.

C. Examine site related work and surfaces before starting work of any Section.

D. Install Work in locations shown on approved Drawings, unless prevented by Project conditions.

E. Prepare drawings showing proposed rearrangement of Work to meet Project conditions, including changes to Work specified in other Sections. Obtain permission from the Owner's Representative before proceeding.

1.7 COOPERATION WITH WORK UNDER OTHER DIVISIONS

A. Cooperate with other trades to facilitate general progress of Work. Allow all other trades every reasonable opportunity for installation of their work.

B. Work under this Division shall follow general building construction closely. Set pipe sleeves and inserts and verify that openings for chases and pipes are provided.

C. Work with other trades in determining exact location of outlets, pipes, and pieces of equipment to avoid interference with lines required to maintain proper installation of Work.

D. Make such progress in the Work to not delay work of other trades.

E. Mechanical Work shall have precedence over the other in the following sequence:

1. Soil and waste piping
2. Hydronic piping
3. Ductwork
4. Domestic water piping
5. Fire sprinkler piping

1.8 DISCREPANCIES

A. The Contractor shall check all Drawings furnished him immediately upon their receipt and shall promptly notify the Owner's Representative of any discrepancies. Figures marked on Drawings shall in general be followed in preference to scale measurements. Piping and instrumentation diagrams shall in general govern floor plans and sections. Large-scale drawings shall in general govern small-scale drawings.

B. Where requirements between Drawings and Specifications conflict, the more restrictive provisions shall apply.

C. If any part of the Specifications or Drawings appears unclear or contradictory, apply to Owner's Representative for interpretation and decision as early as possible, including during bidding period. Do not proceed with such work without Owner Representatives decision. Beginning work of any Section constitutes acceptance of conditions.

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1.9 CHANGES

A. The Contractor shall be responsible to make and obtain approval from the Owner's Representative for all necessary adjustments in piping and equipment layouts as required to accommodate the relocations of equipment and/or devices, which are affected by any approved authorized changes or Product substitutions. All changes shall be clearly indicated on the "Record" drawings.

1.10 SUBMITTALS

A. Refer to Division 01 for additional requirements.

B. The manufacturer, contractor or supplier shall include a written statement that the submitted equipment, hardware or accessory complies with the requirement of that particular specification section.

C. The manufacturer shall resubmit the specification section showing compliance with each respective paragraphs and specified items and features in that particular specification section.

D. All **exceptions** shall be clearly identified by referencing respective paragraph and other requirements along with proposed alternative.

E. Note that prior to acceptance of submittals for review, a submittal schedule shall be submitted to the Owner's Representative.

F. Submit all Division 23 shop drawings and product data grouped and referenced by the specification technical section number in one complete submittal package.

G. Shop Drawings:

1. Include installation details of equipment indicating proposed location, layout and arrangement, accessories, piping, and other items that must be shown to assure a coordinated installation.
2. Indicate adequate clearance for operation, maintenance, and replacement of operating equipment devices.
3. If equipment is rejected, revise drawings to show acceptable equipment and resubmit.

H. Whenever more than one (1) manufacturer's product is specified, the first named product is the basis of design used in the Drawings and the use of alternate-named manufacturer's products or substitutes may require modifications to the design.

I. The Contractor shall be responsible for all equipment ordered and/or installed prior to receipt of shop drawings returned from the Owner's Representative bearing the Owner's Representative stamp of "Reviewed". All corrections or modifications to the equipment as noted on the shop drawings shall be performed and equipment removed from the job site at the request of the Owner's Representative without additional compensation.

J. Manufacturer's Data: For each manufactured item, provide current manufacturer's descriptive literature of cataloged products, certified equipment drawings, diagrams, performance and characteristic curves if applicable, and catalog cuts.

K. Standard Compliance: When materials or equipment provided by the Contractor must conform to the standards of organizations such as American National Standards Institute (ANSI) or UL,

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submit proof of such conformance to the Owner Representative for approval. If an organization uses a label or listing to indicate compliance with a particular standard, the label or listing will be acceptable evidence, unless otherwise specified. In lieu of the label or listing, submit a certificate from an independent testing organization, which is competent to perform acceptance testing and is approved by the Owner Representative. The certificate shall state that the item has been tested in accordance with the specified organization's test methods and that the item conforms to the specified organization's standard.

L. Certified Test Reports: Before delivery of materials and equipment, certified copies of all test reports specified in individual sections shall be submitted for approval.

M. Certificates of Compliance or Conformance: Submit manufacturer's certifications as required on products, materials, finish, and equipment indicated in the technical sections. Certifications shall be documents prepared specifically for this Contract. Pre-printed certifications and copies of previously submitted documents will not be acceptable. The manufacturer's certifications shall name the appropriate products, equipment, or materials and the publication specified as controlling the quality of that item. Certification shall not contain statements to imply that the item does not meet requirements specified, such as "as good as"; or "achieve the same end use and results as materials formulated in accordance with the referenced publications"; or "equal or exceed the service and performance of the specified material." Certifications shall simply state that the item conforms to the requirements specified. Certificates shall be printed on the manufacturer's letterhead and shall be signed by the manufacturer's official authorized to sign certificates of compliance or conformance.

1.11 PROJECT RECORD DOCUMENTS

A. Refer to Division 01 for additional requirements.

1. All changes, deviations and information recorded on the "Project Record Drawings" set during Construction shall be redrafted onto the latest version of AutoCAD or Revit, where applicable.
2. Submit completed shop drawings to the Owner prior to completion in AutoCAD format. Contractor hand marked or drafted redlined "Project Record Drawings" will not be accepted.

1.12 PRODUCT ALTERNATIVES OR SUBSTITUTIONS

A. Refer to General Conditions and Division 01 for additional requirements.

1.13 OPERATING INSTRUCTIONS

A. Furnish approved operating instructions for systems and equipment indicated in the technical sections for use by operation and maintenance personnel.

1.14 MANUFACTURER'S RECOMMENDATIONS

A. Where installation procedures or any part thereof are required to be in accordance with manufacturer's recommendations, furnish printed copies of the recommendations prior to installation. Installation of the item shall not proceed until recommendations are received. Failure to furnish recommendations shall be cause for rejection of the equipment or material.

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1.15 DELIVERY AND STORAGE

A. Refer to Division 01 for additional requirements.

B. Handle, store, and protect equipment and materials in accordance with the manufacturer's recommendations and with the requirements of NFPA 70B P, Appendix I, titled "Equipment Storage and Maintenance During Construction." Replace damaged or defective items with new items.

1.16 GUARANTEE

A. Except as may be specified under other sections in the Specifications, guarantee all equipment furnished under the Specifications for a period of one year from date of project acceptance against defective workmanship and material and improper installation. Upon notification of failure, correct deficiency immediately and without cost to the Owner.

B. Standard warranty of manufacturer shall apply for replacement of parts after expiration of the above period. Manufacturer shall furnish replacement parts to the Owner for their service agency as directed.

PART 2 - PRODUCTS

A. Not Applicable.

PART 3 - EXECUTION

3.1 GENERAL

A. Obtain and pay for all permits and inspections, including any independent testing required to verify standard compliance, and deliver certificates for same to the Owner's Representative.

3.2 WORK RESPONSIBILITIES

A. The drawings indicate diagrammatically the desired locations or arrangement of piping, equipment, etc., and are to be followed as closely as possible. Proper judgment must be exercised in executing the work to secure the best possible installation in the available space and to overcome local difficulties due to space limitations or interference with structural conditions.

B. The Contractor is responsible for the correct placing of Work and the proper location and connection of Work in relation to the work of other trades. Advise appropriate trade as to locations of access panels.

C. In the event changes in the indicated locations or arrangements are necessary, due to developed conditions in the building construction or rearrangement of furnishings or equipment, such changes shall be made without extra cost, providing the change is ordered before the ductwork, piping, etc. and work directly connected to same is installed and no extra materials are required.

D. Where equipment is furnished by others, verify dimensions and the correct locations of this equipment before proceeding with the roughing-in of connections.

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E. All scaled and figured dimensions are approximate of typical equipment of the class indicated. Before proceeding with any work, carefully check and verify all dimensions, sizes, etc. with the drawings to see that the equipment will fit into the spaces provided without violation of applicable codes.

F. Should any changes to the Work indicated on the Drawings or described in the Specifications be necessary in order to comply with the above requirements, notify the Owner immediately and cease work on all parts of the contract, which are affected until approval for any required modifications to the construction has been obtained from the Owner.

G. Be responsible for any cooperative work, which must be altered due to lack of proper supervision or failure to make proper provisions in time. Such changes shall be under direction of the Owner and shall be made to his satisfaction. Perform all Work with competent and skilled personnel.

H. All work, including aesthetic as well as mechanical aspects of the Work, shall be of the highest quality consistent with the best practices of the trade.

I. Replace or repair, without additional compensation, any Work, which, in the opinion of the Owner, does not comply with these requirements.

3.3 PAINTING

A. Refer to Division 09 for additional requirements.

B. Factory Applied:

1. Mechanical equipment shall have factory-applied painting systems, which shall, as a minimum, meet the requirements of NEMA ICS 6 corrosion-resistance test, except equipment specified to meet requirements of ANSI C37.20 shall have a finish as specified in ANSI C37.20.
2. Refer to individual sections of this Division for more stringent requirements.

C. Field Applied:

1. Paint all mechanical equipment as required to touch up, to match finish on other equipment in adjacent spaces or to meet safety criteria.
2. Paint all exposed, uninsulated mechanical piping, valves, supports, hangers and appurtenances. Provide minimum 5 mils dry film thickness.
3. Paint ductwork flat black that are visible behind air outlets and inlets.
4. Paint all exposed and rooftop ductwork, roof mounted mechanical equipment, ductwork supports, hangers and appurtenances.
5. Paint shall be a high performance polyurethane enamel coating system.
   a. Acceptable paint manufacturers include Ameron, Tnemec or engineer approved equal.
   b. Acceptable primer manufacturers include Ameron Amershield VOC, Tnemec's Series 1075 (1074) Endura-Shield, semi-gloss (gloss) sheen or equal.
   c. Provide minimum 5 mils dry film thickness.

END OF SECTION 230000

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SECTION 230548 - VIBRATION AND SEISMIC CONTROLS FOR HVAC

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Elastomeric isolation pads.
2. Elastomeric isolation mounts.
3. Restrained elastomeric isolation mounts.
4. Open-spring isolators.
5. Housed-spring isolators.
6. Restrained-spring isolators.
7. Housed-restrained-spring isolators.
8. Pipe-riser resilient supports.
9. Resilient pipe guides.
10. Air-spring isolators.
11. Restrained-air-spring isolators.
12. Elastomeric hangers.
13. Spring hangers.
14. Snubbers.
15. Restraint channel bracings.
16. Restraint cables.
17. Seismic-restraint accessories.
18. Mechanical anchor bolts.
19. Adhesive anchor bolts.
20. Vibration isolation equipment bases.
21. Restrained isolation roof-curb rails.

B. Related Requirements:

1. Section 210548 "Vibration and Seismic Controls for Fire Suppression" for devices for fire-suppression equipment and systems.
2. Section 220548 "Vibration and Seismic Controls for Plumbing" for devices for plumbing equipment and systems.

1.3 DEFINITIONS

A. IBC: International Building Code.

B. ICC-ES: ICC-Evaluation Service.

C. OSHPD: Office of Statewide Health Planning & Development.

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1.4 ACTION SUBMITTALS

A. Submittals shall be formatted per Section 230000 "General Mechanical Requirements". The manufacturer shall resubmit the specification section showing compliance with each respective paragraphs and specified items and features in that particular specification section. All **exceptions** shall be clearly identified by referencing respective paragraph and other requirements. Next to each specification item, indicate the following:

1. "No Exception Taken".
2. "Exception". All exceptions shall be clearly identified by referencing respective paragraph and other requirements along with proposed alternative.

B. Product Data: For each type of product.

1. Include rated load, rated deflection, and overload capacity for each vibration isolation device.
2. Illustrate and indicate style, material, strength, fastening provision, and finish for each type and size of vibration isolation device and seismic-restraint component required.
   a. Tabulate types and sizes of seismic restraints, complete with report numbers and rated strength in tension and shear as evaluated by [an evaluation service member of ICC-ES] [OSHPD] [an agency acceptable to authorities having jurisdiction].
   b. Annotate to indicate application of each product submitted and compliance with requirements.

3. Interlocking Snubbers: Include ratings for horizontal, vertical, and combined loads.

C. Shop Drawings:

1. Detail fabrication and assembly of equipment bases. Detail fabrication including anchorages and attachments to structure and to supported equipment. Include adjustable motor bases, rails, and frames for equipment mounting.
2. Vibration Isolation Base Details: Detail fabrication including anchorages and attachments to structure and to supported equipment. Include adjustable motor bases, rails, and frames for equipment mounting.

D. Delegated-Design Submittal: For each vibration isolation and seismic-restraint device.

1. Include design calculations and details for selecting vibration isolators, seismic restraints, and vibration isolation bases complying with performance requirements, design criteria, and analysis data signed and sealed by the qualified professional engineer responsible for their preparation.
2. Design Calculations: Calculate static and dynamic loading due to equipment weight, operation, and seismic forces required to select vibration isolators and seismic restraints and for designing vibration isolation bases.
   a. Coordinate design calculations with wind load calculations required for equipment mounted outdoors. Comply with requirements in other Sections for equipment mounted outdoors.

3. Riser Supports: Include riser diagrams and calculations showing anticipated expansion and contraction at each support point, initial and final loads on building structure, spring deflection changes, and seismic loads. Include certification that riser system was examined for excessive stress and that none exists.

4. Seismic-Restraint Details:

a. Design Analysis: To support selection and arrangement of seismic restraints. Include calculations of combined tensile and shear loads.
b. Details: Indicate fabrication and arrangement. Detail attachments of restraints to the restrained items and to the structure. Show attachment locations, methods, and spacings. Identify components, list their strengths, and indicate directions and values of forces transmitted to the structure during seismic events. Indicate association with vibration isolation devices.
c. Coordinate seismic-restraint and vibration isolation details with wind-restraint details required for equipment mounted outdoors. Comply with requirements in other Sections for equipment mounted outdoors.
d. Preapproval and Evaluation Documentation: Byan agency acceptable to authorities having jurisdiction, showing maximum ratings of restraint items and the basis for approval (tests or calculations).

1.5 INFORMATIONAL SUBMITTALS

A. Coordination Drawings: Show coordination of vibration isolation device installation and seismic bracing for HVAC piping and equipment with other systems and equipment in the vicinity, including other supports and restraints, if any.

B. Qualification Data: For professional engineer and testing agency.

C. Welding certificates.

D. Air-Mounting System Performance Certification: Include natural frequency, load, and damping test data performed by an independent agency.

E. Field quality-control reports.

1.6 CLOSEOUT SUBMITTALS

A. Operation and Maintenance Data: For air-spring mounts to include in operation and maintenance manuals.

1.7 QUALITY ASSURANCE

A. Testing Agency Qualifications: An independent agency, with the experience and capability to conduct the testing indicated, that is an NRTL as defined by OSHA in 29 CFR 1910.7 and that is acceptable to authorities having jurisdiction.

B. Comply with seismic-restraint requirements in the IBC unless requirements in this Section are more stringent.

C. Welding Qualifications: Qualify procedures and personnel according to AWS D1.1/D1.1M, "Structural Welding Code - Steel."

D. Seismic-restraint devices shall have horizontal and vertical load testing and analysis and shall bear anchorage preapproval OPM number from OSHPD, or preapproval by another agency acceptable to authorities having jurisdiction, showing maximum seismic-restraint ratings. Ratings based on independent testing are preferred to ratings based on calculations. If preapproved rat-

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ings are unavailable, submittals based on independent testing are preferred. Calculations (including combining shear and tensile loads) to support seismic-restraint designs must be signed and sealed by a qualified professional engineer.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Seismic-Restraint Loading:

1. Contractor shall consult on requirements with Structural Engineer of Record or other acceptable qualified engineer by the authority having jurisdiction.

2.2 ELASTOMERIC ISOLATION PADS

A. Elastomeric Isolation Pads.

1. Manufacturer and Model:
   a. Basis of Design
      1) Mason Industries Type MBSW
   b. Or Approved Equal by:
      1) California Dynamics Corporation
      2) Kinetics Noise Control
      3) Vibrex
      4) Isotech Industries
2. Fabrication: Single or multiple layers of sufficient durometer stiffness for uniform loading over pad area.
3. Size: Factory or field cut to match requirements of supported equipment.
4. Pad Material: Oil and water resistant with elastomeric properties.
5. Surface Pattern: Waffle pattern.
6. Load-bearing metal plates adhered to pads.
7. Sandwich-Core Material: Resilient and elastomeric

2.3 ELASTOMERIC ISOLATION MOUNTS

A. Double-Deflection, Elastomeric Isolation Mounts.

1. Manufacturer and Model:
   a. Basis of Design
      1) Mason Industries Type ND
   b. Or Approved Equal by:
      1) California Dynamics Corporation
      2) Kinetics Noise Control
      3) Vibrex
      4) Isotech Industries

2. Mounting Plates:
   a. Top Plate: Encapsulated steel load transfer top plates, factory drilled and threaded with threaded studs or bolts.
   b. Baseplate: Encapsulated steel bottom plates with holes provided for anchoring to support structure.

3. Elastomeric Material: Molded, oil-resistant rubber, neoprene, or other elastomeric material.

2.4 RESTRAINED ELASTOMERIC ISOLATION MOUNTS

A. Restrained Elastomeric Isolation Mounts.

1. Manufacturer and Model:
   a. Basis of Design
      1) Mason Industries Type BR
   b. Or Approved Equal by:
      1) California Dynamics Corporation
      2) Kinetics Noise Control
      3) Vibrex
      4) Isotech Industries

2. Description: All-directional isolator with seismic restraints containing two separate and opposing elastomeric elements that prevent central threaded element and attachment hardware from contacting the housing during normal operation.
   a. Housing: Cast-ductile iron or welded steel.
   b. Elastomeric Material: Molded, oil-resistant rubber, neoprene, or other elastomeric material.

2.5 OPEN-SPRING ISOLATORS

A. Freestanding, Laterally Stable, Open-Spring Isolators.

1. Manufacturer and Model:
   a. Basis of Design
      1) Mason Industries Type SLFH
   b. Or Approved Equal by:
      1) California Dynamics Corporation
      2) Kinetics Noise Control
      3) Vibrex
      4) Isotech Industries

2. Outside Spring Diameter: Not less than 80 percent of the compressed height of the spring at rated load.
3. Minimum Additional Travel: 50 percent of the required deflection at rated load.
4. Lateral Stiffness: More than 80 percent of rated vertical stiffness.
5. Overload Capacity: Support 200 percent of rated load, fully compressed, without deformation or failure.
6. Baseplates: Factory-drilled steel plate for bolting to structure with an elastomeric isolator pad attached to the underside. Baseplates shall limit floor load to 500 psig.
7. Top Plate and Adjustment Bolt: Threaded top plate with adjustment bolt and cap screw to fasten and level equipment.

2.6 HOUSED-SPRING ISOLATORS

A. Freestanding, Laterally Stable, Open-Spring Isolators in Two-Part Telescoping Housing.

1. Manufacturer and Model:
   a. Basis of Design
      1) Mason Industries Type C
   b. Or Approved Equal by:
      1) California Dynamics Corporation
      2) Kinetics Noise Control
      3) Vibrex
      4) Isotech Industries

2. Outside Spring Diameter: Not less than 80 percent of the compressed height of the spring at rated load.
3. Minimum Additional Travel: 50 percent of the required deflection at rated load.
4. Lateral Stiffness: More than 80 percent of rated vertical stiffness.
5. Overload Capacity: Support 200 percent of rated load, fully compressed, without deformation or failure.
6. Two-Part Telescoping Housing: A steel top and bottom frame separated by an elastomeric material and enclosing the spring isolators.
   a. Drilled base housing for bolting to structure with an elastomeric isolator pad attached to the underside. Bases shall limit floor load to 500 psig.
   b. Top housing with attachment and leveling bolt, threaded mounting holes and internal leveling device.

2.7 RESTRAINED-SPRING ISOLATORS

A. Freestanding, Laterally Stable, Open-Spring Isolators with Vertical-Limit Stop Restraint.

1. Manufacturer and Model:
   a. Basis of Design
      1) Mason Industries Type SLR
   b. Or Approved Equal by:
      1) California Dynamics Corporation
      2) Kinetics Noise Control
      3) Vibrex
      4) Isotech Industries

2. Housing: Steel housing with vertical-limit stops to prevent spring extension due to weight being removed.
   a. Base with holes for bolting to structure with an elastomeric isolator pad attached to the underside. Bases shall limit floor load to 500 psig.
   b. Top plate with threaded mounting holes and elastomeric pad.
   c. Internal leveling bolt that acts as blocking during installation.

3. Restraint: Limit stop as required for equipment and authorities having jurisdiction.
4. Outside Spring Diameter: Not less than 80 percent of the compressed height of the spring at rated load.
5. Minimum Additional Travel: 50 percent of the required deflection at rated load.
6. Lateral Stiffness: More than 80 percent of rated vertical stiffness.
7. Overload Capacity: Support 200 percent of rated load, fully compressed, without deformation or failure.

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2.8 HOUSED-RESTRAINED-SPRING ISOLATORS

A. Freestanding, Steel, Open-Spring Isolators with Vertical-Limit Stop Restraint in Two-Part Telescoping Housing.

1. Manufacturer and Model:
   a. Basis of Design
      1) Mason Industries Type SSLFH
   b. Or Approved Equal by:
      1) California Dynamics Corporation
      2) Kinetics Noise Control
      3) Vibrex
      4) Isotech Industries

2. Two-Part Telescoping Housing: A steel top and bottom frame separated by an elastomeric material and enclosing the spring isolators. Housings are equipped with adjustable snubbers to limit vertical movement.
   a. Drilled base housing for bolting to structure with an elastomeric isolator pad attached to the underside. Bases shall limit floor load to 500 psig.
   b. Threaded top housing with adjustment bolt and cap screw to fasten and level equipment.

3. Outside Spring Diameter: Not less than 80 percent of the compressed height of the spring at rated load.
4. Minimum Additional Travel: 50 percent of the required deflection at rated load.
5. Lateral Stiffness: More than 80 percent of rated vertical stiffness.
6. Overload Capacity: Support 200 percent of rated load, fully compressed, without deformation or failure.

2.9 PIPE-RISER RESILIENT SUPPORT

A. Description: All-directional, acoustical pipe anchor consisting of two steel tubes separated by a minimum 1/2-inch-thick neoprene.

1. Manufacturer and Model:
   a. Basis of Design
      1) Mason Industries Type SSLFH
   b. Or Approved Equal by:
      1) California Dynamics Corporation
      2) Kinetics Noise Control
      3) Vibrex
      4) Isotech Industries

2. Vertical-Limit Stops: Steel and neoprene vertical-limit stops arranged to prevent vertical travel in both directions.
3. Maximum Load Per Support: 500 psig on isolation material providing equal isolation in all directions.

2.10 RESILIENT PIPE GUIDES

A. Description: Telescopic arrangement of two steel tubes or post and sleeve arrangement separated by a minimum 1/2-inch-thick neoprene.

1. Manufacturer and Model:
   a. Basis of Design
      1) Mason Industries Type ADA
   b. Or Approved Equal by:
      1) California Dynamics Corporation
      2) Kinetics Noise Control
      3) Vibrex
      4) Isotech Industries

2. Factory-Set Height Guide with Shear Pin: Shear pin shall be removable and reinsertable to allow for selection of pipe movement. Guides shall be capable of motion to meet location requirements.

2.11 AIR-SPRING ISOLATORS

A. Freestanding, Single or Multiple, Compressed-Air Bellows.

1. Manufacturer and Model:
   a. Basis of Design
      1) Mason Industries Type MT
   b. Or Approved Equal by:
      1) California Dynamics Corporation
      2) Kinetics Noise Control
      3) Vibrex
      4) Isotech Industries

2. Bellows Assembly: Upper and lower powder-coated steel sections connected by a replaceable, flexible, nylon-reinforced neoprene bellows or similar elastomeric material.
3. Maximum Natural Frequency: 3 Hz.
4. Operating Pressure Range: 25 to 100 psig.
5. Burst Pressure: At least three times manufacturer's published maximum operating pressure.

6. Tank valves.

2.12 RESTRAINED-AIR-SPRING ISOLATORS

A. Freestanding, Single or Multiple, Compressed-Air Bellows with Vertical-Limit Stop Restraint.

1. Manufacturer and Model:
   a. Basis of Design
      1) Mason Industries Type SLR-MT
   b. Or Approved Equal by:
      1) California Dynamics Corporation
      2) Kinetics Noise Control
      3) Vibrex
      4) Isotech Industries

2. Housing: Steel housing with vertical-limit stops to prevent spring extension due to weight being removed.
   a. Base with holes for bolting to structure with an elastomeric isolator pad attached to the underside. Bases shall limit floor load to 500 psig.

b. Top plate with threaded mounting holes elastomeric pad.
c. Internal leveling bolt that acts as blocking during installation.

3. Restraint: Limit stop as required for equipment and authorities having jurisdiction.
4. Outside Spring Diameter: Not less than 80 percent of the compressed height of the spring at rated load.
5. Minimum Additional Travel: 50 percent of the required deflection at rated load.
6. Lateral Stiffness: More than 80 percent of rated vertical stiffness.
7. Overload Capacity: Support 200 percent of rated load, fully compressed, without deformation or failure.
8. Bellows Assembly: Upper and lower powder-coated steel sections connected by a replaceable, flexible, nylon-reinforced neoprene bellows or similar elastomeric material.
9. Maximum Natural Frequency: 3 Hz.
10. Operating Pressure Range: 25 to 100 psig.
11. Burst Pressure: At least three times manufacturer's published maximum operating pressure.

12. Tank valves.

2.13 ELASTOMERIC HANGERS

A. Elastomeric Mount in a Steel Frame with Upper and Lower Steel Hanger Rods.

1. Manufacturer and Model:
   a. Basis of Design
      1) Mason Industries Type HD
   b. Or Approved Equal by:
      1) California Dynamics Corporation
      2) Kinetics Noise Control
      3) Vibrex
      4) Isotech Industries

2. Frame: Steel, fabricated with a connection for an upper threaded hanger rod and an opening on the underside to allow for a maximum of 30 degrees of angular lower hanger-rod misalignment without binding or reducing isolation efficiency.
3. Dampening Element: Molded, oil-resistant rubber, neoprene, or other elastomeric material with a projecting bushing for the underside opening preventing steel to steel contact.

2.14 SPRING HANGERS

A. Combination Coil-Spring and Elastomeric-Insert Hanger with Spring and Insert in Compression.

1. Manufacturer and Model:
   a. Basis of Design
      1) Mason Industries Type 30N OR PC30NS
   b. Or Approved Equal by:
      1) California Dynamics Corporation
      2) Kinetics Noise Control
      3) Vibrex
      4) Isotech Industries

2. Frame: Steel, fabricated for connection to threaded hanger rods and to allow for a maximum of 30 degrees of angular hanger-rod misalignment without binding or reducing isolation efficiency.
3. Outside Spring Diameter: Not less than 80 percent of the compressed height of the spring at rated load.
4. Minimum Additional Travel: 50 percent of the required deflection at rated load.
5. Lateral Stiffness: More than 80 percent of rated vertical stiffness.
6. Overload Capacity: Support 200 percent of rated load, fully compressed, without deformation or failure.
7. Elastomeric Element: Molded, oil-resistant rubber or neoprene. Steel-washer-reinforced cup to support spring and bushing projecting through bottom of frame.
8. Adjustable Vertical Stop: Steel washer with neoprene washer "up-stop" on lower threaded rod.
9. Self-centering hanger-rod cap to ensure concentricity between hanger rod and support spring coil.

2.15 SNUBBERS

A. Manufacturer and Model:

1. Basis of Design
   a. Mason Industries Type Z-1011

2. Or Approved Equal by:
   a. California Dynamics Corporation
   b. Kinetics Noise Control
   c. Vibrex
   d. Isotech Industries

B. Description: Factory fabricated using welded structural-steel shapes and plates, anchor bolts, and replaceable resilient isolation washers and bushings.

1. Anchor bolts for attaching to concrete shall be seismic-rated, drill-in, and stud-wedge or female-wedge type.
2. Resilient Isolation Washers and Bushings: Oil- and water-resistant neoprene.
3. Maximum 1/4-inch air gap, and minimum 1/4-inch-thick resilient cushion.

2.16 RESTRAINT CHANNEL BRACINGS

A. Manufacturer and Model:

1. Basis of Design
   a. Mason Industries Type Seismic Sway Bracing System

2. Or Approved Equal by:
   a. California Dynamics Corporation
   b. Kinetics Noise Control
   c. Vibrex
   d. Isotech Industries

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B. Description: MFMA-4, shop- or field-fabricated bracing assembly made of slotted steel channels with accessories for attachment to braced component at one end and to building structure at the other end and other matching components and with corrosion-resistant coating; rated in tension, compression, and torsion forces.

2.17 RESTRAINT CABLES

A. Manufacturer and Model:

1. Basis of Design
   a. Mason Industries Type SCBA Assembly, SCR, UC & CCB

2. Or Approved Equal by:
   a. California Dynamics Corporation
   b. Kinetics Noise Control
   c. Vibrex
   d. Isotech Industries

B. Restraint Cables: ASTM A 603 galvanized ASTM A 492 stainless-steel cables. End connections made of steel assemblies with thimbles, brackets, swivel, and bolts designed for restraining cable service; with a minimum of two clamping bolts for cable engagement.

2.18 SEISMIC-RESTRAINT ACCESSORIES

A. Manufacturer and Model:

1. Basis of Design
   a. Mason Industries Type SCR, UC & CCB

2. Or Approved Equal by:
   a. California Dynamics Corporation
   b. Kinetics Noise Control
   c. Vibrex
   d. Isotech Industries

B. Hanger-Rod Stiffener: Reinforcing steel angle clamped to hanger rod.

C. Hinged and Swivel Brace Attachments: Multifunctional steel connectors for attaching hangers to rigid channel bracings and restraint cables.

D. Bushings for Floor-Mounted Equipment Anchor Bolts: Neoprene bushings designed for rigid equipment mountings, and matched to type and size of anchor bolts and studs.

E. Bushing Assemblies for Wall-Mounted Equipment Anchorage: Assemblies of neoprene elements and steel sleeves designed for rigid equipment mountings, and matched to type and size of attachment devices used.

F. Resilient Isolation Washers and Bushings: One-piece, molded, oil- and water-resistant neoprene, with a flat washer face.

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2.19 MECHANICAL ANCHOR BOLTS

A. Manufacturer and Model:

1. Basis of Design
   a. Mason Industries Type SAB/SAS

2. Or Approved Equal by:
   a. California Dynamics Corporation
   b. Kinetics Noise Control
   c. Hilti

B. Mechanical Anchor Bolts: Drilled-in and stud-wedge or female-wedge type in zinc-coated steel for interior applications and stainless steel for exterior applications. Select anchor bolts with strength required for anchor and as tested according to ASTM E 488.

2.20 ADHESIVE ANCHOR BOLTS

A. Manufacturer and Model:

1. Basis of Design
   a. Mason Industries Type SAA

2. Or Approved Equal by:
   a. California Dynamics Corporation
   b. Kinetics Noise Control
   c. Hilti

B. Adhesive Anchor Bolts: Drilled-in and capsule anchor system containing PVC or urethane methacrylate-based resin and accelerator, or injected polymer or hybrid mortar adhesive. Provide anchor bolts and hardware with zinc-coated steel for interior applications and stainless steel for exterior applications. Select anchor bolts with strength required for anchor and as tested according to ASTM E 488.

2.21 VIBRATION ISOLATION EQUIPMENT BASES

A. Steel Rails: Factory-fabricated, welded, structural-steel rails.

1. Manufacturer and Model:
   a. Basis of Design
      1) Mason Industries Type RND Rails
   b. Or Approved Equal by:
      1) California Dynamics Corporation
      2) Kinetics Noise Control
      3) Vibrex
      4) Isotech Industries

2. Design Requirements: Lowest possible mounting height with not less than 1-inch clearance above the floor. Include equipment anchor bolts and auxiliary motor slide rails.
   a. Include supports for suction and discharge elbows for pumps.

3. Structural Steel: Steel shapes, plates, and bars complying with ASTM A 36/A 36M. Rails shall have shape to accommodate supported equipment.
4. Support Brackets: Factory-welded steel brackets on frame for outrigger isolation mountings and to provide for anchor bolts and equipment support.

B. Steel Bases: Factory-fabricated, welded, structural-steel bases and rails.

1. Manufacturer and Model:
   a. Basis of Design
      1) Mason Industries Type MSL
   b. Or Approved Equal by:
      1) California Dynamics Corporation
      2) Kinetics Noise Control
      3) Vibrex
      4) Isotech Industries

2. Design Requirements: Lowest possible mounting height with not less than 1-inch clearance above the floor. Include equipment anchor bolts and auxiliary motor slide bases or rails.
   a. Include supports for suction and discharge elbows for pumps.

3. Structural Steel: Steel shapes, plates, and bars complying with ASTM A 36/A 36M. Bases shall have shape to accommodate supported equipment.
4. Support Brackets: Factory-welded steel brackets on frame for outrigger isolation mountings and to provide for anchor bolts and equipment support.

C. Concrete Inertia Base: Factory-fabricated, welded, structural-steel bases and rails ready for placement of cast-in-place concrete.

1. Manufacturer and Model:
   a. Basis of Design
      1) Mason Industries Type BMK
   b. Or Approved Equal by:
      1) California Dynamics Corporation
      2) Kinetics Noise Control
      3) Vibrex
      4) Isotech Industries

2. Design Requirements: Lowest possible mounting height with not less than 1-inch clearance above the floor. Include equipment anchor bolts and auxiliary motor slide bases or rails.
   a. Include supports for suction and discharge elbows for pumps.

3. Structural Steel: Steel shapes, plates, and bars complying with ASTM A 36/A 36M. Bases shall have shape to accommodate supported equipment.
4. Support Brackets: Factory-welded steel brackets on frame for outrigger isolation mountings and to provide for anchor bolts and equipment support.
5. Fabrication: Fabricate steel templates to hold equipment anchor-bolt sleeves and anchors in place during placement of concrete. Obtain anchor-bolt templates from supported equipment manufacturer.

2.22 RESTRAINED SEISMICALLY ISOLATION ROOF-CURB RAILS

A. Manufacturer:

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1. Basis of Design
   a. Mason Industries

2. Or Approved Equal by:
   a. California Dynamics Corporation
   b. Kinetics Noise Control
   c. Vibrex
   d. Isotech Industries

B. Description: Factory-assembled, fully enclosed, insulated, air- and watertight curb rail designed to resiliently support equipment and to withstand seismic forces.

C. Upper Frame: The upper frame shall provide continuous support for equipment and shall be captive to resiliently resist seismic forces.

D. Lower Support Assembly: The lower support assembly shall be formed sheet metal section containing adjustable and removable steel springs that support the upper frame. The lower support assembly shall have a means for attaching to building structure and a wood nailer for attaching roof materials, and shall be insulated with a minimum of 2 inches of rigid, glass-fiber insulation on inside of assembly. Adjustable, restrained-spring isolators shall be mounted on elastomeric vibration isolation pads and shall have access ports, for level adjustment, with removable waterproof covers at all isolator locations. Isolators shall be located so they are accessible for adjustment at any time during the life of the installation without interfering with the integrity of the roof.

E. Snubber Bushings: All-directional, elastomeric snubber bushings at least 1/4 inch thick.

F. Water Seal: Galvanized sheet metal with EPDM seals at corners, attached to upper support frame, extending down past wood nailer of lower support assembly, and counterflashed over roof materials.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine areas and equipment to receive vibration isolation and seismic-control devices for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.

B. Examine roughing-in of reinforcement and cast-in-place anchors to verify actual locations before installation.

C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 APPLICATIONS

A. Multiple Pipe Supports: Secure pipes to trapeze member with clamps approved for application by [an evaluation service member of ICC-ES] [OSHPD] [an agency acceptable to authorities having jurisdiction].

B. Hanger-Rod Stiffeners: Install hanger-rod stiffeners where indicated or scheduled on Drawings to receive them and where required to prevent buckling of hanger rods due to seismic forces.

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C. Strength of Support and Seismic-Restraint Assemblies: Where not indicated, select sizes of components so strength is adequate to carry present and future static and seismic loads within specified loading limits.

3.3 VIBRATION CONTROL AND SEISMIC-RESTRAINT DEVICE INSTALLATION

A. Coordinate the location of embedded connection hardware with supported equipment attachment and mounting points and with requirements for concrete reinforcement and formwork specified in Section 033000 "Cast-in-Place Concrete."

B. Installation of vibration isolators must not cause any change of position of equipment, piping, or ductwork resulting in stresses or misalignment.

C. Comply with requirements in Section 077200 "Roof Accessories" for installation of roof curbs, equipment supports, and roof penetrations.

D. Equipment Restraints:

1. Install seismic snubbers on HVAC equipment mounted on vibration isolators. Locate snubbers as close as possible to vibration isolators and bolt to equipment base and supporting structure.
2. Install resilient bolt isolation washers on equipment anchor bolts where clearance between anchor and adjacent surface exceeds 0.125 inch.
3. Install seismic-restraint devices using methods approved by an agency acceptable to authorities having jurisdiction that provides required submittals for component.

E. Piping Restraints:

1. Comply with requirements in MSS SP-127.

2. Space lateral supports a maximum of 40 feet o.c., and longitudinal supports a maximum of 80 feet o.c.
3. Brace a change of direction longer than 12 feet.

F. Install cables so they do not bend across edges of adjacent equipment or building structure.

G. Install seismic-restraint devices using methods approved byan agency acceptable to authorities having jurisdiction that provides required submittals for component.

H. Install bushing assemblies for anchor bolts for floor-mounted equipment, arranged to provide resilient media between anchor bolt and mounting hole in concrete base.

I. Install bushing assemblies for mounting bolts for wall-mounted equipment, arranged to provide resilient media where equipment or equipment-mounting channels are attached to wall.

J. Attachment to Structure: If specific attachment is not indicated, anchor bracing to structure at flanges of beams, at upper truss chords of bar joists, or at concrete members.

K. Drilled-in Anchors:

1. Identify position of reinforcing steel and other embedded items prior to drilling holes for anchors. Do not damage existing reinforcing or embedded items during coring or drilling. Notify the structural engineer if reinforcing steel or other embedded items are encountered

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during drilling. Locate and avoid prestressed tendons, electrical and telecommunications conduit, and gas lines.

2. Do not drill holes in concrete or masonry until concrete, mortar, or grout has achieved full design strength.
3. Wedge Anchors: Protect threads from damage during anchor installation. Heavy-duty sleeve anchors shall be installed with sleeve fully engaged in the structural element to which anchor is to be fastened.
4. Adhesive Anchors: Clean holes to remove loose material and drilling dust prior to installation of adhesive. Place adhesive in holes proceeding from the bottom of the hole and progressing toward the surface in such a manner as to avoid introduction of air pockets in the adhesive.
5. Set anchors to manufacturer's recommended torque, using a torque wrench.
6. Install zinc-coated steel anchors for interior and stainless-steel anchors for exterior applications.

3.4 ACCOMMODATION OF DIFFERENTIAL SEISMIC MOTION

A. Install flexible connections in piping where they cross seismic joints, where adjacent sections or branches are supported by different structural elements, and where the connections terminate with connection to equipment that is anchored to a different structural element from the one supporting the connections as they approach equipment. Comply with requirements in Section 232113 "Hydronic Piping" for piping flexible connections.

3.5 FIELD QUALITY CONTROL

A. Testing Agency: Owner will engagea qualified testing agency to perform tests and inspections.

B. Perform tests and inspections.

C. Tests and Inspections:

1. Provide evidence of recent calibration of test equipment by a testing agency acceptable to authorities having jurisdiction.
2. Schedule test with Owner, through Architect, before connecting anchorage device to restrained component (unless postconnection testing has been approved), and with at least seven days' advance notice.
3. Obtain Architect's approval before transmitting test loads to structure. Provide temporary load-spreading members.
4. Test at least four of each type and size of installed anchors and fasteners selected by Structural Engineer of Record.
5. Test to 90 percent of rated proof load of device.
6. Measure isolator restraint clearance.
7. Measure isolator deflection.
8. Verify snubber minimum clearances.
9. Test and adjust restrained-air-spring isolator controls and safeties.

D. Remove and replace malfunctioning units and retest as specified above.

E. Prepare test and inspection reports.

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3.6 ADJUSTING

A. Adjust isolators after piping system is at operating weight.

B. Adjust limit stops on restrained-spring isolators to mount equipment at normal operating height. After equipment installation is complete, adjust limit stops so they are out of contact during normal operation.

3.7 AIR-SPRING ISOLATOR INSTALLATION

A. Independent Isolator Installation:

1. Install tank valve into each air isolator.
2. Inflate each isolator to height and pressure specified on Drawings.

B. Pressure-Regulated Isolator Installation:

1. Coordinate the constant pressure-regulated air supply to air springs with the requirements for piping and connections specified in Section 221513 "General-Service Compressed-Air Piping."
2. Connect all pressure regulators to a single dry, filtered facility compressed air supply.
3. Inflate isolators to height and or pressure specified on Drawings.

3.8 VIBRATION ISOLATION EQUIPMENT BASES INSTALLATION

A. Coordinate the location of embedded connection hardware with supported equipment attachment and mounting points and with requirements for concrete reinforcement and formwork specified in Section 033000 "Cast-in-Place Concrete."

END OF SECTION 230548

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SECTION 23 0553 - IDENTIFICATION FOR HVAC PIPING AND EQUIPMENT

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Equipment labels.
2. Warning signs and labels.
3. Warning tags.

1.3 ACTION SUBMITTALS

A. Submittals shall be formatted per Section 230000 "General Mechanical Requirements". The manufacturer shall resubmit the specification section showing compliance with each respective paragraphs and specified items and features in that particular specification section. All **exceptions** shall be clearly identified by referencing respective paragraph and other requirements. Next to each specification item, indicate the following:

1. "No Exception Taken".
2. "Exception". All exceptions shall be clearly identified by referencing respective paragraph and other requirements along with proposed alternative.

B. Product Data: For each type of product.

C. Samples: For color, letter style, and graphic representation required for each identification material and device.

D. Equipment Label Schedule: Include a listing of all equipment to be labeled with the proposed content for each label.

1.4 COORDINATION

A. Coordinate installation of identifying devices with completion of covering and painting of surfaces where devices are to be applied.

B. Coordinate installation of identifying devices with locations of access panels and doors.

C. Install identifying devices before installing acoustical ceilings and similar concealment.

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PART 2 - PRODUCTS

2.1 GENERAL

A. Manufacturers:

1. Craftmark Identification Systems
2. Seton Identification Products
3. MSI Marking Services
4. Setmark

2.2 EQUIPMENT LABELS

A. Metal Labels for Equipment:

1. Material and Thickness: Brass or anodized aluminum, 0.032-inch minimum thickness and having predrilled or stamped holes for attachment hardware.
2. Minimum Label Size: Length and width vary for required label content, but not less than 2-1/2 by 3/4 inch.
3. Minimum Letter Size: 1/4 inch for name of units if viewing distance is less than 24 inches, 1/2 inch for viewing distances up to 72 inches, and proportionately larger lettering for greater viewing distances. Include secondary lettering two-thirds to three-fourths the size of principal lettering.
4. Fasteners: Stainless-steel rivets or contact-type permanent adhesive, compatible with label and substrate.
5. Adhesive: Contact-type permanent adhesive, compatible with label and with substrate.

B. Plastic Labels for Equipment:

1. Material and Thickness: Three-layer, multicolor, plastic labels for mechanical engraving, 1/16 inch thick and having predrilled holes for attachment hardware.
2. Color Coding:
   a. Letter Color: White.
   b. Background Color: Red.
3. Maximum Temperature: Able to withstand temperatures up to 160 deg F.
4. Minimum Label Size: Length and width vary for required label content, but not less than 2-1/2 by 3/4 inch.
5. Minimum Letter Size: 1/4 inch for name of units if viewing distance is less than 24 inches, 1/2 inch for viewing distances up to 72 inches, and proportionately larger lettering for greater viewing distances. Include secondary lettering two-thirds to three-fourths the size of principal lettering.
6. Fasteners: Stainless-steel rivets or contact-type permanent adhesive, compatible with label and substrate.

C. Label Content: Include equipment's Drawing designation or unique equipment number, Drawing numbers where equipment is indicated (plans, details, and schedules), plus the Specification Section number and title where equipment is specified.

D. Equipment Label Schedule: For each item of equipment to be labeled, on 8-1/2-by-11-inch bond paper. Tabulate equipment identification number and identify Drawing numbers where equipment is indicated (plans, details, and schedules), plus the Specification Section number and title where

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equipment is specified. Equipment schedule shall be included in operation and maintenance data.

2.3 WARNING SIGNS AND LABELS

A. Material and Thickness: Multilayer, multicolor, plastic labels for mechanical engraving, 1/8 inch thick, and having predrilled holes for attachment hardware.

B. Color Coding:

1. Background Color: Yellow.
2. Letter Color: Black.

C. Maximum Temperature: Able to withstand temperatures up to 160 deg F.

D. Minimum Label Size: Length and width vary for required label content, but not less than 2-1/2 by 3/4 inch.

E. Minimum Letter Size: 1/4 inch for name of units if viewing distance is less than 24 inches, 1/2 inch for viewing distances up to 72 inches, and proportionately larger lettering for greater viewing distances. Include secondary lettering two-thirds to three-fourths the size of principal lettering.

F. Fasteners: Stainless-steel rivets or self-tapping screws.

G. Adhesive: Contact-type permanent adhesive, compatible with label and with substrate.

H. Label Content: Include caution and warning information, plus emergency notification instructions.

2.4 WARNING TAGS

A. Warning Tags: Preprinted or partially preprinted, accident-prevention tags, of plasticized card stock with matte finish suitable for writing.

1. Size: Approximately 4 by 7 inches.
2. Fasteners: Brass grommet and wire.
3. Nomenclature: Large-size primary caption such as "DANGER", "CAUTION" or "DO NOT OPERATE."
4. Color:
   a. Background Color: Yellow.
   b. Letter Color: Black.

PART 3 - EXECUTION

3.1 PREPARATION

A. Clean equipment surfaces of substances that could impair bond of identification devices, including dirt, oil, grease, release agents, and incompatible primers, paints, and encapsulants.

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3.2 GENERAL INSTALLATION REQUIREMENTS

A. Coordinate installation of identifying devices with completion of covering and painting of surfaces where devices are to be applied.

B. Coordinate installation of identifying devices with locations of access panels and doors.

C. Install identifying devices before installing acoustical ceilings and similar concealment.

3.3 EQUIPMENT LABEL INSTALLATION

A. Install or permanently fasten labels on each major item of mechanical equipment.

B. Locate equipment labels where accessible and visible.

3.4 WARNING-TAG INSTALLATION

A. Write required message on, and attach warning tags to, equipment and other items where required.

END OF SECTION 230553

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SECTION 230713 - DUCT INSULATION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section. Review these documents for coordination with additional requirements and information that apply to work under this Section

1.2 SUMMARY

A. Section includes insulating the following duct services:

1. Indoor, concealed supply and outdoor air.
2. Indoor, exposed supply and outdoor air.
3. Indoor, concealed return located in unconditioned space.
4. Indoor, exposed return located in unconditioned space.
5. Indoor, concealed, Type I, commercial, kitchen hood exhaust.
6. Indoor, exposed, Type I, commercial, kitchen hood exhaust.
7. Indoor, concealed exhaust between isolation damper and penetration of building exterior.
8. Indoor, exposed exhaust between isolation damper and penetration of building exterior.
9. Outdoor, concealed supply and return.
10. Outdoor, exposed supply and return.

B. Related Sections:

1. Section 230716 "HVAC Equipment Insulation."
2. Section 230719 "HVAC Piping Insulation."
3. Section 233113 "Metal Ducts" for duct liners.

1.3 ACTION SUBMITTALS

A. Submittals shall be formatted per Section 230000 "General Mechanical Requirements". The manufacturer shall resubmit the specification section showing compliance with each respective paragraphs and specified items and features in that particular specification section. All **exceptions** shall be clearly identified by referencing respective paragraph and other requirements. Next to each specification item, indicate the following:

1. "No Exception Taken".
2. "Exception". All exceptions shall be clearly identified by referencing respective paragraph and other requirements along with proposed alternative.

B. Product Data: For each type of product indicated. Include thermal conductivity, water-vapor permeance thickness, and jackets (both factory- and field-applied if any).

C. Sustainable Design/LEED Submittals:

1. Product Data for Credit EQ 4.1: For adhesives and sealants, including printed statement of VOC content.

D. Shop Drawings: Include plans, elevations, sections, details, and attachments to other work.

1. Detail application of protective shields, saddles, and inserts at hangers for each type of insulation and hanger.
2. Detail insulation application at elbows, fittings, dampers, specialties and flanges for each type of insulation.
3. Detail application of field-applied jackets.
4. Detail application at linkages of control devices.

1.4 INFORMATIONAL SUBMITTALS

A. Qualification Data: For qualified Installer.

B. Material Test Reports: From a qualified testing agency acceptable to authorities having jurisdiction indicating, interpreting, and certifying test results for compliance of insulation materials, sealers, attachments, cements, and jackets, with requirements indicated. Include dates of tests and test methods employed.

C. Field quality-control reports.

1.5 QUALITY ASSURANCE

A. Installer Qualifications: Skilled mechanics who have successfully completed an apprenticeship program or another craft training program certified by the Department of Labor, Bureau of Apprenticeship and Training.

B. Surface-Burning Characteristics: For insulation and related materials, as determined by testing identical products according to ASTM E 84, by a testing agency acceptable to authorities having jurisdiction. Factory label insulation and jacket materials and adhesive, mastic, tapes, and cement material containers, with appropriate markings of applicable testing agency.

1. Insulation Installed Indoors: Flame-spread index of 25 or less, and smoke-developed index of 50 or less.
2. Insulation Installed Outdoors: Flame-spread index of 75 or less, and smoke-developed index of 150 or less.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Packaging: Insulation material containers shall be marked by manufacturer with appropriate ASTM standard designation, type and grade, and maximum use temperature.

1.7 COORDINATION

A. Coordinate sizes and locations of supports, hangers, and insulation shields specified in Section 230529 "Hangers and Supports for HVAC Piping and Equipment."

B. Coordinate clearance requirements with duct Installer for duct insulation application. Before preparing ductwork Shop Drawings, establish and maintain clearance requirements for installation of insulation and field-applied jackets and finishes and for space required for maintenance.

C. Coordinate installation and testing of heat tracing.

1.8 SCHEDULING

A. Schedule insulation application after pressure testing systems. Insulation application may begin on segments that have satisfactory test results.

B. Complete installation and concealment of plastic materials as rapidly as possible in each area of construction.

PART 2 - PRODUCTS

2.1 INSULATION MATERIALS

A. Comply with requirements in "Duct Insulation Schedule, General," "Indoor Duct and Plenum Insulation Schedule," and "Aboveground, Outdoor Duct and Plenum Insulation Schedule" articles for where insulating materials shall be applied.

B. Products shall not contain asbestos, lead, mercury, or mercury compounds.

C. Products that come in contact with stainless steel shall have a leachable chloride content of less than 50 ppm when tested according to ASTM C 871.

D. Insulation materials for use on austenitic stainless steel shall be qualified as acceptable according to ASTM C 795.

E. Foam insulation materials shall not use CFC or HCFC blowing agents in the manufacturing process.

F. Mineral-Fiber Blanket Insulation: Mineral or glass fibers bonded with a thermosetting resin. Comply with ASTM C 553, Type II and ASTM C 1290, Type III with factory-applied FSK jacket. Factory-applied jacket requirements are specified in "Factory-Applied Jackets" Article.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
   a. CertainTeed Corporation; SoftTouch Duct Wrap
   b. Johns Manville; Microlite.
   c. Knauf Insulation; Friendly Feel Duct Wrap.
   d. Owens Corning; SOFTR All-service Duct Wrap.

2.2 SEALANTS

A. FSK and Metal Jacket Flashing Sealants:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

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a. Childers Brand; H. B. Fuller Construction Products.; CP-76.
b. Foster Brand; H. B. Fuller Construction Products.; 95-44.
c. Mon-Eco Industries, Inc.; 44-05
d. Eagle Bridges – Marathon Industries; 405.

2. Materials shall be compatible with insulation materials, jackets, and substrates.
3. Fire- and water-resistant, flexible, elastomeric sealant.
4. Service Temperature Range: 20 to plus 250 deg F.
5. Color: Aluminum.
6. For indoor applications, use sealants that have a VOC content of 420 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).
7. Use sealants that comply with the testing and product requirements of the California Department of Health Services' "Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers," including 2004 Addenda.

2.3 FIELD-APPLIED JACKETS

A. Field-applied jackets shall comply with ASTM C 921, Type I, unless otherwise indicated.

B. Metal Jacket:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
   a. Childers.
   b. ITW Insulation Systems; Illinois Tool Works, Inc.
   c. RPR Products, Inc.

2. Aluminum Jacket: Comply with ASTM B 209, Alloy 3003, 3005, 3105, or 5005, Temper H-14.
   a. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:
      1) Childers Brand, Specialty Construction Brands, Inc., a business of H. B. Fuller Company; Metal Jacketing Systems.
      2) ITW Insulation Systems; Aluminum and Stainless Steel Jacketing.
      3) RPR Products, Inc.; Insul-Mate.

3. Factory cut and rolled to size.
4. Finish and thickness are indicated in field-applied jacket schedules.
   a. Moisture Barrier for Indoor Applications: 3-mil- thick, heat-bonded polyethylene and kraft paper.
   b. Moisture Barrier for Outdoor Applications: 2.5-mil- thick polysurlyn.

2.4 TAPES

A. FSK Tape: Foil-face, vapor-retarder tape matching factory-applied jacket with acrylic adhesive; complying with ASTM C 1136.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
   a. Compac Corporation; 110 and 111.
   b. ABI, Ideal Tape Division; 491 AWF FSK.

c. Venture Tape; 1525 CW NT, 1528 CW, and 1528 CW/SQ.
d. Avery Dennison Corporation, Specialty Tapes Division; Fasson 0827.

2. Width: 3 inches.
3. Thickness: 6.5 mils.
4. Adhesion: 90 ounces force/inch in width.
5. Elongation: 2 percent.
6. Tensile Strength: 40 lbf/inch in width.
7. FSK Tape Disks and Squares: Precut disks or squares of FSK tape.

2.5 SECUREMENTS

A. Bands:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
   a. ITW Insulation Systems; Illinois Tool Works, Inc.; Gerrard Strapping and Seals.
   b. RPR Products, Inc.; Insul-Mate Strapping, Seals, and Springs.

2. Aluminum: ASTM B 209, Alloy 3003, 3005, 3105, or 5005; Temper H-14, 0.020 inch thick, 3/4 inch wide with wing seal or closed seal.

3. Springs: Twin spring set constructed of stainless steel with ends flat and slotted to accept metal bands. Spring size determined by manufacturer for application.
4. Self-Sticking-Base Insulation Hangers: Baseplate welded to projecting spindle that is capable of holding insulation, of thickness indicated, securely in position indicated when self-locking washer is in place. Comply with the following requirements:
   a. Midwest Fasteners or approved equal.
   b. Baseplate: Galvanized carbon-steel sheet, 0.030 inch thick by 2 inches square.
   c. Spindle: Zinc-coated, low-carbon steel, fully annealed, 0.106-inch- diameter shank, length to suit depth of insulation indicated.
   d. Adhesive-backed base with a peel-off protective cover.

5. Insulation-Retaining Washers: Self-locking washers formed from 0.016-inch- thick, galvanized-steel sheet, with beveled edge sized as required to hold insulation securely in place but not less than 1-1/2 inches in diameter.

B. Wire: 0.062-inch soft-annealed, stainless steel.

1. Manufacturers: Subject to compliance with requirements, provide product by:
   a. C & F Wire, or equal.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates and conditions for compliance with requirements for installation tolerances and other conditions affecting performance of insulation application.

1. Verify that systems to be insulated have been tested and are free of defects.
2. Verify that surfaces to be insulated are clean and dry.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Surface Preparation: Clean and dry surfaces to receive insulation. Remove materials that will adversely affect insulation application.

3.3 GENERAL INSTALLATION REQUIREMENTS

A. Install insulation materials, accessories, and finishes with smooth, straight, and even surfaces; free of voids throughout the length of ducts and fittings.

B. Install insulation materials, vapor barriers or retarders, jackets, and thicknesses required for each item of duct system as specified in insulation system schedules.

C. Install accessories compatible with insulation materials and suitable for the service. Install accessories that do not corrode, soften, or otherwise attack insulation or jacket in either wet or dry state.

D. Install insulation with longitudinal seams at top and bottom of horizontal runs.

E. Install multiple layers of insulation with longitudinal and end seams staggered.

F. Keep insulation materials dry during application and finishing.

G. Install insulation with tight longitudinal seams and end joints. Bond seams and joints with adhesive recommended by insulation material manufacturer.

H. Install insulation with least number of joints practical.

I. Where vapor barrier is indicated, seal joints, seams, and penetrations in insulation at hangers, supports, anchors, and other projections with vapor-barrier mastic.

1. Install insulation continuously through hangers and around anchor attachments.
2. For insulation application where vapor barriers are indicated, extend insulation on anchor legs from point of attachment to supported item to point of attachment to structure. Taper and seal ends at attachment to structure with vapor-barrier mastic.
3. Install insert materials and install insulation to tightly join the insert. Seal insulation to insulation inserts with adhesive or sealing compound recommended by insulation material manufacturer.

J. Apply adhesives, mastics, and sealants at manufacturer's recommended coverage rate and wet and dry film thicknesses.

K. Install insulation with factory-applied jackets as follows:

1. Draw jacket tight and smooth.
2. Cover circumferential joints with 3-inch- wide strips, of same material as insulation jacket. Secure strips with adhesive and outward clinching staples along both edges of strip, spaced 4 inches o.c.
3. Overlap jacket longitudinal seams at least 1-1/2 inches. Clean and dry surface to receive self-sealing lap. Staple laps with outward clinching staples along edge at 2 inches o.c.
   a. For below ambient services, apply vapor-barrier mastic over staples.

4. Cover joints and seams with tape, according to insulation material manufacturer's written instructions, to maintain vapor seal.
5. Where vapor barriers are indicated, apply vapor-barrier mastic on seams and joints and at ends adjacent to duct flanges and fittings.

L. Cut insulation in a manner to avoid compressing insulation more than 75 percent of its nominal thickness.

M. Finish installation with systems at operating conditions. Repair joint separations and cracking due to thermal movement.

N. Repair damaged insulation facings by applying same facing material over damaged areas. Extend patches at least 4 inches beyond damaged areas. Adhere, staple, and seal patches similar to butt joints.

3.4 PENETRATIONS

A. Insulation Installation at Roof Penetrations: Install insulation continuously through roof penetrations.

1. Seal penetrations with flashing sealant.
2. For applications requiring only indoor insulation, terminate insulation above roof surface and seal with joint sealant. For applications requiring indoor and outdoor insulation, install insulation for outdoor applications tightly joined to indoor insulation ends. Seal joint with joint sealant.
3. Extend jacket of outdoor insulation outside roof flashing at least 2 inches below top of roof flashing.
4. Seal jacket to roof flashing with flashing sealant.

B. Insulation Installation at Aboveground Exterior Wall Penetrations: Install insulation continuously through wall penetrations.

1. Seal penetrations with flashing sealant.
2. For applications requiring only indoor insulation, terminate insulation inside wall surface and seal with joint sealant. For applications requiring indoor and outdoor insulation, install insulation for outdoor applications tightly joined to indoor insulation ends. Seal joint with joint sealant.
3. Extend jacket of outdoor insulation outside wall flashing and overlap wall flashing at least 2 inches.
4. Seal jacket to wall flashing with flashing sealant.

C. Insulation Installation at Interior Wall and Partition Penetrations (That Are Not Fire Rated): Install insulation continuously through walls and partitions.

D. Insulation Installation at Fire-Rated Wall and Partition Penetrations: Terminate insulation at fire damper sleeves for fire-rated wall and partition penetrations. Externally insulate damper sleeves to match adjacent insulation and overlap duct insulation at least 2 inches.

1. Comply with requirements in Section 078413 "Penetration Firestopping."

E. Insulation Installation at Floor Penetrations:

1. Duct: For penetrations through fire-rated assemblies, terminate insulation at fire damper sleeves and externally insulate damper sleeve beyond floor to match adjacent duct insulation. Overlap damper sleeve and duct insulation at least 2 inches.
2. Seal penetrations through fire-rated assemblies. Comply with requirements in Section 078413 "Penetration Firestopping."

3.5 INSTALLATION OF MINERAL-FIBER INSULATION

A. Blanket Insulation Installation on Ducts and Plenums: Secure with adhesive and insulation pins.

1. Apply adhesives according to manufacturer's recommended coverage rates per unit area, for 50 percent coverage of duct and plenum surfaces.

2. Apply adhesive to entire circumference of ducts and to all surfaces of fittings and transitions.
3. Install either capacitor-discharge-weld pins and speed washers or cupped-head, capacitor-discharge-weld pins on sides and bottom of horizontal ducts and sides of vertical ducts as follows:
   a. On duct sides with dimensions 18 inches and smaller, place pins along longitudinal centerline of duct. Space 3 inches maximum from insulation end joints, and 16 inches o.c.
   b. On duct sides with dimensions larger than 18 inches, place pins 16 inches o.c. each way, and 3 inches maximum from insulation joints. Install additional pins to hold insulation tightly against surface at cross bracing.
   c. Pins may be omitted from top surface of horizontal, rectangular ducts and plenums.
   d. Do not over compress insulation during installation.
   e. Impale insulation over pins and attach speed washers.
   f. Cut excess portion of pins extending beyond speed washers or bend parallel with insulation surface. Cover exposed pins and washers with tape matching insulation facing.

4. For ducts and plenums with surface temperatures below ambient, install a continuous unbroken vapor barrier. Create a facing lap for longitudinal seams and end joints with insulation by removing 2 inches from one edge and one end of insulation segment. Secure laps to adjacent insulation section with 1/2-inch outward-clinching staples, 1 inch o.c. Install vapor barrier consisting of factory- or field-applied jacket, adhesive, vapor-barrier mastic, and sealant at joints, seams, and protrusions.
   a. Repair punctures, tears, and penetrations with tape or mastic to maintain vapor-barrier seal.
   b. Install vapor stops for ductwork and plenums operating below 50 deg F at 18-foot intervals. Vapor stops shall consist of vapor-barrier mastic applied in a Z-shaped pattern over insulation face, along butt end of insulation, and over the surface. Cover insulation face and surface to be insulated a width equal to two times the insulation thickness, but not less than 3 inches.

5. Overlap un-faced blankets a minimum of 2 inches on longitudinal seams and end joints. At end joints, secure with steel bands spaced a maximum of 18 inches o.c.
6. Install insulation on rectangular duct elbows and transitions with a full insulation section for each surface. Install insulation on round and flat-oval duct elbows with individually mitered gores cut to fit the elbow.
7. Insulate duct stiffeners, hangers, and flanges that protrude beyond insulation surface with 6-inch- wide strips of same material used to insulate duct. Secure on alternating sides of stiffener, hanger, and flange with pins spaced 6 inches o.c.

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3.6 FIELD-APPLIED JACKET INSTALLATION

A. Where FSK jackets are indicated, install as follows:

1. Draw jacket material smooth and tight.
2. Install lap or joint strips with same material as jacket.
3. Secure jacket to insulation with manufacturer's recommended adhesive.
4. Install jacket with 1-1/2-inch laps at longitudinal seams and 3-inch- wide joint strips at end joints.
5. Seal openings, punctures, and breaks in vapor-retarder jackets and exposed insulation with vapor-barrier mastic.

B. Where metal jackets are indicated, install with 2-inch overlap at longitudinal seams and end joints. Overlap longitudinal seams arranged to shed water. Seal end joints with weatherproof sealant recommended by insulation manufacturer. Secure jacket with stainless-steel bands 12 inches o.c. and at end joints.

3.7 FINISHES

A. Insulation with ASJ, or Other Paintable Jacket Material: Paint jacket with paint system identified below and as specified in Section 099113 "Exterior Painting" and Section 099123 "Interior Painting."

1. Flat Acrylic Finish: Two finish coats over a primer that is compatible with jacket material and finish coat paint. Add fungicidal agent to render fabric mildew proof.
   a. Finish Coat Material: Interior, flat, latex-emulsion size.

B. Color: Final color as selected by Architect. Vary first and second coats to allow visual inspection of the completed Work.

C. Do not field paint aluminum or stainless-steel jackets.

3.8 DUCT INSULATION SCHEDULE, GENERAL

A. Plenums and Ducts Requiring Insulation:

1. Outdoor, concealed supply and return.
2. Outdoor, exposed supply and return.

B. Items Not Insulated:

1. Metal ducts with duct liner of sufficient thickness to comply with Title 24 energy code.
2. Metal ducts located in conditioned spaces.
3. Factory-insulated flexible ducts.
4. Factory-insulated plenums and casings.
5. Flexible connectors.
6. Vibration-control devices.
7. Factory-insulated access panels and doors.

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3.9 OUTDOOR, FIELD-APPLIED JACKET SCHEDULE

A. Install jacket over insulation material. For insulation with factory-applied jacket, install the field-applied jacket over the factory-applied jacket.

B. Ducts and Plenums, Exposed, up to 48 Inches in Diameter or with Flat Surfaces up to 72 Inches:

1. Aluminum,Smooth 0.024 inch thick.
2. Painted Aluminum, Smooth 0.024 inch thick.

C. Ducts and Plenums, Exposed, Larger Than 48 Inches in Diameter or with Flat Surfaces Larger Than 72 Inches:

1. Painted Aluminum with 2-1/2-Inch- Deep Corrugations 0.040 inch thick.

END OF SECTION 230713

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SECTION 23 09 00 - INSTRUMENTATION AND CONTROL FOR HVAC – BUILDING AUTOMATION SYSTEM

PART 1 - GENERAL

1.1 DESCRIPTION:

A. The intent of this document is to describe a system that is complete in every respect without further cost to the Owner. Anything not shown on the drawings or indicated in the specifications, and required for complete operating systems, shall be included as part of this Work. This will also include all connections to new services.

B. All parts of the plans and specifications fully apply when applicable to the work of this Division. No attempt has been made to divide the work between the various trades or subcontractors.

1.2 CONTROL CONTRACTOR QUALIFICATIONS:

A. Controls contractor shall be a currently authorized **Honeywell WEB-N4 TCPRO** certified dealer at time of bid. Certifications shall be submitted with bid. No Exceptions. Contractor shall provide certificate from the local HW ASD distributor, stating authorization of installing such systems in this geographic area. No Exceptions. Contractor shall have a minimum of five networked systems with proposed manufactures product already installed within a 100-mile radius of project site.

B. The manufacturers authorized **Honeywell ASD distributor** for this geographical territory shall approve all programming algorithms.

C. Mechanical contractor shall assume full responsibility for accepting bids from contractors meeting this qualification.

1.3 CONDUIT AND WIRING

A. Control Contractor shall provide and install all low voltage conduit and wiring for DDC system as required for a complete and operating system. Conduit and wiring shall conform to Division 16 requirements.

1.4 CODES, STANDARDS, ORDINANCES AND REGULATIONS:

A. All work and materials shall be in full accordance with the latest rules and regulations of applicable codes as amended and adopted by any governmental agency which has jurisdiction over this work. Nothing in these Plans or Specifications is to be construed to permit work not conforming to these codes. Should the Plans or Specifications call for material, methods, or construction of a higher quality or standard than required by the above rules, the higher quality shall govern.

B. When not contradicting the above, the manufacturers' recommendations along with applicable parts of the following documents shall be the basis for quality and technique of installation.

1. Title 24, California Administrative Code, all parts.

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2. Applicable publications of the National Fire Protection Association (NFPA), and the National Electrical Code (NEC).
3. Applicable publications of the American Society of Heating, Refrigerating and Air Conditioning Engineers, Inc. (ASHRAE).

1.5 SITE CONDITIONS AND LOCATIONS:

A. The general location and arrangement of system hardware is shown on the drawings. Information on the drawings relative to existing services is approximate only. Minor adjustments required to conform to actual locations shall be made without additional cost to Owner. The Contractor shall, as work progresses, verify the dimensions of the spaces available for the installation of the work and he shall assume full responsibility for the proper locations of each portion thereof.

B. The construction documents are generally diagrammatic, and the locations indicated may be approximate only. They do not show every offset, bend, or elbow required for installation in the space provided. The Contractor, therefore, shall install all equipment, conduit runs and the like as follows:

1. Adhere to the location indicated as near as possible.
2. Maintain ample head room and access in all passageways, clearance around all equipment and under conduit runs for unrestricted passage and for easy servicing of all apparatus, equipment, devices and the like.
3. Provide access for maintenance of all equipment.

1.6 QUALITY ASSURANCE

A. Controls Contractor must be factory trained, with a minimum of five continuous years of experience with Honeywell installation as a WEB-N4 TCPRO. Controls Contractor must have a minimum of five Honeywell installations in Municipalities in the State of California. Only Dealers located within 75 miles of the County of Santa Barbara will qualify.

B. Controls Contractor must submit proof in writing of his/her experience and qualifications above.

1. DDC Controls must communicate directly with the existing Honeywell WEB's N4, Honeywell WEB's AX controls and Trend Controls and will be compatible with the existing County of Santa Barbara Software.
2. Controls contractor to provide graphics and programming to allow monitoring of both Trend Controls and Honeywell WEB's N4 on the existing County's Server. Both controller generations will coexist on each graphics page as one campus wide system. In addition to Honeywell, Contractor will be an authorized Trend Control dealer.
3. Controls Contractor must be factory trained, with a minimum of five continuous years of experience with Honeywell installation as an authorized dealer. Employees working for, or subcontracted to the Contractor do not qualify the Controls Contractor. Controls Contractor must have a minimum of five Honeywell installations Municipalities in the State of California.
4. Controls Contractor must submit proof in writing of his/her experience and qualifications above.
5. The Control System Contractor shall have a full service DDC office within 75 miles of the job site. It is preferable that multiple contractor bids using the same manufacturer be provided. The office shall be staffed with applications engineers, software engineers and field technicians. This office shall maintain parts inventory and shall have all testing and

diagnostic equipment necessary to support this work, as well as staff trained in the use of this equipment.

6. Single Source Responsibility of Supplier: The Control System Contractor shall be responsible for the complete installation and proper operation of the control system. The Control System Contractor shall exclusively be in the regular and customary business of design, installation and service of computerized building management systems similar in size and complexity to the system specified. The Control System Contractor shall be the manufacturer of the primary DDC system components or shall have been the authorized representative for the primary DDC components manufacturer for at least 5 years.
7. Equipment and Materials: Equipment and materials shall be cataloged products of manufacturers regularly engaged in the production and installation of HVAC control systems. Products shall be manufacturer's latest standard design and have been tested and proven in actual use.

1.7 SUBMITTALS

A. Control Submittal: Within **30 calendar days** after award of the contract, and before any materials of this Section are delivered to the job site, submit:

1. Complete materials and equipment list with manufacturers' literature on all items proposed to be furnished and installed under this Section and the General Conditions.
2. Product data submittals must be complete and in a single bound document for all items supplied in this Division. Each document shall be bound with an index and marked with the equipment identification as specified in the Plans and Specifications.
3. Provide complete control shop drawing including equipment, control devices, point to point connections with terminal numbers, and any details necessary for a complete control drawing.
4. List of name plates to be engraved, showing each name plate wording and location.

B. Record Documents:

1. During progress of the work, maintain an accurate record of all changes made in the systems from those shown on the drawings, specifications and submittals.
2. Revise Shop Drawings and provide on reproducible media.

C. Owner's Manual: Upon completion of the work, a complete bound book containing the following information shall be submitted to the Architect:

1. Complete catalog and performance data on all control devices, including all documents included in submittals.
2. Complete manufacturers' operating and maintenance instructions on all control devices.
3. Complete wiring and control diagrams for all equipment and systems, including list of materials, description of operation and system flow diagrams.
4. Manufacturers' warranty certificates on all equipment.
5. Contractor's warrantee letter.

1.8 OPERATION

A. The Owner may require operation of parts or all of the installation for beneficial occupancy prior to final acceptance.

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1.9 GUARANTEE

A. The Contractor shall warrant in writing all work performed under this contract for a period of one year from the date of notice of completion.

B. When notified of a system failure relating to the work performed under this contract, the contractor will be responsible for all investigations, diagnoses, repair, revision or replacement necessary to correct the condition.

C. Contractor to provide a 4 hour response for all service during warranty period.

D. Provide all services, materials, and equipment necessary for the successful operation of the entire BAS after acceptance by the Client and provide hardware and software upgrade support during that period that corresponds with any upgrades performed by the BAS Contractor Systems Integrator.

E. Upon discovery of any defects in the work provided under this section due to faulty materials, methods of installation or workmanship shall be promptly repaired or replaced. Systems or parts found defective shall be provided and installed at no cost to the Client by the BAS Contractor including, but not limited to:

1. Building Controls System Server software, project-specific software, graphic software, database software, and firmware updates that resolve known software deficiencies, as identified by the Contractor or the Client, shall be provided, and installed at no charge during the warranty period.
2. Contractor to apply all software updates and security patches immediately as they become available, from the start of the project until the end of the warranty period.
3. All corrective software modifications made during the warranty period shall be updated on all user documentation and on user and manufacturer archived software disks.
4. All parts shall be replaced with the exact products. If exact parts are not available, then the equivalency determination rests with the Client.

F. During warranty period, provide quarterly Preventative Maintenance checks (allow 4 hours per visit).

1. Contractor shall provide quarterly Preventive Maintenance checks report to the District maintenance manager after each visit.
2. Contractor to provide maintenance schedule with close out documents and shall include:
   a. Date and time
   b. Must coordinate for site access with District at least one week in advance

G. At the end of the warranty period, Contractor shall ensure every instance of software has the latest software maintenance release installed.

H. Expiration of the warranty period does not relieve Contractor of the responsibility for correcting all deficiencies identified during the warranty period. Expiration of the warranty period does not relieve Contractor of the responsibility for fulfilling all specified obligations during warranty period.

1.10 MAINTENANCE AGREEMENT

A. The Contractor shall provide a maintenance agreement for a minimum of 5 years. During this period, the following should be provided:

1. Building Controls System Server software, project-specific software, graphic software, database software, and firmware updates that resolve known software deficiencies, as identified by the Contractor or Client, shall be provided and installed during the maintenance agreement period.
2. Contractor to apply all software updates and security patches immediately as they become available, from the start of the project until the end of the maintenance agreement period.
3. All corrective software modifications made during the maintenance period shall be updated on all user documentation and on user and manufacturer archived software disks.
4. All parts shall be replaced with the exact products. If exact parts are not available, then the equivalency determination rests with the Client.

1.11 CYBERSECURITY REQUIREMENTS

A. The Contractor should adhere to the County of Santa Barbara Information and Technology Department (ITD) standards for installing the control systems. Refer to the website listed below for the latest ITD requirements. Any work that needs to connect to the County of Santa Barbara network shall be coordinated with ITD. A copy of the information listed in this website is provided in Part 4 of this specification.

1. https://www.countyofsb.org/3993/Cybersecurity-Requirements-for-IT-Purcha

PART 2 - PRODUCTS

2.1 GENERAL PRODUCT DESCRIPTION

A. The **Building Automation System (BAS)** shall be capable of integrating multiple building functions, including equipment supervision and control, alarm management, energy management, and trend data collection. System shall be **Honeywell HON-9000 N4** web-based supervisory controller with **Honeywell Optimizer** controllers. Programming of the **HON-9000 N4** and creating all required dynamic graphics shall be included in this section.

1. The **BAS** shall consist of the following:
   a. Local Display Devices.
   b. Distributed User Interfaces
   c. Network processing, data storage and communications equipment
   d. DC Controllers (HVAC etc)
   e. Five year SMA (Software Maintenance Agreement) on HON-9000.
   f. HON-9000 shall be licenced for the amount of devices on this project plus 15.

2. The system shall be modular in nature, and shall permit expansion of both capacity and functionality through the addition of sensors, actuators, ASCs, and operator devices.
3. System architectural design shall eliminate dependence upon any single device for alarm generation and control execution. The failure of any single component or network connection shall not interrupt the execution of control strategies at other operational devices.
4. Acceptable Systems
   a. Honeywell HON-9000 N4. No Exceptions

2.2 BAS ARCHITECTURE

A. Automation Network

1. The system shall be capable of supporting an unlimited number of clients using standard Web browser such as Internet Explorer™, Google Chrome™, or Mozilla Firefox™. Systems requiring additional software (to enable a standard Web browser) to be resident on the client machine, or manufacture-specific browsers shall not be acceptable.
2. The BAS shall network multiple user interface clients, system controllers and systems supervisors(s) as required for systems operation.
3. The automation network option shall be capable of operating at a communication speed of 100 Mbps.
4. The automation network option will be compatible with other enterprise-wide networks. Where indicated, the automation network shall be connected to the enterprise network and share resources with it by way of standard networking devices and practices.

B. Control Network

1. Control networks shall provide either "Peer-to-Peer," Master-Slave, or Supervised Token Passing communications, and shall operate at a minimum communication speed of 57600 baud.
2. HW Optimizer Digital Controllers shall reside on the control network. No ILC Devices Allowed
3. TR-71 Room sensors as standard.

C. Integration

1. Hardwired
   a. Analog and digital signal values shall be passed from one system to another via hardwired connections.
   b. There will be one separate physical point on each system for each point to be integrated between the systems.

2. Direct Protocol (Integrator Panel)
   a. The BAS system shall include appropriate hardware equipment and software to allow bi-directional data communications between the BAS system and 3rd party manufacturers' control panels. The BAS shall receive, react to, and return information from multiple building systems, including but not limited to the chillers, boilers, variable frequency drives, power monitoring system, and medical gas. All systems shall be located under the Dashboard.
   b. All data required by the application shall be mapped into the BAS system, and shall be transparent to the operator.
   c. Point inputs and outputs from the controllers shall have real-time interoperability with BAS software features such as: Control Software, Energy Management, Custom Process Programming, Alarm Management, Historical Data and Trend Analysis, Totalization, and Local Area Network Communications.

2.3 USER INTERFACE

A. Browser Based Interface

1. The system shall be capable of supporting an unlimited number of clients using standard Web browser such as Internet Explorer™, Google Chrome™, or Mozilla Firefox™. Systems

requiring additional software (to enable a standard Web browser) to be resident on the client machine, or manufacture-specific browsers shall not be acceptable.

2. The system shall be capable of supporting an unlimited number of clients using standard Web browser such as Internet Explorer™, Google Chrome™, or Mozilla Firefox™. Systems requiring additional software (to enable a standard Web browser) to be resident on the client machine, or manufacture-specific browsers shall not be acceptable.
3. The Web browser software shall run on any operating system and system configuration that is supported by the Web browser. Systems that require specific machine requirements in terms of processor speed, memory, etc., in order to allow the Web browser to function with the **Building Automation System (BAS)**, shall not be acceptable.
4. The Web browser client shall support at a minimum, the following functions:
   a. User log-on identification and password shall be required. If an unauthorized user attempts access, notice of access failure shall be displayed. Security using authentication and encryption techniques to prevent unauthorized access shall be implemented.
   b. HTML programming shall not be required to display system graphics or data on a Web page. HTML editing of the Web page shall be allowed if the user desires a specific look or format.
   c. Storage of the graphical screens shall be in the Network Area Controller (NAC), without requiring any graphics to be stored on the client machine. Systems that require graphics storage on each client are not acceptable.
   d. Real-time values displayed on a Web page shall update automatically without requiring a manual "refresh" of the Web page.
   e. Users shall have administrator-defined access privileges. Depending on the access privileges assigned, the user shall be able to perform the following:
      1) Modify common application objects, such as schedules and setpoints in a graphical manner.
      2) Commands binary objects to start and stop.
      3) View logs and charts.
      4) View alarms.
   f. Graphic screens on the Web Browser client shall support hypertext links to other locations on the Internet or on Intranet sites, by specifying the Uniform Resource Locator (URL) for the desired link.

5. Alarms
   a. Alarm features shall allow user configuration of criteria to create, route, and manage alarms and events. It shall be possible for specific alarms from specific points to be routed to specific alarm recipients. The alarm management portion of the user interface shall, at the minimum, provide the following functions:
      1) Allow configuration to generate alarms on any numeric, binary, or data point in the system.
      2) Generate alarm records that contain a minimum of a timestamp, original state, acknowledged state, alarm class and priority.
      3) Allow the establishment of alarm classes that provide the routing of alarms with similar characteristics to common recipients.
      4) Allow a user, with the appropriate security level, to manage alarms - including sorting, acknowledging, and tagging alarms.

6. Reports and Summaries
   a. Reports and Summaries shall be generated and directed to the user interface displays, with subsequent assignment to printers, or disk. As a minimum, the system shall provide the following reports:
      1) All points in the BAS
      2) All points in each BAS application
      3) All points in a specific controller

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4) All points in a user-defined group of points
5) All points currently in alarm
6) All BAS schedules
7) All user defined and adjustable variables, schedules, interlocks and the like.

b. Reports shall be exportable to .pdf, .txt, or .csv formats.
c. The system shall allow for the creation of custom reports and queries.

7. Schedules
   a. A graphical display for time-of-day scheduling and override scheduling of building operations shall be provided. At a minimum, the following functions shall be provided:
      1) Regular schedules
      2) Repeating schedules
      3) Exception schedules
      a. Weekly schedules shall be provided for each group of equipment with a specific time use schedule.
      b. It shall be possible to define one or more exception schedules for each schedule including references to calendars.
      c. Monthly calendars shall be provided that allow for simplified scheduling of holidays and special days. Holidays and special days shall be user-selected with the pointing device or keyboard.

8. Password
   a. Multiple-level password access protection shall be provided to allow the user/manager to user interface control, display, and database manipulation capabilities deemed appropriate for each user, Based on an assigned password.
   b. Each user shall have the following: a username, a password, and access levels.
   c. The system shall provide the capability to require a password of minimum length and require a combination of characters and numerical or special characters.
   d. When entering or editing passwords, the system shall not echo the actual characters for display on the monitor.
   e. The system shall provide unlimited flexibility with access rights. A minimum of four levels of access shall be provided along with the ability to customize the system to provide additional levels.
   f. A minimum of 100 unique passwords shall be supported.
   g. Operators shall be able to perform only those commands available for their respective passwords. Display of menu selections shall be limited to only those items defined for the access level of the password used to log-on.
   h. The system shall automatically generate a report of log-on/log-off and system activity for each user.
   i. All log data shall be available in .pdf, .txt, and .csv formats.

9. Dynamic Color Graphics
   a. The graphics application program shall be supplied as an integral part of the User Interface.
   b. The graphics applications shall include a create/edit function and a runtime function. The system architecture shall support an unlimited number of graphics documents (graphic definition files) to be generated and executed.
   c. The graphics shall be able to display real-time data that is acquired, derived, or entered.
   d. Graphics runtime functions –Each graphic application shall be capable of the following functions:
   e. All graphics shall be fully scalable.

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f. The graphics shall support a maintained aspect ratio.
g. Multiple fonts shall be supported.
h. Unique background shall be assignable on a per graphic basis.
i. Operation from graphics – It shall be possible to change values (setpoints) and states in systems controlled equipment within the Web browser interface.
j. Graphic editing tool – A graphic editing tool shall be provided that allows for the creation and editing of graphic files. The graphic editor shall be capable of performing/defining all runtime binding.

10. Historical Data Collection
    a. All numeric, binary or data points in the system database shall allow their values to be logged over time (trend log). Each historical record shall include the point's name, a time stamp including time zone, and the point's value.
    b. The Network Area Controller (NAC) shall have the ability to store its historical data records locally and periodically to a remote server on the network (archiving).
    c. The configuration of the historical data collection shall allow for recording data based on change of value or on a user-defined time interval.
    d. The configuration of the historical data collection shall allow for the collection process to stop or rollover when capacity has been reached.
    e. A historical data viewing utility shall be provided with access to all history records. This utility shall allow historical data to be viewed in a table or chart format.
    f. The history data table view shall allow the user to hide/show columns and to filter data based on time and date. The history data table shall allow exporting to .txt, .csv, or .pdf file formats.
    g. The historical data chart view shall allow different point histories to be displayed simultaneously, and also provide panning and zooming capabilities.

11. Audit Log
    a. For each log entry, provide the following data:
        1) Time and date.
        2) User ID
        3) Change or activity: i.e., Change setpoint, add or delete objects, commands, etc.

12. Database Backup and Storage
    a. The user shall have the ability to backup the System Controller databases.

13. Portable Operator Terminal (not applicable)
    a. The BAS Contractor shall provide a portable operator terminal for programming purposes. The terminal shall be configured as follows:
        1) Personal Laptop Computer
        2) 512 MB RAM (minimum) - Windows XP.
        3) SVGA 1024x768 resolution color display.
        4) Complete workstation software packages, including any hardware or software.
        5) Software registration cards for all included software shall be provided to the Owner.
            a) External power supply/battery charger.
    b. Software:
        1) Portable operator terminals shall support all controllers (Local and Supervisory) within the system on a direct-connect communications basis.
        2) When used to access First or Second Tier controllers, the portable operator terminal shall utilize the standard operator workstation software, as previously defined.

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3) When used to access Application Specific Controllers, the portable operator terminal shall utilize either the standard operator workstation software, as previously defined, or controller-specific utility software.

2.4 AUTOMATION NETWORK

A. Network Server

1. A central server is existing. The server shall support all Network Area Controllers (NAC) connected to the customer's network whether local or remote.
2. Server Hardware Requirements: The server hardware platform shall have the following requirements:
   a. Licensing for additional HON-9000
   b. JACE Controllers shall be included in this project.
   c. Connection to the FMCS network shall be via an Ethernet network interface card, 100 Mbps.
3. Local connections shall be via an Ethernet LAN.
4. It shall be possible to provide access to all Network Area Controllers via a single connection to the server. In this configuration, each Network Area Controller can be accessed from the Graphical User Interface (GUI) or from a standard Web browser (WBI) by connecting to the server.
5. The server shall provide the following functions, at a minimum:
   a. Global Data Access: The server shall provide complete access to distributed data defined anywhere in the system.
   b. Distributed Control: The server shall provide the ability to execute global control strategies based on control and data objects in any NAC in the network, local or remote.
   c. The server shall include a master clock service for its subsystems and provide time synchronization for all Network Area Controllers (NAC).
   d. The server shall accept time synchronization messages from trusted precision Atomic Clock Internet sites and update its master clock based on this data.
   e. The server shall provide scheduling for all Network Area Controllers and their underlying field control devices.
   f. The server shall provide demand limiting that operates across all Network Area Controllers. The server must be capable of multiple demand programs for sites with multiple meters and or multiple sources of energy. Each demand program shall be capable of supporting separate demand shed lists for effective demand control.
   g. The server shall implement the BACnet Command Prioritization scheme (16 levels) for safe and effective contention resolution of all commands issued to Network Area Controllers. Systems not employing this prioritization shall not be accepted.
   h. Each Network Area Controller supported by the server shall have the ability to archive its log data, alarm data and database to the server, automatically. Archiving options shall be user-defined including archive time and archive frequency.
   i. The server shall provide central alarm management for all Network Area Controllers supported by the server. Alarm management shall include:
      1) Routing of alarms to display, printer, email and email compatible pagers
      2) View and acknowledge of alarms
      3) Query alarm logs based on user-defined parameters
   j. The server shall provide central management of log data for all Network Area Controllers supported by the server. Log data shall include process logs, runtime and event counter logs, audit logs and error logs.

B. Network Area Controller (NAC)

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1. The NAC must provide the following hardware features as a minimum:
   a. Communications
      1) Three 10/100 Mb Ethernet Port – RJ-45 connection
      2) One RS-232 port
      3) One RS-485 port (up to 57,600 baud.)
      4) Optional internal auto-dial/auto-answer 56K modem (uses the RS-232 port when installed) – Use for remote dial-in.
      5) All required protocol drivers are included. Lon and BACnet shall be resident as standard without additional costs or additional hardware or gateways.
   b. Inputs/Outputs
      1) Four form C SPDT relay outputs rated for 24 VAC/DC @ 2Amps resistive each with individual LED indicators
      2) Six Universal Inputs for 10K NYC, 4-20 mA, 1-10 V, Dry contact
   c. Battery Backup
      1) Battery backup provided for all on board functions including I/O
      2) Battery is monitored and trickle charged
      3) Battery maintains processor operation through power failures for a pre-determined interval, and then writes all data to flash memory, shuts the processor down, and maintains the clock for five years.
   d. Environment
      1) Must be capable of operation over a temperature range of 0°C to 55°C.
      2) Must be capable of withstanding storage temperatures of between 0°C and 70°C.
      3) Must be capable of operation over a humidity range of 5% to 95% RH, non-condensing.
   e. Performance
      1) Supports up to 100 devices.

2. The Network Area Controller (NAC) shall be a fully user-programmable device capable of providing all of the capability described in Section 2.3 Part A.
3. Automation network – The Network Area Controller (NAC) shall reside on the automation network. Each NAC shall support one or more sub-networks of controllers.
4. User Interface – Each Network Area Controller (NAC) shall have the ability to deliver a web based user interface as previously described. All computers connected physically or virtually to the automation network shall have access to the web based UI.
5. Power Failure – In the event of the loss of normal power, The Network Area Controller (NAC) shall continue to operate for a define period after which there shall be an orderly shutdown of all programs to prevent the loss of database or operating system software. Flash memory shall be incorporated for all critical controller configuration data.
   a. During a loss of normal power, the control sequences shall go to the normal system shutdown conditions.
   b. Upon restoration of normal power and after a minimum off-time delay, the controller shall automatically resume full operation without manual intervention through a normal soft-start sequence.
   c. Certification – All controllers shall be listed by Underwriters Laboratories (UL).

C. Network Area Controllers (NACs)

1. The NAC must provide the following hardware features as a minimum:
   a. Communications:
      1) One 10/100 Mb Ethernet Port – RJ-45 connection
      2) One RS-232 port
      3) Three RS-485 port (up to 57,600 baud)
      4) All required protocol drivers are included.
   b. Inputs/Outputs

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1) Four form C SPDT relay outputs rated for 24 VAC/DC @ 2Amps resistive each with individual LED indicators
2) Six Universal Inputs for 10K NYC, 4-20 mA, 1-10 V, Dry contact

c. Battery Backup
1) Battery backup provided for all on board functions including I/O
2) Battery is monitored and trickle charged
3) Battery maintains processor operation through power failures for a minimum of 30 minutes, and then writes all data to flash memory, shuts the processor down, and maintains the clock for five years.

d. Environment
1) Must be capable of operation over a temperature range of 0°C to 55°C.
2) Must be capable of withstanding storage temperatures of between 0°C and 70°C.
3) Must be capable of operation over a humidity range of 5% to 95% RH, non-condensing.

e. Performance
1) Supports 100 devices.

2. The Network Area Controller (NAC) shall be a fully user-programmable device capable of providing all of the capability described in Section 2.3 Part A.
3. Automation network – The Network Area Controller (NAC) shall reside on the automation network. Each NAC shall support one or more sub-networks of controllers in addition to communicating with other Systems Supervisors and any network connected Web Supervisor.
4. User Interface – Each Network Area Controller (NAC) shall have the ability to deliver a web based user interface as previously described. All computers connected physically or virtually to the automation network shall have access to the web based UI.
5. Power Failure – In the event of the loss of normal power, The Network Area Controller (NAC) shall continue to operate for a define period after which there shall be an orderly shutdown of all programs to prevent the loss of database or operating system software. Flash memory shall be incorporated for all critical controller configuration data.
a. During a loss of normal power, the control sequences shall go to the normal system shutdown conditions.
b. Upon restoration of normal power and after a minimum off-time delay, the controller shall automatically resume full operation without manual intervention through a normal soft-start sequence.
c. Certification – All controllers shall be listed by Underwriters Laboratories (UL).

2.5 SOFTWARE PROGRAMMING/TOOLS

A. Network Area Controller Toolset

1. Device embedded toolset shall provide the following capabilities in a graphical environment using a standard Web browser:
a. Device and point management
b. Scheduling, alarming and trending setup
c. Creation and binding of graphics
d. Time management
e. User management

B. Toolset provides additional engineering capabilities including:

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1. Editable table based point listings.
2. Automatically generated graphics for standard applications.

C. Device Program Editor

1. Definition of application and logic and display operation shall be available in a completely graphic environment.
2. Definition of operator device characteristics, Digital Controllers (DC) panels, individual points, applications, and control sequences shall be performed in a drag and drop programming environment.
3. All temperature and equipment control strategies, energy management routines, scheduled operations and local device status indicators shall be definable by the operator. User password access and language options shall be definable by the operator.
4. Event definition, prioritization, logging and reporting options are definable by the operator.
5. Application logic shall provide for stand-alone applications as well as distributed applications that are automatically downloaded from master controllers to a network of controllers.
6. The programming environment shall provide help menus and instructions for each operation and/or application performed, for all programming library functions, and for the programming language itself.
7. Libraries of standard application modules shall be provided, such as temperature, humidity, and flow control. These modules may be used as "building blocks" in defining or creating new control sequences. In addition, the user shall have the capability to easily create and archive new modules and control sequences.

2.6 LOCAL CONTROL PANELS

A. All control panels shall be a fabricated and UL Listed finished product. Using UL listed components do not meet "finished product" specifications. Incorporate the BAS manufacturer's standard designs and layouts. Control panels shall be fully enclosed, with sub-panel, hinged door, and slotted flush latch.

B. In general, the control panels shall consist of the DDC controller(s), display module as specified and indicated on the plans, and I/O devices—such as relays, transducers, and so forth—that are not required to be located external to the control panel due to function. Where specified the display module shall be flush mounted in the panel face unless otherwise noted.

C. All I/O connections on the DDC controller shall be provide via removable or fixed screw terminals.

D. Low and line voltage wiring shall be segregated. All provided terminal strips and wiring shall be UL listed, 300-volt service and provide adequate clearance for field wiring.

E. All wiring shall be neatly installed in plastic trays or tie-wrapped.

F. A convenience 120 VAC duplex receptacle shall be provided in each enclosure, fused on/off power switch, and required transformers.

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PART 3 - PART 3 - EXECUTION

3.1 PREPARATIONS

A. Prior to Installation: Inspect the installed work executed under other Sections which affect the installation of the controls. Report unacceptable conditions to Engineer. Do not begin work until unacceptable conditions have been corrected. Installation of the controls shall constitute acceptance of existing conditions.

B. Coordination: Coordinate work with work specified under other Sections to ensure proper and adequate interface of work. Equipment and systems drawings are generally diagrammatic unless dimensions are indicated. Drawings and details shall be checked for interference's with structural and other conditions prior to performing work.

C. The Contractor shall be responsible for safety and good condition of his materials and equipment until final acceptance by the Owner. He shall erect and maintain suitable barriers, protective devices, lights and warning signs where required.

3.2 INSTALLATIONS

A. General:

1. When applicable installation procedures are shown or specified in other sections, those procedures shall be followed.
2. Provide all supports and hangers, etc., as required to install the equipment as specified or shown on the drawings. All equipment shall be supported, braced and cross-braced to comply with current CBC and CMC.
3. Sealing: Wherever any part of the control system has to pierce the roofing, openings through the roof shall be flashed absolutely watertight.
4. Arrange and support piping and equipment so that vibration is at a minimum and is not transmitted to or through building structure.

3.3 WIRING AND CONDUIT

A. Control wiring and conduit shall be the responsibility of this section and be installed as follows:

1. In equipment rooms/attics – Conductors shall be run in conduit. Final connection to equipment shall be flexible conduit.
2. Concealed in building construction (wall/inaccessible ceilings) - Conductors shall be run in conduit or plenum rated wire properly secured to prevent damage.
3. Roof mounted/exterior equipment yards - Conductors shall be in conduit. All flexible conduit shall be seal-tite with weatherproof connections. Equipment on grade and detached from the building a distance greater than 36" shall have underground control conduit routed to equipment.
4. Above accessible ceiling spaces - Control cable will be allowed to be installed without conduit in accessible areas above ceilings as follows:
   a. Cable is an approved type for the application.
   b. Cable is bundled/organized in management devices routed square with building lines (no diagonals) and kept clear of electrical devices (i.e., ballasts, transformers, etc.) that could cause interference.

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c. Conduit sleeves are provided between accessible ceiling spaces (i.e., across soffits, gypboard ceilings, etc.) as required to maintain future access to cable.

5. Cable routed in accessible ceiling spaces shall comply with EIA/TIA standards for communications cabling.

3.4 CONTROL PANELS AND DEVICE LOCATIONS

A. All controllers, relays, switches, etc., for equipment located within equipment rooms shall be mounted in enclosed control panels with hinged locking doors. All control devices equipment located in exposed areas subject to outside weather conditions shall be mounted inside weatherproof enclosures.

B. Location of each panel is to be convenient for adjustment and service. Submit locations of all panels to the engineer with shop drawings.

3.5 IDENTIFICATION

A. The label wording shall match that used on the drawings and provide clearly readable printed labels for each control component inside a panel. When applicable, additional identification needed shall be documented on the Shop Drawings. See Specification Section 15100.

B. Engraved nameplates shall be provided on the face of each panel and beneath each actuator and control device not in a panel describing its use.

C. All electrical devices within the panel shall be wired to a terminal strip within the panel. An "electric terminal" numbering system shall be applied to all terminals with aforementioned numbers matching terminals shown on Shop Drawings.

3.6 CLOSING-IN OF UNINSPECTED WORK

A. General: Do not allow or cause any of the Work of this Section to be covered up or enclosed until it has been inspected, tested, and approved by the Mechanical Engineer and by all other authorities having jurisdiction.

B. Uncovering: Should any of the Work of this Section be covered up or enclosed before it has been completely inspected, tested, or approved, do all things necessary to uncover all such work. After the Work has been completely inspected, tested, and approved, provide all materials and labor necessary and make all repairs necessary to restore the Work to its original and proper condition at no additional cost to the Owner.

3.7 PROGRAMMING

A. The **Direct Digital Control (DDC)** operational program will be provided by the Control Systems Contractor. The Contractor shall provide any testing program he feels necessary to fully test the operation of the various components.

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3.8 SYSTEM INSTRUCTION AND RECORD DRAWINGS

A. The Control Contractor shall schedule a minimum of 24 hours of training to train the owner's representative in the use and care of the system. This training shall occur after all commissioning of the control system is completed.

B. Instruction period shall be started after instruction books, service manuals and record drawings have been submitted to and approved by the Architect and shall be at hours (regular and non-regular) arranged by the Architect.

C. Service manuals shall include oiling, cleaning and servicing data, compiled in clearly and easily understood form and in a durable binder. Data shall show all serial numbers of every piece of equipment and complete list of replacement parts.

3.9 COMMISSIONING THE SYSTEM

A. The commissioning period starts when the following conditions are met:

1. The DDC system and all involved HVAC equipment have been installed, connected to the DDC system and ready to operate.
2. A commissioning meeting has been conducted with representative of contractors involved building occupants, County Representative, Mechanical Contractor, and the Control System Contractor.
3. Consensus is reached, by the representatives at the above referenced meeting, that it is appropriate for the commissioning process to start. The operational program is loaded into the DDC system by the Control Systems Contractor.

B. During the commissioning period, the Control System Contractor will maintain a commissioning file of the printed reports from the building.

C. The commissioning process will be completed and the warranty period shall start when the following conditions are met.

1. All training to be provided as part of the project has been completed.
2. No "alarm" or "condition reports" are being generated by the DDC system for seven (7) calendar days (168 hours) due to incomplete or inaccurate installation, program, or programming.
3. All adjustments and "fine tuning" of the system have been completed.
4. The system has been accepted by the General Contractor and Building Owners and approved by the Mechanical Engineer.

PART 4 - APPENDIX

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Cybersecurity Requirements Cover Letter

Thank you for your interest in providing technology solutions for the County of Santa Barbara. This cybersecurity requirements package contains three documents, described below, which are standard attachments to the County's technology-related Requests for Proposal (RFP). These documents work together to analyze and mitigate the security and compatibility risks of all technology solutions proposed to the County.

COSB Cybersecurity Controls List

This document identifies the County-adopted cybersecurity requirements and includes a list of other, potentially applicable requirement sets. A level of importance has been assigned to each requirement (Mandatory, Highly Desirable, Desirable). Vendors are required to respond to each item on this list, detailing any requirement(s) that their proposed product or solution cannot meet.

Product Evaluation Q&A

This document serves as a valuable tool for the County during the interview process with RFP Semi-Finalists and prospective Vendors. It facilitates discussions about the compatibility of proposed solutions with the County's existing technology environment. By referring to this document, Vendors can gain insights into the types of questions and information the County will require from the selected Vendor, thus ensuring a more streamlined evaluation process. This document must be signed by County ITD and the County CISO, authorizing Vendors to move forward in the selection process.

Vendor Attestation of Required Minimum Cybersecurity and Operational Environments/Standards

This document requires a responsible party within the Proposed Vendor's organization, with extensive technical knowledge (CTO, CIO, or CISO), to certify that their Company, Proposed Solution, and all work done under the RFP follows all the policies identified in the RFP, or has negotiated security risk mitigation strategies with, and has obtained formal approval from, the County Information Technology Department and County Chief Information Security Officer. This will be completed with the selected Vendor during the selection process.

If you have any questions or require further clarification regarding these requirements, please do not hesitate to reach out to us. Once again, we appreciate your interest in contributing to the technological advancement of our community.

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Vendor Attestation of Required Minimum Cybersecurity and Operational Environments/Standards

Purpose

This document outlines the County of Santa Barbara's (COSB) cybersecurity requirements for vendors. Vendors must certify that their systems, services, or applications adhere to these standards, including NIST 800-53 controls and FEDRAMP Moderate Authorization for Cloud-based systems. Additional compliance controls may apply. Vendors are encouraged to declare exceptions, which won't necessarily disqualify them. The document aims to establish vendor accountability and ensure alignment with the County's cybersecurity standards.

Audience

The targeted audience for this document is vendors and their representatives who are responding to Requests for Proposals (RFPs) or seeking to provide systems, services, or applications to the COSB.

Minimum Cybersecurity Requirements

The County of Santa Barbara requires vendor certification that their system/service/application meets best practice cybersecurity standards including County adopted NIST 800-53 controls and FEDRAMP Moderate Authorization for Cloud based systems. Additional compliance controls such as CJIS, HIPAA, FTI, PCI, PII, SOX, etc., may be required.

The County recognizes that responding vendors may not be able to meet all the applicable controls and/or requirements. During the RFP process we require replying vendors to list compliance exceptions. This will allow the County the opportunity to accept or reject associated risks and threats associated with the vendor's identified exceptions. Exceptions will not necessarily disqualify vendor applicant.

- Controls and requirements adopted by the County of Santa Barbara as seen in:
  - COSB Cybersecurity Policies
  - COSB Cybersecurity Controls List

Alignment with County deployed technology standards and operational environment

Vendor attests that there has been a review of existing/currently deployed technology environments (as example the County standard virtual platform is VMWARE and, as example, MS Windows Operating Systems which are always in a supported and patchable state) that are considered County standards AND

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that proposed system/software/service will successfully operate within these already deployed environments/standards.

Original Equipment Manufacturer (OEM) Attestation

This document must be signed by the vendor's authorized representative responsible for ensuring that the vendor solution and contractual obligations meet the County's cybersecurity posture.

Certification by OEM

I certify that the solution is capable of meeting the County's cybersecurity requirements with the exceptions identified in the COSB Cybersecurity Controls List which have been formally approved by County ITD and County CISO prior to certification.

Signed _____ Date _____

Name _____ Title _____

Vendor Name _____ RFP # (if applicable) _____

Value-Added Reseller Attestation

This document must be signed by the vendor's Chief Information Officer (CIO), Chief Technology Officer (CTO) or Chief Information Security Officer (CISO) responsible for ensuring that the vendor solution and contractual obligations meet the County's cybersecurity posture.

The County may, at its discretion, perform a security assessment prior to final payment. All remediations, required to pass security assessments, will be at the contractor's expense.

Certification by RFP respondent (CIO, CTO or CISO)

I certify that the solution will meet the County's cybersecurity requirements with the exceptions identified in the COSB Cybersecurity Controls List which have been formally approved by County ITD and County CISO prior to certification.

Signed _____ Date _____

Name _____ Title _____

Vendor Name _____ RFP # (if applicable) _____

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Product Evaluation Q&A

The Information Technology Department (ITD) will be meeting with you to **assess your product's compatibility with the current County computing environment.** Be prepared to discuss and provide the following information during the interview. Note that this interview is an initial step and does not cover all integration and security requirements of the County. Detailed specifications will be included in the County's Requests for Proposal (RFP) for the proposed solution.

Contents

Cloud-based or On-Premise 1
Networking 2
End Point Devices 2
Identity 2
Role based administration 3
Application 3
Security 3
Support and Maintenance 4
Disaster Recovery and Business Continuity 4

Cloud-Based or On-Premise

1. On-premise components
    a. Prepare to discuss your minimum system requirements in our VMware environment as the County provides virtual server hosting and recommends using this environment.
    b. Prepare to discuss the hardware needs of your project if your product requires Vendor furnished or County furnished hardware.
        i. Identify the recommended life cycle and replacement schedule for each component.
    c. Operating System (OS) and firmware version(s)?
        i. The County mandates that all applications must align with current OS versions within 90 days of general distribution. Can you support this model?
    d. If the solution includes IoT devices, prepare to offer detailed specifications and lifecycle support.
    e. Provide an overview of your Disaster Recovery (DR) and Business Continuity (BC) procedures, including ransomware protections.
        i. Replication
        ii. Immutable Backup
2. Cloud-based Component
    a. Will your solution install in one of the County's Azure commercial or government tenants provided, or will you supply cloud services?
        i. Replication Is the hosted environment FedRAMP Moderate compliant? Be prepared to provide evidence of certification.
        ii. Government cloud?
        iii. USA only?
        iv. US Citizen supported data centers?
    b. Give details of the billing model for cloud services.

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Networking

1. What are the solution's bandwidth requirements?
2. Are there any software-defined networking requirements?
3. Provide a network line diagram of your proposed solution?
    a. On your diagram, clearly identify all components that are part of your solution.
    b. How do they communicate with each other?
        i. Protocol Matrix template has been included to crosswalk connectivity
        ii. The county provides network segmentation for on-premise solutions which may require specific rules to allow communications (firewall, ACL, etc.). Identify all connectivity requirements encompassing the Internet, cloud-based services, on-premise servers/systems and any additional devices. System integration details will be addressed in the Application section of this questionnaire.
    c. Where do your solution's components "touch" the County network?
        i. Copper or fiber required?
    d. Is virtual network isolation recommended?
        i. If so, identify security zones.
    e. Does it integrate with/require connectivity to existing County systems?
        i. If so, identify those systems in your diagram.
    f. Does the solution require Internet access?
        i. Be prepared to identify all the necessary elements for the solution to function, as adjustments to the County's perimeter security might be required to accommodate special ports or protocols.
    g. Identify any wirelessly connected components.
        i. Can it leverage county wireless or does it need its own infrastructure?
    h. Document the anticipated bandwidth needs for each component.
    i. Include any public facing component.

End point Devices

1. Identify the End User end-point hardware and software requirements.
2. Identify all related peripherals including cameras, microphones, printers, sensors, etc.
3. Are there IoT components?

Identity

1. How will your service leverage our directory services? The County's standard IdP is Microsoft Active Directory (AD), available as On-premise AD or Azure AD?
    a. Azure AD integrated?
    b. AD/LDAP integrated?
    c. Prepare to discuss user and system authentication needs.
2. Prepare to explain the use of other authentication requirements if needed.
    a. Local database?
    b. Other?
3. How is access controlled?
4. MFA is a requirement for authentication, how is MFA achieved?
    a. Microsoft MFA?
    b. Duo MFA?
    c. Other?
5. Prepare to provide documentation necessary to complete tasks required to implement Security and Authorization for access and control of the solution.

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6. Can your solution provide Security and Authorization capabilities by connecting to Microsoft Azure Active Directory system using SAML 2.0?

Role Based Administration

1. What roles exist?
2. How are they defined?
3. Does the software enable distributed administration? If it does, are users restricted to viewing only what they are authorized to see?
4. The solution must offer various levels of security access to folders and documents, encompassing options such as viewing and editing, viewing and annotating, view-only, and no viewing access.
5. The solution must be capable of restricting the display of search results based on the applied security rights and roles of users.
6. Where do we find your documentation?

Application

1. Describe any software your solution requires. This includes server software, end user interfaces/applications, software installed on IoT devices, etc.
    a. Describe the software update process for all components.
    b. Describe the software update cycle and frequency for all components.
    c. Do all components of your software utilize supported libraries and components? Describe your process for ensuring that the software consistently employs supported and patched libraries and components.
2. Does your solution support deployment through tools like Microsoft Endpoint Configuration Manager (MECM), which the County uses for deploying end user software? If so, please specify the supported tools.
3. Is your end user interface/application ADA compliant?
    a. Can end users customize their display settings for enhanced comfort, such as enabling dark mode, increasing font size, etc.?
4. Does your solution generate notifications to end users and/or administrators?
    a. As per County policy, third parties are prohibited from sending emails from our domain on behalf of the County. If your solution involves sending emails, can it do so without using our domain (i.e., without domain spoofing)?
    b. Does your solution generate notifications that are not email based? If yes, how do end users and/or administrators receive these notifications?
5. Is there a test environment?
6. If the County would like to pull data from applications for reporting services, how does the solution support access to data via API?

Security

1. How do you achieve the controls identified in the CoSB Cybersecurity controls list?
2. Classify the data being leveraged, shared, or stored by this solution into the following classifications:
    a. Highly confidential
    b. Confidential
    c. General
    d. Public
3. How is the data Encrypted at rest?
4. How is the data Encrypted in transit?

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Support and Maintenance

1. Who patches and updates the application and the operating system (OS)?
2. What is the application's patching cycle? How are dependencies on the OS managed?
3. Is remote access needed? If updates are automated, how are you alerted and how do you address failures?
4. What are your Service Level Agreements (SLAs)?

Disaster Recovery and Business Continuity

Provide the disaster recovery plan including testing procedures and testing frequency, identification of system vulnerabilities most prone to failure or disaster leading to downtime, recovery procedures or steps for addressing downtime events, and comprehensive recommendations for the County to efficiently mitigate the risk of downtime.

*****Below This Line for County Use Only*****

Project	
Vendor	
Proposed Product/Solution	
County Customer Dept.	

Cybersecurity exceptions for the proposed solution, as detailed in the completed *COSB Cybersecurity Controls List*, have been reviewed and accepted.

The proposed solution, as presented in the *Product Evaluation Q&A*, appears to be compatible with County of Santa Barbara technology infrastructure.

The proposed solution, listed above, can be considered for moving forward in the selection process.

County ITD Representative: _____

Sign: _____ Date: _____

County CISO: _____

Sign: _____ Date: _____

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Req. ID	Cybersecurity Controls	COSB Priority Mandatory (M), Highly Desirable (H), Desirable (D)	Proposer's Response Y	N	C	T	Comments or Page and Section number in the proposal where additional information can be found.
Access Control (AC)							
CoSB-101	Identify and select the following types of information system accounts to support organizational missions and business functions: individual, shared, group, system, guest/anonymous, emergency, developer/manufacturer/vendor, temporary, and service.	H					
CoSB-102	Assign account managers for information system accounts.	M					
CoSB-103	Establish conditions for group and role membership.	M					
CoSB-104	Specify authorized users of the information system, group and role membership, and access authorizations (i.e., privileges) and other attributes (as required) for each account.	M					
CoSB-105	Require approvals by system owners for requests to create information system accounts.	M					
CoSB-106	Create, enable, modify, disable, and remove information system accounts in accordance with approved procedures.	M					
CoSB-107	Monitor the use of information system accounts.	M					
CoSB-108	Notify account managers when accounts are no longer required, when users are terminated or transferred, and when individual information system usage or need-to-know changes.	M					
CoSB-109	Authorize access to the information system based on a valid access authorization or intended system usage.	M					
CoSB-110	Review accounts for compliance with account management requirements annually.	M					
CoSB-111	Establish a process for reissuing shared/group account credentials (if deployed) when individuals are removed from the group.	M					
CoSB-112	Employ automated mechanisms to support the management of information system accounts.	M					
CoSB-113	Ensure that the information system automatically disables temporary and emergency accounts after usage.	M					
CoSB-114	Ensure that the information system automatically disables inactive accounts after 6 months.	M					
CoSB-115	Ensure that the information system automatically audits account creation, modification, enabling, disabling, and removal actions, and notifies appropriate IT personnel.	H					
CoSB-116	Ensure that the information system enforces approved authorizations for logical access to information and system resources in accordance with applicable access control policies.	M					
CoSB-117	Ensure that the information system enforces approved authorizations for controlling the flow of information within the system and between interconnected systems based on applicable policy.	M					
CoSB-118	Separate duties of individuals as necessary, to prevent malevolent activity without collusion.	M					
CoSB-119	Document the separation of duties of individuals.	M					
CoSB-120	Define information system access authorizations to support separation of duties.	M					
CoSB-121	Employ the principle of least privilege, allowing only authorized accesses for users (or processes acting on behalf of users) which are necessary to accomplish assigned tasks in accordance with organizational missions and business functions.	M					
CoSB-122	Authorize explicitly access to hardware and software controlling access to systems and filtering rules for routers/firewalls, cryptographic key management information, configuration parameters for security services, and access control lists.	M					
CoSB-123	Require that users of information system accounts, or roles, with access to systems containing protected or confidential information, use non-privileged accounts or roles, when accessing non-security functions.	M					
CoSB-124	Restrict privileged accounts on the information system to least privileged users of those systems that are sensitive technology assets and those systems containing protected and confidential information.	M					
CoSB-125	Ensure that the information system audits the execution of privileged functions.	M					
CoSB-126	Ensure that the information system prevents non-privileged users from executing privileged functions to include disabling, circumventing, or altering implemented security safeguards/countermeasures.	M					
CoSB-127	Enforce a limit of consecutive invalid logon attempts by a user during 15 incorrect log-in attempts.	M					
CoSB-128	Locks the account/node automatically for a limited period or until released by an administrator when the maximum number of unsuccessful attempts is exceeded.	M					
CoSB-129	Display to users an approved system use notification message or banner before granting access to the system that provides privacy and security notices consistent with applicable state and federal laws, directives, policies, regulations, standards, and guidance and states informing that: - Users are accessing an agency information system. - Information system usage may be monitored, recorded, and subject to audit. - Unauthorized use of the information system is prohibited and subject to criminal and civil penalties. - Use of the information system indicates consent to monitoring and recording. - There are not rights to privacy.	M					
CoSB-130	Retain the notification message or banner on the screen until users acknowledge the usage conditions and take explicit actions to log on to or further access the information system.	M					
CoSB-131	For publicly accessible systems, Agency IT shall ensure that the information system: - Displays system use information designated during log-on screen, before granting further access. - Displays references, if any, to monitoring, recording, or auditing that are consistent with privacy accommodations for such systems that generally prohibit those activities. - Include a description of the authorized uses of the system.	M					
CoSB-132	Prevent access to the system by initiating a session lock after sixty days of inactivity or upon receiving a request from a user.	M					
CoSB-133	Retain the session lock until the user reestablishes access using established identification and authentication procedures.	M					
CoSB-134	Conceal, via the session lock, information previously visible on the display with a publicly viewable image.	M					
CoSB-135	Ensure that the information system automatically terminates a user session after twenty minutes.	M					

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CoSB-136	Identify user actions that can be performed on the information system without identification or authentication consistent with organizational missions and business functions.	M						
CoSB-137	Document and provide supporting rationale in the security plan for the information system, user actions not requiring identification or authentication.	M						
CoSB-138	Establish and document usage restrictions, configuration/connection requirements, and implementation guidance for each type of remote access allowed.	M						
CoSB-139	Authorize remote access to the information system prior to allowing such connections.	M						
CoSB-140	Ensure that the information system monitors and controls remote access methods.	M						
CoSB-141	Ensure that the information system implements cryptographic mechanisms to protect the confidentiality and integrity of remote access sessions.	M						
CoSB-142	Ensure that the information system routes all remote accesses through [Assignment: Agency defined number] managed network access control points to reduce the risk for external attacks.	M						
CoSB-143	Authorize the execution of privileged commands and access to security-relevant information via remote access only for approved business needs.	M						
CoSB-144	Document the rationale for such access in the security plan for the information system.	M						
CoSB-145	Establish usage restrictions, configuration/connection requirements, and implementation guidance for wireless access.	M						
CoSB-146	Authorize wireless access to the information system prior to allowing such connections.	M						
CoSB-147	Ensure that the information system protects wireless access to the system using authentication of users and devices and encryption.	M						
CoSB-148	Establish usage restrictions, configuration requirements, connection requirements, and implementation guidance for organization-controlled mobile devices.	M						
CoSB-149	Authorize the connection of mobile devices to organizational information systems.	M						
CoSB-150	Employ full-device encryption or container encryption to protect the confidentiality and integrity of information on approved devices.	M						
CoSB-151	Mobile: Establish usage restrictions, configuration requirements, connection requirements, and implementation guidance for organization-controlled mobile devices.	M						
CoSB-152	Mobile: Authorize the connection of mobile devices to organizational information systems.	M						
CoSB-153	Mobile: Employ full-device encryption or container encryption to protect the confidentiality and integrity of information on approved devices.	M						
	Awareness & Training (AT)							
CoSB-156	Agency IT shall determine the appropriate content of security awareness training and security awareness techniques based on the specific organizational requirements and the information systems to which personnel have authorized access. The content shall include a basic understanding of the need for information security and user actions to maintain security and to respond to suspected security incidents.	M						
CoSB-154	Schedule security awareness training as part of initial training for new users.	M						
CoSB-155	Schedule security awareness training when required by information system changes and then annually thereafter.	H						
CoSB-157	Address awareness of the need for operations security. Security awareness techniques can include, for example, displaying posters, offering supplies inscribed with security reminders, generating email advisories/notices from senior organizational officials, displaying logon screen messages, and conducting information security awareness events.	M						
CoSB-158	Include security awareness training on recognizing and reporting potential indicators of insider threat.	H						
CoSB-159	Provide role-based security training to personnel with assigned security roles and responsibilities: o Before authorizing access to the information system or performing assigned duties. o When required by information system changes and annually thereafter.	H						
CoSB-160	Designate Agency personnel to receive initial and ongoing training in the employment and operation of environmental controls to include, for example, fire suppression and detection devices/systems, sprinkler systems, handheld fire extinguishers, fixed fire hoses, smoke detectors, temperature/humidity, HVAC, and power within the facility.	H						
CoSB-161	Provide initial and ongoing training in the employment and operation of physical security controls; physical security controls include, for example, physical access control devices, physical intrusion alarms, monitoring/surveillance equipment, and security guards (deployment and operating procedures).	M						
CoSB-162	Identify personnel with specific roles and responsibilities associated with physical security controls requiring specialized training.	H						
CoSB-163	Provide practical exercises in security training that reinforce training objectives; practical exercises may include, for example, security training for software developers that includes simulated cyber-attacks exploiting common software vulnerabilities (e.g., buffer overflows), or spear/whale phishing attacks targeted at senior leaders/executives. These types of practical exercises help developers better understand the effects of such vulnerabilities and appreciate the need for security coding standards and processes.	H						
CoSB-164	Provide training to its specified staff on how to recognize suspicious communications and anomalous behavior in organizational information systems.	H						
CoSB-165	Designate Agency personnel to document and monitor individual information system security training activities including basic security awareness training and specific information system security training.	M						
CoSB-166	Retain individual training records for a minimum of three years.	H						

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		Audit & Accountability (AU)				
CoSB-167	Determine that the information system is capable of auditing the following events: Log credentials, failures of login's and other 'events' determined by IT and/or the system capable of maintaining log data.	M				
CoSB-168	Coordinate the security audit function with other organizational entities requiring audit.	M				
CoSB-169	Provide a rationale for why the auditable events are deemed to be adequate to support after-the-fact investigations of security incidents.	H				
CoSB-170	Determine that the following events are to be audited within the information system: · Log credentials, failures of login's and other events determined by IT and/or the system capable of maintaining log data. · Review and update the audited events as needed by a frequency determined by IT.	M				
CoSB-171	The information system shall generate audit records containing the following additional information: Logon data, failures and other data fields as determined by IT.	M				
CoSB-172	Ensure audit record storage capacity is allocated in accordance with pre-described by IT requirements based on specific systems.	M				
CoSB-173	The information system shall off-load audit by IT, when appropriate, onto a different system or media than the system being audited.	M				
CoSB-174	Alert IT assigned staff in the event of an audit.	M				
CoSB-175	Take the following additional actions: IT defined actions will be taken to prevent an event driven processing failure, and (e.g., shut down information system, overwrite oldest audit records, stop generating audit records).	M				
CoSB-176	The information system shall provide a warning to IT Staff within enough time to allocate additional storage when audit record storage volume reaches 15% of repository maximum audit record storage capacity (if possible by specific system).	M				
CoSB-177	The information system shall provide an alert as immediate as possible to IT and assigned departmental staff when the following audit failure events occur: Logon failures, hacking attempts, other cyber-attacks.	M				
CoSB-178	The information system shall enforce configurable network communications traffic volume thresholds reflecting limits on auditing capacity and apply appropriate action within network traffic above those thresholds.	M				
CoSB-179	The information system or IT Staff shall invoke a full system shutdown, partial system shutdown, degraded operational mode with limited mission/business functionality available or other appropriate responses in the event of audit failure, unless an alternate audit capability exists.	D				
CoSB-180	Review and analyze information system audit records as determined by IT for indications of inappropriate or unusual activity. Report findings to the CIO or CISO.	M				
CoSB-181	The information system owners shall ensure automated mechanisms are employed to integrate audit review, analysis, and reporting processes to support organizational processes for investigation and response to suspicious activities.	M				
CoSB-182	The information system owner shall ensure analysis and correlation of audit records across different repositories to gain Agency-wide situational awareness.	M				
CoSB-183	The information system shall provide an audit reduction and report generation capability that: · Supports on-demand audit review, analysis, and reporting requirements and after-the-fact. · Does not alter the original content or time ordering of audit records. · The information system shall provide the capability to process audit records for events of interest based on IT defined audit fields within audit records. · Use internal system clocks to generate time stamps for audit records. · Record time stamps for audit records that can be mapped to Coordinated Universal Time (UTC) or Greenwich Mean Time (GMT) and meets IT defined time periods. · Compare the internal information system clocks periodically to insure all systems date and time compliant. · Synchronize the internal system clocks to the authoritative time source when the time difference is greater than acceptable best practices, generally within one second.	M				
CoSB-184	The information system shall protect audit information and audit tools from unauthorized access, modification, and deletion.	M				
CoSB-185	The organization shall authorize access to management of audit functionality to only those fields that of non-protected data or information unless viewer already has appropriate access to such data and information.	M				
CoSB-186	The information system owners shall retain audit records for a minimum of three months to provide support for after-the-fact investigations of security incidents and to meet regulatory and organizational information retention requirements.	M				
CoSB-187	The information system owners shall employ appropriate policy to ensure that long-term audit records generated by the information system can be retrieved.	M				
CoSB-188	Provide audit record generation capability for the auditable events as defined at the system level of which containing protected or confidential or sensitive technology assets.	M				
CoSB-189	Allow appropriate IT staff to select which auditable events are to be audited by specific components of the information system.	H				
CoSB-190	Generate audit records for the events with the content as defined by IT.	M				
CoSB-191	The information system shall comply with audit records from all systems containing protected or confidential data and information and all sensitive technology assets into a system-wide (logical or physical) audit trail that is time-correlated to within recommended security best practices or as directed by law or organizational agreements.	M				
CoSB-192	The information system shall produce a system-wide (logical or physical) audit trail composed of audit records in a standardized format.	M				
CoSB-193	The information system shall provide the capability for authorized IT Staff to change the auditing to be performed on systems audited based on industry acceptable best practices available.	H				

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Security Assessment & Authorization (CA)							
CoSB-194	Develop, document, and disseminate to appropriate technology and supporting staff:	H					
CoSB-195	Develop a security assessment and authorization policy that addresses purpose, scope, roles, responsibilities, management commitment, coordination among organizational entities, and compliance.	H					
CoSB-196	Deploy procedures to facilitate the implementation of the security assessment and authorization policy and associated security assessment and authorization controls.	M					
CoSB-197	Review and update the current security assessment and authorization policy and procedures annually.	M					
CoSB-198	Produce a security assessment report that documents the results of the assessment.	M					
CoSB-199	Provide the results of the security control assessment to the Agency CIO.	M					
CoSB-200	Authorize connections from the information system to other information systems through the use of Interconnection Security Agreements.	M					
CoSB-201	Document, for each interconnection, the interface characteristics, security requirements, and the nature of the information communicated.	M					
CoSB-202	Review and update Interconnection Security Agreements annually.	M					
CoSB-203	Employ permit-by-exception] policy for allowing internal staff to connect to external information systems.	M					
CoSB-204	Develop a plan of action and milestones for the information system to document the Agency's planned remedial actions to correct weaknesses or deficiencies noted during the assessment of the security controls and to reduce or eliminate known vulnerabilities in the system.	M					
CoSB-205	Update existing plan of action and milestones annually based on the findings from security controls assessments, security impact analyses, and continuous monitoring activities.	M					
CoSB-208	Update the security authorization annually or as needed during modification to existing systems and deployment of new systems.	M					
CoSB-206	Assign a senior-level executive or manager as the authorizing official for the information system.	M					
CoSB-207	Ensure that the authorizing official authorizes the information system for processing before commencing operations.	M					
CoSB-209	Develop a continuous monitoring strategy and implement a continuous monitoring program that includes:	M					
CoSB-210	Establishment of best industry practices and recommendations systems as defined by IT to be monitored.	M					
CoSB-211	Establishment of best industry practices and recommendations frequencies for monitoring and within IT defined frequencies for assessments supporting such monitoring.	M					
CoSB-212	Ongoing security status monitoring of organization-defined metrics in accordance with the organizational continuous monitoring strategy.	M					
CoSB-213	Correlation and analysis of security-related information generated by assessments and monitoring.	M					
CoSB-214	Response actions to address results of the analysis of security-related information.	M					
CoSB-215	Reporting the security status of organization and the information system to Agency CIO annually.	M					
CoSB-216	Document, for each internal connection, the interface characteristics, security requirements, and the nature of the information communicated.	M					
Configuration Management (CM)							
CoSB-217	Develop, document, and maintain under configuration control, a current baseline configuration of information systems.	M					
CoSB-239	Prevent program execution in accordance with Agency policies regarding software program usage and restrictions and rules authorizing the terms and conditions of software program usage.	M					
CoSB-240	Identify software programs not authorized to execute on information systems.	M					
CoSB-241	Employ an deny-all, allow-by-exception policy to prohibit the execution of unauthorized software programs on the information system.	M					
CoSB-254	Use software and associated documentation in accordance with contract agreements and copyright laws.	M					
CoSB-255	Track the use of software and associated documentation protected by quantity licenses to control copying and distribution.	M					
CoSB-256	Control and document the use of peer-to-peer file sharing technology to ensure that this capability is not used for the unauthorized distribution, display, performance, or reproduction of copyrighted work.	M					
CoSB-257	Establish policies governing the installation of software by users.	M					
CoSB-258	Enforce software installation policies through controlling privileged access and blocking the execution of files using policy applied by directory service and/or application whitelisting.	M					
CoSB-259	Monitor policy compliance at least annually.	M					
CoSB-218	Review and update the baseline configuration of the information system annually.	M					
CoSB-219	Review and update the baseline configuration of the information system when required as a result of changes to the system including deployment of new system components and as an integral part of information system component installations and upgrades.	M					
CoSB-220	Retain one previous version of baseline configurations of information systems to support rollback.	M					
CoSB-221	Determine the types of changes to the information system that are configuration-controlled.	M					
CoSB-222	Review proposed configuration-controlled changes to the information system and approve or disapprove such changes with explicit consideration for security impact analyses.	M					
CoSB-223	Document configuration change decisions associated with the information system.	M					
CoSB-225	Retain records of configuration-controlled changes to the information system for a minimum of three years.	M					
CoSB-226	Audit and review activities associated with configuration-controlled changes to the information system.	M					
CoSB-227	Coordinate and provide oversight for configuration change control activities through appropriate change control processes that convenes as needed and as defined by the Agency CIO.	M					
CoSB-229	Analyze changes to the information system to determine potential security impacts prior to change implementation.	M					
CoSB-230	Analyze changes to the information system to determine potential security impacts prior to change implementation.	M					

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CoSB-231	Define, document, approve, and enforce physical and logical access restrictions associated with changes to the information system.	M						
CoSB-224	Implement approved configuration-controlled changes to the information system.	M						
CoSB-232	Establish and document configuration settings for information technology products employed within the information system using documentation contained within appropriate IT systems folders that reflect the most restrictive mode consistent with operational requirements.	M						
CoSB-233	Implement the configuration settings.	M						
CoSB-234	Identify, document, and approve any deviations from established configuration settings for all critical technology assets based on Agency IT defined operational requirements.	M						
CoSB-235	Monitor and control changes to the configuration settings in accordance with Agency policies and procedures.	M						
CoSB-247	Take the following actions when unauthorized components are detected: - Disable network access by such components, or - Isolate the components and notifies the Chief Information Officer and system owner.	M						
CoSB-236	Configure the information system to provide only essential capabilities.	M						
CoSB-238	Disable functions, ports, protocols, and services within the information system deemed to be unnecessary and/or non-secure.	M						
CoSB-237	Review the information system quarterly to identify unnecessary and/or non-secure functions, ports, protocols, and services.	H						
CoSB-242	Review and update the list of unauthorized software programs annually.	H						
CoSB-243	Develop and document an inventory of information system components that: - Reflects the current information system accurately. - Includes all components within the authorization boundary of the information system. - Is at the level of granularity deemed necessary for tracking and reporting. - Includes information deemed necessary to achieve effective information system component accountability.	H						
CoSB-244	Review and update the information system component inventory no less than annually.	H						
CoSB-245	Update the inventory of information system components as an integral part of component installations, removals, and information system updates.	H						
CoSB-246	Employ automated mechanisms quarterly to detect the presence of unauthorized hardware, software, and firmware components within the information system.	M						
CoSB-248	Verify that all components within the authorization boundary of the information system are not duplicated in other information system component inventories.	D						
CoSB-228	Test, validate, and document changes to the information system before implementing the changes on the operational system.	M						
CoSB-249	Develop, document, and implement a configuration management plan for the information system that:	M						
CoSB-250	Addresses roles, responsibilities, and configuration management processes and procedures.	H						
CoSB-251	Establish a process for identifying configuration items throughout the system development life cycle and for managing the configuration of the configuration items.	M						
CoSB-252	Define the configuration items for the information system and places the configuration items under configuration management.	M						
CoSB-253	Protect the configuration management plan from unauthorized disclosure and modification.	M						
	Contingency Planning (CP)							
CoSB-292	Provide for the recovery and reconstitution of the information system to a known state after a disruption, compromise, or failure.	M						
CoSB-260	Provide that the information system implements transaction recovery for systems that are transaction-based.	M						
CoSB-261	Develop a contingency plan for the information system, in direct guidance and association with the information system owner, that: - Identifies essential missions and business functions and associated contingency requirements. - Provides recovery objectives, restoration priorities, and metrics. - Addresses contingency roles, responsibilities, assigned individuals with contact information. - Addresses maintaining essential missions and business functions despite an information system disruption, compromise, or failure. - Addresses eventual, full information system restoration without deterioration of the security safeguards originally planned and implemented. - Is reviewed and approved by the Agency CIO, and information system's owner management on at least an annual basis.	M						
CoSB-262	Distribute copies of contingency plans to key contingency personnel, identified by name and/or by business role.	H						
CoSB-263	Coordinate contingency planning activities with incident handling activities.	M						
CoSB-264	Update the contingency plan to address changes to the business owner's mission, information system, or environment of operation and problems encountered during contingency plan implementation, execution, or testing.	M						
CoSB-265	Communicate contingency plan changes to key contingency personnel identified by name and/or by business role.	H						
CoSB-272	Protect the contingency plan from unauthorized disclosure and modification.	M						
CoSB-266	Coordinate contingency plan testing with organizational elements responsible for related plans; plans related to contingency plans for information systems include, for example, Business Continuity Plans, Disaster Recovery Plans, Continuity of Operations Plans, Crisis Communications Plans, Critical Infrastructure Plans, Cyber Incident Response Plans, and Occupant Emergency Plans.	H						
CoSB-267	Provide contingency training to information system users (all departments, offices, including the commissions, districts, and Board of Supervisors) consistent with assigned roles and responsibilities	H						

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CoSB-268	Ensure designated personnel receive contingency training at least biannually of assuming a contingency role or responsibility, and when required by information system changes.	H							
CoSB-269	Test the contingency plan for the information system, as determined by the mission critical nature of the business system(s) no less than annually.	M							
CoSB-270	Use strategic and tactical planning during testing to simulate a production information system to determine the effectiveness of the plan and the organizational readiness to execute the plan.	M							
CoSB-271	Review the contingency plan test results.	M							
CoSB-273	Initiate corrective actions, as needed.	M							
CoSB-274	Establish an alternate storage site including necessary agreements to permit the storage and retrieval of information system backup information.	M							
CoSB-275	Ensure that the alternate storage site provides information security safeguards equivalent to that of the primary site.	M							
CoSB-276	Identify an alternate storage site that is separated from the primary storage site to reduce susceptibility to the same threats.	M							
CoSB-277	Identify and document potential accessibility problems to the alternate storage site in the event of an area-wide disruption or disaster and outline explicit mitigation actions.	M							
CoSB-278	Establish an alternate processing site including necessary agreements to permit the transfer and resumption of the information system operations for essential missions/business functions within the time period consistent with recovery time and recovery point objectives when the primary processing capabilities are unavailable.	M							
CoSB-279	Ensure that equipment and supplies required to transfer and resume operations are available at the alternate processing site or contracts are in place to support delivery to the site within the agreed upon time period for transfer/resumption.	M							
CoSB-280	Ensure that the alternate processing site provides information security safeguards equivalent to that of the primary site.	M							
CoSB-281	Identify an alternate processing site that is separated from the primary processing site to reduce susceptibility to the same threats.	M							
CoSB-282	Identify potential accessibility problems to the alternate processing site in the event of an area-wide disruption or disaster and outline explicit mitigation actions.	M							
CoSB-283	Develop alternate processing site agreements that contain priority-of-service provisions in accordance with Agency business objectives and availability requirements.	H							
CoSB-284	Establish alternate telecommunications services including necessary agreements to permit the resumption of information system operations for essential missions and business functions within agreed upon recovery timeframes when the primary telecommunications capabilities are unavailable at either the primary or alternate processing or storage sites.	M							
CoSB-285	Develop primary and alternate telecommunications service agreements that contain priority-of-service provisions in accordance with agreed upon recovery objectives and availability requirements.	M							
CoSB-286	Request Telecommunications Service Priority for all telecommunications services used for national security emergency preparedness in the event that the primary and/or alternate telecommunications services are provided by a common carrier.	M							
CoSB-287	Conduct backups of user-level information contained in the information system defined by frequency consistent with recovery time and recovery point objectives.	M							
CoSB-288	Conduct backups of system-level information contained in the information system defined by frequency consistent with recovery time and recovery point objectives.	M							
CoSB-289	Conduct backups of information system documentation including security-related documentation defined by frequency consistent with recovery time and recovery point objectives.	M							
CoSB-290	Protect the confidentiality, integrity, and availability of backup information at storage locations.	M							
	Test backup information to verify media reliability and information integrity.	M							
	Identification & Authentication (IA)								
CoSB-293	Ensure that information systems uniquely identify and authenticate Agency users or processes acting on behalf of Agency users.	M							
CoSB-294	Ensure that information systems implement multifactor authentication for network access to privileged accounts.	M							
CoSB-295	Ensure that information systems implement multifactor authentication for network access to non-privileged accounts.	M							
CoSB-296	Ensure that information systems implement multifactor authentication for local access to privileged accounts.	M							
CoSB-304	Create passwords no less than 8 characters on platforms that have restrictions around lengths, especially maximum lengths, such as legacy platforms.	M							
CoSB-305	Create passwords between 15 to 20 characters utilizing self-imposed password complexity when passwords are human derived.	M							
CoSB-319	Disable the identifier after 30 days of inactivity.	M							
CoSB-300	Ensure that information systems uniquely identify and authenticate all devices before establishing a network connection.	M							
CoSB-306	Create passwords of no less than 20 characters when a password manager is being leveraged.	M							
CoSB-307	Base User Passwords may be utilized (no reset needed) indefinitely unless there is a suspected or real breach of authentication security or other indicators of risk to require immediate password resets of all users.	ID							
CoSB-308	Enable 'Show Password while Typing' feature.	M							
CoSB-309	Allow 'Password Paste In' function.	M							
CoSB-310	Do not use 'password hints' processor or, as an example, 'Knowledge-based' authentication (KBA) questions like 'what street did you grow up?' (these are not permitted).	M							
CoSB-311	Elevated user (Admins) passwords should be at least 20 characters and contain numerous symbols/emojis. Admin passwords will expire a maximum of 90 days.	M							
CoSB-312	Administrators MUST only use their ADMIN (elevated) authentications during administrative work and MUST log out to return to any 'normal user' activity.	M							
CoSB-313	Do not use any 'password hints' processes or, as an example, 'Knowledge-based authentication (KBA) questions like 'What street did you grow up on?' (these are not permitted).	M							
CoSB-314	Utilize system generated dynamically assigned passwords for 'Managed Accounts'.	M							
CoSB-315	Shared passwords shall not be used unless there is a documented approval by Central IT or County CISO with an 'exception request'. If a shared password is permitted for a specific instance then the 'business owner' MUST deploy additional 'defenses in depth' protections to offset the lack of security presented by shared password risks.	M							

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CoSB-301	Ensure that the Agency manages information system identifiers by receiving authorization from departmental business systems owners and Agency IT to assign an individual, group, role, or device identifier.	M						
CoSB-302	Select an identifier that identifies an individual, group, role, or device.	M						
CoSB-303	Assign the identifier to the intended individual, group, role, or device.	M						
CoSB-316	Ensure that the Agency manages information system identifiers by receiving authorization from departmental business systems owners and Agency IT to assign an individual, group, role, or device identifier.	M						
CoSB-317	Select an identifier that identifies an individual, group, role, or device.	M						
CoSB-318	Assign the identifier to the intended individual, group, role, or device.	M						
CoSB-299	Ensure that information systems accept and electronically verify Personal Identity Verification (PIV) credentials.	M						
CoSB-323	Ensure that information systems accept and electronically verify Personal Identity Verification (PIV) credentials from other government agencies.	M						
CoSB-297	Ensure that information systems implement replay-resistant authentication mechanisms for network access to privileged accounts	M						
CoSB-320	Ensure that information systems obscure feedback of authentication information during the authentication process to protect the information from possible exploitation/use by unauthorized individuals.	M						
CoSB-298	Ensure that information systems implement multifactor authentication for remote access to privileged and non-privileged accounts such that one of the factors is provided by a device separate from the system gaining access and the device utilizes a cryptographic strength mechanisms that protects the primary authentication token (secret key, private key or one-time password) against compromise by protocol threats including, eavesdropper, replay, online guessing, verifier impersonation and man-in-the-middle attacks.	M						
CoSB-321	Ensure that information systems implement mechanisms for authentication to a cryptographic module that meet the requirements of applicable state and federal laws, directives, policies, regulations, standards, and guidance for such authentication.	M						
CoSB-324	Ensure that information systems accept only Federal Identity, Credential, and Access Management (FICAM) Trust Framework Solutions initiative approved third-party credentials.	M						
CoSB-325	Ensure that the organization employs only FICAM-approved information system components in those systems deemed to require appropriate levels of security to protect sensitive technology assets and protected and confidential data and information to accept third-party credentials.	M						
CoSB-322	Ensure that information systems uniquely identify and authenticate non-Agency users or processes acting on behalf of non-Agency users.	M						
	Incident Response (IR)							
CoSB-339	Distribute copies of the incident response plan to all appropriate Agency staff involved with incident response including all departmental management.	M						
CoSB-340	Review the incident response plan annually.	M						
CoSB-326	Provide incident response training to information system users consistent with assigned roles and responsibilities: - Within 30 days of assuming an incident response role or responsibility. - When required by information system changes, and annually thereafter.	M						
CoSB-327	Incorporate simulated events into incident response training to facilitate effective response by personnel in crisis situations.	M						
CoSB-328	Employ automated mechanisms to provide a more thorough and realistic incident response training environment.	M						
CoSB-329	Test the incident response capability for the information system annually using industry standards testing procedures to determine the incident response effectiveness and documents the results.	M						
CoSB-330	Coordinate incident response testing with Agency entity elements responsible for related plans such as Business Continuity Plans, Contingency Plans, Disaster Recovery Plans, Continuity of Operations Plans, Crisis Communications Plans, Critical Infrastructure Plans, and Occupant Emergency Plans.	M						
CoSB-331	Implement an incident handling capability for security incidents that includes preparation, detection and analysis, containment, eradication, and recovery.	M						
CoSB-332	Coordinate incident handling activities with contingency planning activities.	M						
CoSB-333	Incorporate lessons learned from ongoing incident handling activities into incident response procedures, training, and testing/exercises, and implements the resulting changes accordingly.	M						
CoSB-334	Employ automated mechanisms to assist in the tracking of security incidents and in the collection and analysis of incident information.	M						
CoSB-335	Require personnel to report suspected security incidents to the Agency incident response capability within 24 hours or sooner as the event would indicate more immediacy.	M						
CoSB-336	Report security incident information using designated Agency response procedure.	M						
CoSB-337	Provide an incident response support resource, integral to the Agency incident response capability that offers advice and assistance to users of the information system for the handling and reporting of security incidents.	M						
CoSB-338	Develop an incident response plan that: - Provides the Agency with a roadmap for implementing its incident response capability. - Describes the structure and Agency of the incident response capability. - Provides a high-level approach for how the incident response capability fits into the overall Agency. - Meets the unique requirements of the Agency, which relate to mission, size, structure, and functions. - Defines reportable incidents. - Provides metrics for measuring the incident response capability within the Agency. - Defines the resources and management support needed to effectively maintain and mature an incident response capability. - Is reviewed and approved by Agency CIO.	M						
CoSB-341	Update the incident response plan to address system/Agency changes or problems encountered during plan implementation, execution, or testing.	M						
CoSB-342	Communicate incident response plan changes to all appropriate Agency staff involved with incident response including all departmental management.	M						
CoSB-343	Protect the incident response plan from unauthorized disclosure and modification.	M						

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Maintenance (MA)							
CoSB-359	Document in the security plan for the information system, the policies and procedures for the establishment and use of nonlocal maintenance and diagnostic connections.	M					
CoSB-344	Schedule, perform, document, and review records of maintenance and repairs on information system components in accordance with manufacturer or vendor specifications and/or Agency requirements conducted by local IT and/or outsourced IT entities.	M					
CoSB-345	Approve and monitor all maintenance activities, whether performed on site or remotely and whether the equipment is serviced on site or removed to another location.	M					
CoSB-346	Require that system owners explicitly approve the removal of the information system or system components from Agency facilities for off-site maintenance or repairs.	M					
CoSB-347	Sanitize equipment to remove all information from associated media prior to removal from Agency facilities for off-site maintenance or repairs.	M					
CoSB-348	Check all potentially impacted security controls to verify that the controls are still functioning properly following maintenance or repair actions.	M					
CoSB-350	For those components not directly associated with information processing such as scanners, copiers, and printers, maintenance records must include date and time of maintenance, entity performing the maintenance, maintenance performed, components replaced or removed including identification/serial numbers as applicable.	M					
CoSB-352	Inspect the maintenance tools carried into a facility by maintenance personnel for improper or unauthorized modifications.	M					
CoSB-353	Check media containing diagnostic and test programs for malicious code before the media are used in the information system.	M					
CoSB-349	Include Agency IT and system owner's defined maintenance-related information in Agency maintenance records.	M					
CoSB-351	Ensure that system owners and Agency IT approve, control, and monitor information system maintenance tools.	M					
CoSB-354	Approve and monitor non-local maintenance and diagnostic activities.	M					
CoSB-355	Allow the use of nonlocal maintenance and diagnostic tools only as consistent with Agency policy and documented in the security plan for the information system.	M					
CoSB-356	Employ strong authenticators in the establishment of nonlocal maintenance and diagnostic sessions.	M					
CoSB-357	Maintain records for nonlocal maintenance and diagnostic activities.	M					
CoSB-358	Terminate session and network connections when nonlocal maintenance is completed.	M					
CoSB-360	Establish a process for maintenance personnel authorization and maintain a list of authorized maintenance organizations or personnel.	M					
CoSB-361	Ensure that non-escorted personnel performing maintenance on the information system have required access authorizations.	M					
CoSB-362	Designate Agency personnel with required access authorizations and technical competence to supervise the maintenance activities of personnel who do not possess the required access authorizations.	M					
CoSB-363	Obtain maintenance support and/or spare parts for information systems as agreed upon within the service level agreement between IT and the system owner.	M					
Media Protection (MP)							
CoSB-364	Restrict access to only those staff members assigned to support such media.	M					
CoSB-366	Specify staff to physically control and securely store media within defined controlled areas.	M					
CoSB-365	Mark information system media indicating the distribution limitations, handling caveats, and applicable security markings of digital and non-digital information media.	M					
CoSB-367	Protect information system media until the media are destroyed or sanitized using approved equipment, techniques, and procedures.	M					
CoSB-368	Protect and control media during transport outside of controlled areas.	M					
CoSB-369	Maintain accountability for information system media during transport outside of controlled areas.	M					
CoSB-370	Document activities associated with the transport of information system media.	M					
CoSB-371	Restrict the activities associated with the transport of information system media to authorized personnel.	M					
CoSB-372	Sanitize prior to disposal, release out of organizational control, or release for reuse using DoD level data wipe processes in accordance with applicable federal and organizational standards and policies.	M					
CoSB-373	Employ sanitization mechanisms with the strength and integrity commensurate with the security category or classification of the information.	M					
CoSB-374	Prohibit the use of non IT approved/supported media on Agency owned equipment using unapproved security safeguards.	M					
Physical & Environmental Protection (PE)							
CoSB-394	Provide the capability of shutting off power to the information system or individual system components in emergency situations.	M					
CoSB-395	Place emergency shutoff switches or devices in to facilitate safe and easy access for personnel; and protect emergency power shutoff capability from unauthorized activation.	M					
CoSB-396	Provide a short-term uninterruptible power supply to facilitate an orderly shutdown of the information system; transition of the information system to long-term alternate power in the event of a primary power source loss.	M					
CoSB-397	Provide a long-term alternate power supply for the information system that is capable of maintaining minimally required operational capability in the event of an extended loss of the primary power source.	M					
CoSB-398	Employ and maintain automatic emergency lighting for the information system that activates in the event of a power outage or disruption and that covers emergency exits and evacuation routes within the facility.	M					
CoSB-399	Provide emergency lighting for all areas within the facility supporting essential missions and business functions.	M					
CoSB-400	Employ and maintain fire suppression and detection devices/systems for the information system that are supported by an independent energy source. (This applies primarily to facilities containing concentrations of information system resources including, for example, data centers, server rooms, and mainframe computer rooms. Fire suppression and detection devices/systems include, for example, sprinkler systems, handheld fire extinguishers, fixed fire hoses, and smoke detectors.)	M					
CoSB-401	Maintain temperature and humidity levels within the facility where the information system resides at pre-defined levels.	M					

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CoSB-402	Monitor temperature and humidity levels in real time notification processes to include alarms or notifications of changes potentially harmful to personnel or equipment.	M						
CoSB-403	Protect the information system from damage resulting from water leakage by providing master shutoff or isolation valves that are accessible, working properly, and known to key personnel. (This applies primarily to facilities containing concentrations of information system resources including, for example, data centers, server rooms, and mainframe computer rooms. Isolation valves can be employed in addition to or in lieu of master shutoff valves to shut off water supplies in specific areas of concern, without affecting entire organizations.)	M						
CoSB-404	Authorize, monitor, and control entering and exiting the facility and maintain records of those items delivered and removed from facility.	M						
CoSB-405	Effectively enforce authorizations for entry and exit of information system components may require restricting access to delivery areas and possibly isolating the areas from the information system and media libraries.	M						
CoSB-406	Employ all existing internally deployed security at alternate work sites. (Alternate work sites may include, for example, other government facilities or private residences of employees. While commonly distinct from alternative processing sites, alternate work sites may provide readily available alternate locations as part of contingency operations. Agency staff may define different sets of security controls for specific alternate work sites or types of sites depending on the work-related activities conducted at those sites.)	M						
CoSB-407	Assess as feasible, the effectiveness of security controls at alternate work sites.	M						
CoSB-408	Provide a means for employees to communicate with information security personnel in case of security incidents or problems.	M						
CoSB-375	Develop, approve, and maintain a list of individuals with authorized access to the facilities where the information systems reside.	M						
CoSB-376	Issue authorization credentials for facility access.	M						
CoSB-377	Review the access list detailing authorized facility access by individuals and remove individuals from the facility access list when access is no longer required.	M						
CoSB-378	Enforce physical access authorizations by verifying individual access authorizations before granting access to the facility.	M						
CoSB-379	Control ingress/egress to the facility using appropriate security tools such as locks, access fobs, cameras, alarms or a combination of such safeguards.	M						
CoSB-383	Secure keys, combinations, and other physical access devices.	M						
CoSB-384	Inventory physical access devices annually.	M						
CoSB-385	Change combinations and keys no less than annually and/or when keys are lost, combinations are compromised, or individuals are transferred or terminated.	M						
CoSB-386	Employ a penetration testing process that includes annual, unannounced attempts to bypass or circumvent security controls associated with physical access points to the facility.	M						
CoSB-381	Provide appropriate security safeguards to control access to areas within the facility officially designated as publicly accessible.	M						
CoSB-387	Control physical access to all Agency transmission assets and processes within Agency facilities using industry accepted standards.	M						
CoSB-388	Control physical access to information system output devices to prevent unauthorized individuals from obtaining the output.	M						
CoSB-380	Maintain physical access audit logs for sensitive areas containing technology assets or systems containing protected or confidential data or information.	M						
CoSB-389	Control physical access to output devices including, for example, placing output devices in locked rooms or other secured areas and allowing access to authorized individuals only, and placing output devices in locations that can be monitored by Agency personnel. Monitors, printers, copiers, scanners, facsimile machines, and audio devices are examples of information system output devices.	M						
CoSB-390	Monitor physical access to the facility where the information system resides to detect and respond to physical security incidents.	M						
CoSB-382	Escort visitors and monitors visitor activity in sensitive areas.	M						
CoSB-391	Maintain visitor access records to the facility where the information system resides annually and review visitor access records monthly.	M						
CoSB-392	Protect power equipment and power cabling for the information system from damage and destruction.	M						
CoSB-393	Determine the types of protection necessary for power equipment and cabling employed at different locations both internal and external to organizational facilities and environments of operation. This includes, for example, generators and power cabling outside of buildings, internal cabling and uninterruptable power sources within an office or data center, and power sources for self-contained entities such as vehicles and satellites	M						
	Planning (PL)							
CoSB-409	Develop a security plan for each information system that: - Is consistent with the Agency's enterprise architecture. - Defines explicitly the authorization boundary for the system. - Describes the operational context of the information system in terms of missions and business processes. - Provides the security categorization of the information system including supporting rationale. - Describes the operational environment for the information system and relationships with or connections to other information systems. - Provides an overview of the security requirements for the system. - Identifies any relevant overlays, if applicable. - Describes the security controls in place or planned for meeting those requirements including a rationale for the tailoring decisions. - Is reviewed and approved by the authorizing official or designated representative prior to plan implementation.	M						
CoSB-410	Distribute copies of the security plan and communicate subsequent changes to the plan to authorized personnel and/or business units.	M						
CoSB-411	Review the security plan for the information system at least annually.	M						
CoSB-412	Update the plan to address changes to the information system/environment of operation or problems identified during plan implementation or security control assessments.	M						

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CoSB-447		Require third-party providers to comply with personnel security policies and procedures established by the Agency.	M							
CoSB-448		Require third-party providers to notify Agency IT of any personnel transfers or terminations of third-party personnel who possess Agency credentials and/or badges, or who have information system privileges within 24 hours of said event.	M							
CoSB-449		Monitor provider compliance. (Third-party providers include, for example, service bureaus, contractors, and other organizations providing information system development, information technology services, outsourced applications, and network and security management.)	M							
CoSB-450		Employ a formal sanction process for individuals failing to comply with established information security policies and procedures	M							
CoSB-451		Notify Agency Human Resources Department as soon as knowledge of potential sanction when a formal employee sanctions process is initiated, identifying the individual sanctioned and the reason for the sanction. (Agency sanction processes reflect applicable state and federal laws, directives, regulations, policies, standards, and guidance. Sanctions processes are described in access agreements and can be included as part of general personnel policies and procedures for those organizations.)	M							
		Risk Assesments (RA)								
CoSB-452		Apply proper security controls to data categorized as confidential by system owners, including protected health information (PHI) and personally identifiable information (PII), in accordance with applicable federal and state laws, directives, policies, regulations, standards, and guidance.	M							
CoSB-453		Document the security controls (including supporting rationale) in the security plan for the information system.	M							
CoSB-454		Conduct (or have conducted by a qualified third-party) an assessment of risk, including the likelihood and magnitude of harm, from the unauthorized access, use, disclosure, disruption, modification, or destruction of the information system and the information it processes, stores, or transmits.	M							
CoSB-455		Document risk assessment results in annual IT Risk Assesment.	M							
CoSB-456		Review risk assessment results quarterly.	M							
CoSB-457		Disseminate risk assessment results to stakeholders.	M							
CoSB-458		Update the risk assessment quarterly or whenever there are significant changes to the information system or environment of operation (including the identification of new threats and vulnerabilities), or other conditions that may impact the security state of the system.	M							
CoSB-459		Scan for vulnerabilities in the information system and hosted applications as frequently as possible given the existing tools and support services available and/or randomly and when new vulnerabilities potentially affecting the system/applications are identified and reported.	M							
CoSB-460		Employ vulnerability scanning tools and techniques that facilitate interoperability among tools and automate parts of the vulnerability management process by using standards for: - Enumerating platforms, software flaws, and improper configurations. - Formatting checklists and test procedures. - Measuring vulnerability impact.	M							
CoSB-461		Analyze vulnerability scan reports and results from security control assessments.	M							
CoSB-462		Remediate legitimate vulnerabilities within one month in accordance with an organizational assessment of risk.	M							
CoSB-463		Share information obtained from the vulnerability scanning process and security control assessments with the Chief Information Officer to help eliminate similar vulnerabilities in other information systems (i.e., systemic weaknesses or deficiencies).	M							
CoSB-464		Employ vulnerability scanning tools that include the capability to readily update the information system vulnerabilities to be scanned.	M							
CoSB-465		Update the information system vulnerabilities scanned monthly, prior to a new scan, or when new vulnerabilities are identified and reported.	M							
CoSB-466		Ensure that information systems implement privileged access authorization to all systems for selected vulnerability scanning.	H							
		System and Services Acquisition (SA)								
CoSB-487		Perform configuration management during system, component, or service design; development, implementation, and/or operation.	M							
CoSB-488		Document, manage, and control the integrity of changes to configuration items under configuration management.	M							
CoSB-489		Implement only organization-approved changes to the system, component, or service.	M							
CoSB-490		Document approved changes to the system, component, or service and the potential security impacts of such changes.	M							
CoSB-491		Track security flaws and flaw resolution within the system, component, or service and report findings to authorized personnel and/or business units.	M							
CoSB-492		Require the developer of the information system, system component, or information system service to enable integrity verification of software and firmware components.	M							
CoSB-493		Provide an alternate configuration management process using organizational personnel in the absence of a dedicated developer configuration management team.	M							
CoSB-499		Perform unit; integration; system; regression testing/evaluation.	M							
CoSB-501		Implement a verifiable flaw remediation process.	M							
CoSB-507		Perform a manual code review of defined processes, procedures, and/or techniques.	M							
CoSB-494		Require the developer of the information system, system component, or information system service to enable integrity verification of hardware components.	M							
CoSB-495		Require the developer of the information system, system component, or information system service to employ tools for comparing newly generated versions of security-relevant hardware descriptions and software/firmware source and object code with previous versions.	M							
CoSB-496		Require the developer of the information system, system component, or information system service to maintain the integrity of the mapping between the master build data (hardware drawings and software/firmware code) describing the current version of security-relevant hardware, software, and firmware and the on-site master copy of the data for the current version.	M							
CoSB-498		Create and implement a security assessment plan.	M							
CoSB-500		Produce evidence of the execution of the security assessment plan and the results of the security testing/evaluation.	M							
CoSB-502		Correct flaws identified during security testing/evaluation.	M							

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CoSB-504	Perform threat and vulnerability analyses and subsequent testing/evaluation of the as-built system, component, or service.	M					
CoSB-508	Perform penetration testing.	M					
CoSB-509	Verify that the scope of security testing/evaluation provides complete coverage of required security controls.	M					
CoSB-510	Employ dynamic code analysis tools to identify common flaws and document the results of the analysis.	M					
CoSB-505	Require an independent agent satisfying to verify the correct implementation of the developer security assessment plan and the evidence produced during security testing/evaluation.	M					
CoSB-506	Ensure that the independent agent either is provided with sufficient information to complete the verification process or has been granted the authority to obtain such information.	M					
CoSB-497	Require the developer of the information system, system component, or information system service to execute procedures for ensuring that security-relevant hardware, software, and firmware updates distributed to the organization are exactly as specified by the master copies.	M					
CoSB-503	Employ static code analysis tools to identify common flaws and document the results of the analysis.	M					
CoSB-467	Determine information security requirements for the information system or information system service in mission/business process planning.	M					
CoSB-468	Determine, document, and allocate the resources required to protect the information system or information system service as part of its capital planning and investment control process.	M					
CoSB-469	Establish a discrete line item for information security in organizational programming and budgeting documentation.	M					
CoSB-470	Manage the information system using the Agency system development life cycle to ensure incorporation information security considerations.	M					
CoSB-471	Defines and documents information security roles and responsibilities throughout the system development life cycle.	M					
CoSB-472	Identifies individuals having information security roles and responsibilities.	M					
CoSB-473	Integrates the information security risk management process into system development life cycle activities.	M					
CoSB-474	Ensure the acquisition process includes the following requirements, descriptions, and criteria, explicitly or by reference, in the acquisition contract for the information system, system component, or information system service in accordance with applicable federal, state, and local laws, Executive Orders, directives, policies, regulations, standards, guidelines, and Agency mission and business needs: · Security strength requirements. · Security assurance requirements. · Security-related documentation requirements. · Requirements for protecting security-related documentation. · Description of the information system development environment and environment in which the system is intended to operate. · Acceptance criteria.	M					
CoSB-475	Describe the functional properties of the security controls to be employed; security-relevant external system interfaces; high-level design, low-level design, source code or hardware schematics that meet the business requirements.	M					
CoSB-476	Identify early in the system development life cycle, the functions, ports, protocols, and services intended for organizational use.	M					
CoSB-477	Employ only information technology products on the FIPS 201-approved products list for Personal Identity Verification (PIV) capability implemented within Agency information systems.	M					
CoSB-478	Obtain administrator documentation for the information system, system component, or information system service that describes: · Secure configuration, installation, and operation of the system, component, or service. · Effective use and maintenance of security functions/mechanisms. · Known vulnerabilities regarding configuration and use of administrative (i.e., privileged) functions. · Obtain user documentation for the information system, system component, or information system service that describes: · User-accessible security functions/mechanisms and how to effectively use those security functions/mechanisms. · Methods for user interaction, which enables individuals to use the system, component, or service in a more secure manner. · User responsibilities in maintaining the security of the system, component, or service.	M					
CoSB-479	Document attempts to obtain information system, system component, or information system service documentation when such documentation is either unavailable or nonexistent and insure that there is a process to develop and maintain appropriate documentation in response.	M					
CoSB-480	Protect documentation as required, in accordance with the risk management strategy.	M					
CoSB-481	Distribute documentation to only authorized persons or entities.	M					
CoSB-482	Apply industry standard information system security engineering principles in the specification, design, development, implementation, and modification of the information system.	M					
CoSB-483	Require that providers of external information system services comply with organizational information security requirements and employ security controls in accordance with applicable federal laws, Executive Orders, directives, policies, regulations, standards, and guidance.	M					
CoSB-484	Define and document government oversight and user roles and responsibilities with regard to external information system services.	M					
CoSB-485	Employ processes, methods, and techniques to monitor security control compliance by external service providers on an ongoing basis.	M					
CoSB-486	Require providers of external information system services to identify the functions, ports, protocols, and other services required for the use of such services.	M					

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		Systems and Communications Protection (SC)					
CoSB-518	Ensure information systems are configured to terminate the network connection associated with a communications session at the end of the session or after 20 minutes of inactivity: this control applies to both internal and external networks.	M					
CoSB-519	Terminate network connections associated with communications sessions including, for example, de-allocating associated TCP/IP address/port pairs at the operating system level, or de-allocating networking assignments at the application level if multiple application sessions are using a single, operating system-level network connection.	M					
CoSB-520	Establish and manage cryptographic keys for required cryptography employed within the information system in accordance with existing State and Federal rules and regulations.	M					
CoSB-521	Implement appropriate cryptographic deployment in accordance with applicable federal and state laws, directives, policies, regulations, and standards.	M					
CoSB-522	Prohibit remote activation of collaborative computing devices with the following exceptions: Allowed based on business need and approval of departmental management and IT CIO based on review of security issues of said devices.	M					
CoSB-523	Provide an explicit indication of use to users physically present at the devices.	M					
CoSB-524	Issue public key certificates under a [defined certificate policy] or obtain public key certificates from an approved service provider.	M					
CoSB-525	Manage information system trust stores for all key certificates to ensure only approved trust anchors are in the trust stores.	M					
CoSB-526	Define acceptable and unacceptable mobile code and mobile code technologies.	M					
CoSB-527	Establish usage restrictions and implementation guidance for acceptable mobile code and mobile code technologies.	M					
CoSB-528	Authorize, monitor, and control the use of mobile code within the information system.	M					
CoSB-529	Decisions regarding the employment of mobile code within organizational information systems are based on the potential for the code to cause damage to the systems if used maliciously.	M					
CoSB-530	Establish usage restrictions and implementation guidance for Voice over Internet Protocol (VoIP) technologies based on the potential to cause damage to the information system if used maliciously.	M					
CoSB-531	Authorize, monitor, and control the use of VoIP within the information system.	M					
CoSB-511	Separate user functionality from information system management functionality either logically or physically. (Information system management functionality includes, for example, functions necessary to administer databases, network components, workstations, or servers, and typically requires privileged user access.)	M					
CoSB-532	Provide additional data origin authentication and integrity verification artifacts along with the authoritative name resolution data the system returns in response to external name/address resolution queries.	M					
CoSB-533	Provide the means to indicate the security status of child zones and (if the child supports secure resolution services) to enable verification of a chain of trust among parent and child domains, when operating as part of a distributed, hierarchical namespace.	M					
CoSB-534	Enable external clients including, for example, remote Internet clients, to obtain origin authentication and integrity verification assurances for the host/service name to network address resolution information obtained through the service.	M					
CoSB-535	Ensure information systems that requests and performs data origin authentication and data integrity verification on the name/address resolution responses the system receives from authoritative sources.	M					
CoSB-536	Ensure each client of name resolution services either performs validation on its own, or has authenticated channels to trusted validation providers. Information systems that provide name and address resolution services for local clients include, for example, recursive resolving or caching domain name system (DNS) servers.	M					
CoSB-537	Ensure the information systems that collectively provide name/address resolution service for an organization are fault-tolerant and implement internal/external role separation.	M					
CoSB-540	Ensure the information system maintains a separate execution domain for each executing process.	M					
CoSB-538	Employ at least two authoritative domain name system servers, one configured as the primary server and the other configured as the secondary server, to eliminate single points of failure and to enhance redundancy.	M					
CoSB-539	Ensure the information system protects the authenticity of communications sessions.	M					
CoSB-512	Prevent unauthorized and unintended information transfer via shared system resources.	M					
CoSB-513	Ensure that the information system protects against or limit the effects of the following types of denial of service attacks: brute force attack, web defacement, other public facing services that are interrupted, by employing periodic and frequent review of public facing services including web pages, GIS systems, etc.	M					
CoSB-514	The information system must restrict the ability of individuals to launch or limit such denial of service attacks against other information systems.	M					
CoSB-515	Monitor and control communications at the external boundary of the system and at key internal boundaries within the system	M					
CoSB-516	Implement sub-networks for publicly accessible system components that are [physically; logically] separated from internal organizational networks, and connected to external networks or information systems only through managed interfaces consisting of boundary protection devices arranged in accordance with an organizational security architecture. (Managed interfaces include, for example, gateways, routers, firewalls, guards, network-based malicious code analysis and virtualization systems, or encrypted tunnels implemented within security architecture.)	M					
CoSB-517	Deploy information systems that protect the [confidentiality; integrity] of transmitted information.	M					

	System and Information Integrity (SI)					
CoSB-570	Ensure the information system: · Checks the validity of edits and new inputted data and fields of structured systems. · Provides a manual override capability for input validation of structured applications and its data. · Restricts the use of the manual override capability to only supporting roles as directed by the Agency CIO. · Audits the use of the manual override capability. · Reviews and resolve within input validation errors. · Behaves in a predictable and documented manner that reflects Agency and system objectives when invalid inputs are received. · Generates error messages that provide information necessary for corrective actions without revealing information that could be exploited by adversaries. · Reveals error messages only to appropriate administrators of those monitored systems.	M				
CoSB-571	Handle and retain information within the information system and information output from the system in accordance with applicable state and federal laws, directives, policies, regulations, standards, and operational requirements.	M				
CoSB-541	Identify, report, and correct information system flaws.	M				
CoSB-542	Test software and firmware updates related to flaw remediation for effectiveness and potential side effects before installation.	M				
CoSB-543	Install security-relevant software and firmware updates within industry standard recommendations and best practice intervals (generally weekly for end points and monthly for servers, switching and other devices) of the release of the updates.	M				
CoSB-544	Incorporate flaw remediation into the Agency configuration management process.	M				
CoSB-545	Employ automated mechanisms weekly to determine the state of information system components with regard to flaw remediation.	M				
CoSB-546	Employ malicious code protection mechanisms at information system entry and exit points to detect and eradicate malicious code.	M				
CoSB-547	Update malicious code protection mechanisms whenever new releases are available in accordance with Agency configuration management policy and procedures.	M				
CoSB-548	Configure malicious code protection mechanisms to: · Perform periodic scans of the information system minimally monthly and real-time scans of files from external sources at endpoint; network entry/exit points as the files are downloaded, opened, or executed in accordance with Agency security policy; · Block malicious code; quarantine malicious code; send alert to administrator; IT Staff will take immediate mitigating actions in response to malicious code detection. · Address the receipt of false positives during malicious code detection and eradication and the resulting potential impact on the availability of the information system.	M				
CoSB-549	Employ malicious code protection mechanisms at information system entry and exit points to detect and eradicate malicious code.	M				
CoSB-550	Update malicious code protection mechanisms whenever new releases are available in accordance with Agency configuration management policy and procedures.	M				
CoSB-551	Monitor the information system to detect: · Attacks and indicators of potential attacks. · Unauthorized local, network, and remote connections. · Identify unauthorized use of the information system through defined techniques and methods.	M				
CoSB-552	Deploy monitoring devices strategically within the information system to collect all appropriate data to determine any suspicious activity and at ad hoc locations within the system to track specific types of transactions of interest to the Agency.	M				
CoSB-553	Protect information obtained from intrusion-monitoring tools from unauthorized access, modification, and deletion.	M				
CoSB-554	Heighten the level of information system monitoring activity whenever there is an indication of increased risk to Agency operations and assets, individuals, other organizations, or based on law enforcement information, intelligence information, or other credible sources of information.	M				
CoSB-555	Obtain legal opinion with regard to information system monitoring activities in accordance with applicable state and federal laws, directives, policies, or regulations.	M				
CoSB-556	Provide information system monitoring information to authorized personnel or business units as needed.	M				
CoSB-557	Ensure the information system that may be generated from a variety of sources, including, for example, audit records or inputs from malicious code protection mechanisms, intrusion detection or prevention mechanisms, or boundary protection devices such as firewalls, gateways, and routers will be disseminated to authorized personnel or business units that shall take appropriate action on the alert(s).	M				
CoSB-565	Incorporate the detection of inappropriate events affecting Agency technology assets including unauthorized access of protected data and information into the Agency incident response capability.	M				
CoSB-558	Ensure alerts be transmitted telephonically, electronic mail messages, or by text messaging as required. Agency personnel on the notification list can include system administrators, mission/business owners, system owners, or information system security officers.	M				
CoSB-559	Receive information system security alerts, advisories, and directives from Multi State Information Sharing and Analysis Center, Microsoft, and other supporting/vendor entities on an ongoing basis.	M				
CoSB-560	Generate internal security alerts, advisories, and directives as deemed necessary throughout the Agency.	M				
CoSB-561	Disseminate security alerts, advisories, and directives to appropriate IT Staff as well supporting vendors and other supporting public agencies.	M				
CoSB-562	Implement security directives in accordance with established time frames, or notifies the issuing organization of the degree of noncompliance.	M				
CoSB-563	Employ integrity verification tools or manual detection processes to detect unauthorized changes to any and all technology assets including systems containing protected data and information.	M				
CoSB-564	Ensure the information system performs an integrity check of technology assets at startup, and/or at intervals determined to be industry best practices.	M				

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CoSB-566	Employ spam protection mechanisms at information system entry and exit points to detect and take action on unsolicited messages.	M					
CoSB-567	Update spam protection mechanisms when new releases are available in accordance with Agency configuration management policy and procedures.	M					
CoSB-568	Manage spam protection mechanisms centrally.	M					
CoSB-569	Ensure information systems automatically update spam protection mechanisms.	M					
	Additional Compliance Requirements						
CJIS	If applicable, the Vendor awarded this bid, the solution and all subcontractors must adhere to cybersecurity best practices as defined by **Criminal Justice Information Services (CJIS)**.					Please use the **CJIS Exceptions** tab to annotate exeptions if needed	
HIPAA	If applicable, the Vendor awarded this bid, the solution and all subcontractors must adhere to cybersecurity best practices as defined by **Health Insurance Portability and Accountability Act (HIPAA)**					Please use the **HIPAA Exceptions** tab to annotate exeptions if needed	
FTI	If applicable, the Vendor awarded this bid, the solution and all subcontractors must adhere to cybersecurity best practices as defined by **Federal Tax Information (FTI)**.					Please use the **FTI Exceptions** tab to annotate exeptions if needed	
PCI	If applicable, the Vendor awarded this bid, the solution and all subcontractors must adhere to cybersecurity best practices as defined by **Payment Card Industry (PCI)**.					Please use the **PCI Exceptions** tab to annotate exeptions if needed	
PII	If applicable, the Vendor awarded this bid, the solution and all subcontractors must adhere to State and Federal Rules and regulations protecting **Personally Identifiable Information (PII)**					Please use the **PII Exceptions** tab to annotate exeptions if needed	
SOX	If applicable, the Vendor awarded this bid, the solution and all subcontractors must adhere to cybersecurity best practices as defined by **Sarbanes-Oxley Act (SOX)**.					Please use the **SOX Exceptions** tab to annotate exeptions if needed	
FedRAMP Moderate	If applicable, the Vendor awarded this bid, the solution and all subcontractors must adhere to cybersecurity best practices as defined by **Federal Risk and Authorization Management Program (FedRAMP) Moderate**					Please use the **FedRAMP Exceptions** tab to annotate exeptions if needed	
FIPS	If applicable, the Vendor awarded this bid, the solution and all subcontractors must adhere to cybersecurity best practices as defined by **Federal Information Processing Standards (FIPS)**.					Please use the **FIPS Exceptions** tab to annotate exeptions if needed	
CCPA	If applicable, the Vendor awarded this bid, the solution and all subcontractors must adhere to cybersecurity best practices as defined by **California Consumer Privacy Act (CCPA)**					Please use the **CCPA Exceptions** tab to annotate exeptions if needed	
48 CFR 52.204-21	If applicable, the Vendor awarded this bid, the solution and all subcontractors must adhere to cybersecurity best practices as defined by **Federal Acquisition Regulation clause 48 CFR 52.204-21**					Please use the **48CFR 52.204-21 Exceptions** tab to annotate exeptions if needed	

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END OF SECTION 230900

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SECTION 233113 - METAL DUCTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Single-wall rectangular ducts and fittings.
2. Single-wall round and flat-oval ducts and fittings.
3. Sheet metal materials.
4. Duct liner.
5. Sealant and gaskets.
6. Hangers and supports.
7. Seismic-restraint devices.

B. Related Sections:

1. Section 230593 "Testing, Adjusting, and Balancing for HVAC" for testing, adjusting, and balancing requirements for metal ducts.
2. Section 233300 "Air Duct Accessories" for dampers, sound-control devices, duct-mounting access doors and panels, turning vanes, and flexible ducts.

1.3 PERFORMANCE REQUIREMENTS

A. Delegated Duct Design: Duct construction, including sheet metal thicknesses, seam and joint construction, reinforcements, and hangers and supports, shall comply with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible" and performance requirements and design criteria indicated in "Duct Schedule" Article.

B. Structural Performance: Duct hangers and supports and seismic restraints shall withstand the effects of gravity and seismic loads and stresses within limits and under conditions described in SMACNA's "HVAC Duct Construction Standards - Metal and Flexible" SMACNA's "Seismic Restraint Manual: Guidelines for Mechanical Systems."

1. Seismic Hazard Level A: Seismic force to weight ratio, 0.48.

C. Airstream Surfaces: Surfaces in contact with the airstream shall comply with requirements in ASHRAE 62.1.

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1.4 ACTION SUBMITTALS

A. Submittals shall be formatted per Section 230000 "General Mechanical Requirements". The manufacturer shall resubmit the specification section showing compliance with each respective paragraphs and specified items and features in that particular specification section. All **exceptions** shall be clearly identified by referencing respective paragraph and other requirements. Next to each specification item, indicate the following:

1. "No Exception Taken".
2. "Exception". All exceptions shall be clearly identified by referencing respective paragraph and other requirements along with proposed alternative.

B. Product Data: For each type of the following products:

1. Liners and adhesives.
2. Sealants and gaskets.
3. Seismic-restraint devices.

C. LEED Submittals:

1. Product Data for Prerequisite IEQ 1: Documentation indicating that duct systems comply with ASHRAE 62.1, Section 5 - "Systems and Equipment."
2. Product Data for Prerequisite EA 2: Documentation indicating that duct systems comply with ASHRAE/IESNA 90.1, Section 6.4.4 - "HVAC System Construction and Insulation."
3. Leakage Test Report for Prerequisite EA 2: Documentation of work performed for compliance with ASHRAE/IESNA 90.1, Section 6.4.4.2.2 - "Duct Leakage Tests."
4. Duct-Cleaning Test Report for Prerequisite IEQ 1: Documentation of work performed for compliance with ASHRAE 62.1, Section 7.2.4 - "Ventilation System Start-up."
5. Product Data for Credit IEQ 4.1: For adhesives and sealants, documentation including printed statement of VOC content.
6. Laboratory Test Reports for Credit IEQ 4: For adhesives and sealants, documentation indicating that products comply with the testing and product requirements of the California Department of Health Services' "Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers."

D. Shop Drawings:

1. Fabrication, assembly, and installation, including plans, elevations, sections, components, and attachments to other work.
2. Factory- and shop-fabricated ducts and fittings.
3. Duct layout indicating sizes, configuration, liner material, and static-pressure classes.
4. Elevation of top of ducts.
5. Dimensions of main duct runs from building grid lines.
6. Fittings.
7. Reinforcement and spacing.
8. Seam and joint construction.
9. Penetrations through fire-rated and other partitions.
10. Equipment installation based on equipment being used on Project.
11. Locations for duct accessories, including dampers, turning vanes, and access doors and panels.

12. Hangers and supports, including methods for duct and building attachment, seismic restraints, and vibration isolation.

E. Delegated-Design Submittal:

1. Sheet metal thicknesses.
2. Joint and seam construction and sealing.
3. Reinforcement details and spacing.
4. Materials, fabrication, assembly, and spacing of hangers and supports.

5. Design Calculations: Calculations, including analysis data signed and sealed by the licensed structural engineer responsible for their preparation for selecting hangers and supports and seismic restraints.

1.5 INFORMATIONAL SUBMITTALS

A. Coordination Drawings: 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. Duct installation in congested spaces, indicating coordination with general construction, building components, and other building services. Indicate proposed changes to duct layout.
2. Suspended ceiling components.
3. Structural members to which duct will be attached.
4. Size and location of initial access modules for acoustical tile.
5. Penetrations of smoke barriers and fire-rated construction.
6. Items penetrating finished ceiling including the following:
   a. Lighting fixtures.
   b. Air outlets and inlets.
   c. Speakers.
   d. Sprinklers.
   e. Access panels.
   f. Perimeter moldings.

B. Welding certificates.

C. Field quality-control reports.

1.6 QUALITY ASSURANCE

A. Welding Qualifications: Qualify procedures and personnel according to the following:

1. AWS D1.1/D1.1M, "Structural Welding Code - Steel," for hangers and supports.
2. AWS D1.2/D1.2M, "Structural Welding Code - Aluminum," for aluminum supports.
3. AWS D9.1M/D9.1, "Sheet Metal Welding Code," for duct joint and seam welding.

B. ASHRAE Compliance: Applicable requirements in ASHRAE 62.1, Section 5 - "Systems and Equipment" and Section 7 - "Construction and System Start-up."

C. ASHRAE/IESNA Compliance: Applicable requirements in ASHRAE/IESNA 90.1, Section 6.4.4 - "HVAC System Construction and Insulation."

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D. Exhaust system shall comply with CMC Section XXX.

E. ASHRAE/IESNA 90.1 requires leakage testing for representative sections totaling no less than 25 percent of installed duct area for ducts designated to operate at a static-pressure class in excess of 3-inch wg . Consider building a mockup of typical portions of the system that can be tested early in the construction process. This standard, as enforced by some authorities having jurisdiction, requires duct systems with static-pressure classes in excess of 3-inch wg to be identified on Drawings.

PART 2 - PRODUCTS

2.1 SINGLE-WALL RECTANGULAR DUCTS AND FITTINGS

A. General Fabrication Requirements: Comply with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible" based on indicated static-pressure class unless otherwise indicated.

B. Transverse Joints: Select joint types and fabricate according to SMACNA's "HVAC Duct Construction Standards - Metal and Flexible," Figure 2-1, "Rectangular Duct/Transverse Joints," for static-pressure class, applicable sealing requirements, materials involved, duct-support intervals, and other provisions in SMACNA's "HVAC Duct Construction Standards - Metal and Flexible."

C. Longitudinal Seams: Select seam types and fabricate according to SMACNA's "HVAC Duct Construction Standards - Metal and Flexible," Figure 2-2, "Rectangular Duct/Longitudinal Seams," for static-pressure class, applicable sealing requirements, materials involved, duct-support intervals, and other provisions in SMACNA's "HVAC Duct Construction Standards - Metal and Flexible."

D. Elbows, Transitions, Offsets, Branch Connections, and Other Duct Construction: Select types and fabricate according to SMACNA's "HVAC Duct Construction Standards - Metal and Flexible," Chapter 4, "Fittings and Other Construction," for static-pressure class, applicable sealing requirements, materials involved, duct-support intervals, and other provisions in SMACNA's "HVAC Duct Construction Standards - Metal and Flexible."

2.2 SINGLE-WALL ROUND AND FLAT-OVAL DUCTS AND FITTINGS

A. General Fabrication Requirements: Comply with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible," Chapter 3, "Round, Oval, and Flexible Duct," based on indicated static-pressure class unless otherwise indicated.

1. Factory- or shop-fabricated spiral lock seam duct:
   a. No snap lock
   b. Factory-fabricated longitudinal seam acceptable for ducts larger than standard factory sizes

2. Manufacturers:
   a. United Sheet Metal Division, United McGill
   b. Semco Manufacturing, Inc.
   c. Or equal

B. Flat-Oval Ducts: Indicated dimensions are the duct width (major dimension) and diameter of the round sides connecting the flat portions of the duct (minor dimension).

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C. Transverse Joints: Select joint types and fabricate according to SMACNA's "HVAC Duct Construction Standards - Metal and Flexible," Figure 3-1, "Round Duct Transverse Joints," for static-pressure class, applicable sealing requirements, materials involved, duct-support intervals, and other provisions in SMACNA's "HVAC Duct Construction Standards - Metal and Flexible."

1. Transverse Joints in Ducts Larger Than 60 Inches in Diameter: Flanged.

D. Longitudinal Seams: Select seam types and fabricate according to SMACNA's "HVAC Duct Construction Standards - Metal and Flexible," Figure 3-2, "Round Duct Longitudinal Seams," for static-pressure class, applicable sealing requirements, materials involved, duct-support intervals, and other provisions in SMACNA's "HVAC Duct Construction Standards - Metal and Flexible."

1. Fabricate round ducts larger than 90 inches in diameter with butt-welded longitudinal seams.
2. Fabricate flat-oval ducts larger than 72 inches in width (major dimension) with butt-welded longitudinal seams.

E. Fittings:

1. Same material and construction as duct in which installed
2. For ductwork exposed to occupant view, do not use fabricated fittings at taps to terminal units and outlets. Instead use saddle tap cut into continuous spiral duct. Intent is for spiral duct to be continuous for aesthetic reasons. Saddle tap flange width shall be 0.5 inches or less.

F. Tees and Laterals: Select types and fabricate according to SMACNA's "HVAC Duct Construction Standards - Metal and Flexible," Figure 3-5, "90 Degree Tees and Laterals," and Figure 3-6, "Conical Tees," for static-pressure class, applicable sealing requirements, materials involved, duct-support intervals, and other provisions in SMACNA's "HVAC Duct Construction Standards - Metal and Flexible."

2.3 SHEET METAL MATERIALS

A. General Material Requirements: Comply with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible" for acceptable materials, material thicknesses, and duct construction methods unless otherwise indicated. Sheet metal materials shall be free of pitting, seam marks, roller marks, stains, discolorations, and other imperfections.

B. Galvanized Sheet Steel: Comply with ASTM A 653/A 653M.

1. General Applications (except as noted below): G60 Galvanized Coating.
2. Plenum Walls and Blank-Offs Where in Contact with Cooling Coil: G90 Galvanized Coating.
3. Exterior Applications: G90 Galvanized Coating.
4. Finishes for Surfaces Exposed to View: Mill phosphatized.

C. PVC-Coated, Galvanized Sheet Steel: Comply with ASTM A 653/A 653M.

1. Galvanized Coating Designation: G90

2. Minimum Thickness for Factory-Applied PVC Coating: 4 mils thick on sheet metal surface of ducts and fittings, and minimum 1 mil thick on opposite surface.
3. Coating Materials: Acceptable to authorities having jurisdiction for use on ducts listed and labeled by an NRTL for compliance with UL 181, Class 1.

D. Carbon-Steel Sheets: Comply with ASTM A 1008/A 1008M, with oiled, matte finish for exposed ducts.

E. Stainless-Steel Sheets: Comply with ASTM A 480/A 480M, Type 304L or 316L, as indicated in the "Duct Schedule" Article; cold rolled, annealed, sheet. Exposed surface finish shall be No. 2B, No. 2D, No. 3, or No. 4 as indicated in the "Duct Schedule" Article.

F. Aluminum Sheets: Comply with ASTM B 209 Alloy 3003, H14 temper; with mill finish for concealed ducts, and standard, one-side bright finish for duct surfaces exposed to view.

G. Factory- or Shop-Applied Antimicrobial Coating:

1. Apply to the surface of sheet metal that will form the interior surface of the duct. An untreated clear coating shall be applied to the exterior surface.
2. Antimicrobial compound shall be tested for efficacy by an NRTL and registered by the EPA for use in HVAC systems.
3. Coating containing the antimicrobial compound shall have a hardness of 2H, minimum, when tested according to ASTM D 3363.
4. Surface-Burning Characteristics: Maximum flame-spread index of 25 and maximum smoke-developed index of 50 when tested according to UL 723; certified by an NRTL.
5. Shop-Applied Coating Color: [Black] [White].
6. Antimicrobial coating on sheet metal is not required for duct containing liner treated with antimicrobial coating.

H. Reinforcement Shapes and Plates: ASTM A 36/A 36M, steel plates, shapes, and bars; black and galvanized.

1. Where black- and galvanized-steel shapes and plates are used to reinforce aluminum ducts, isolate the different metals with butyl rubber, neoprene, or EPDM gasket materials.

I. Tie Rods: Galvanized steel, 1/4-inch minimum diameter for lengths 36 inches or less; 3/8-inch minimum diameter for lengths longer than 36 inches.

2.4 DUCT LINER

A. Fibrous-Glass Duct Liner: Comply with ASTM C 1071, NFPA 90A, or NFPA 90B; and with NAIMA AH124, "Fibrous Glass Duct Liner Standard."

1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:
   a. CertainTeed Corporation; Insulation Group
   b. Johns Manville
   c. Knauf Insulation
   d. Maximum Thermal Conductivity:
      1) Type I, Flexible: 0.27 Btu x in./h x sq. ft. x deg F at 75 deg F mean temperature.
      2) Type II, Rigid: 0.23 Btu x in./h x sq. ft. x deg F at 75 deg F mean temperature.

2. Antimicrobial Erosion-Resistant Coating: Apply to the surface of the liner that will form the interior surface of the duct to act as a moisture repellent and erosion-resistant coating. Antimicrobial compound shall be tested for efficacy by an NRTL and registered by the EPA for use in HVAC systems.
3. Water-Based Liner Adhesive: Comply with NFPA 90A or NFPA 90B and with ASTM C 916.

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a. For indoor applications, adhesive shall have a VOC content of 80 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).
b. Adhesive shall comply with the testing and product requirements of the California Department of Health Services' "Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers."

B. Flexible Elastomeric Duct Liner: Preformed, cellular, closed-cell, sheet materials complying with ASTM C 534, Type II, Grade 1; and with NFPA 90A or NFPA 90B.

1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:
   a. Armacell LLC.
   b. Aeroflex USA Inc.
   c. Rubatex International, LLC.

2. Surface-Burning Characteristics: Maximum flame-spread index of 25 and maximum smoke-developed index of 50 when tested according to UL 723; certified by an NRTL.
3. Liner Adhesive: As recommended by insulation manufacturer and complying with NFPA 90A or NFPA 90B.
   a. For indoor applications, adhesive shall have a VOC content of 50 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).
   b. Adhesive shall comply with the testing and product requirements of the California Department of Health Services' "Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers."

C. Insulation Pins and Washers:

1. Cupped-Head, Capacitor-Discharge-Weld Pins: Copper- or zinc-coated steel pin, fully annealed for capacitor-discharge welding, 0.135-inch-diameter shank, length to suit depth of insulation indicated with integral 1-1/2-inch galvanized carbon-steel washer.
2. Insulation-Retaining Washers: Self-locking washers formed from 0.016-inch-thick stainless steel; with beveled edge sized as required to hold insulation securely in place but not less than 1-1/2 inches in diameter.

D. Shop Application of Duct Liner: Comply with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible," Figure 7-11, "Flexible Duct Liner Installation."

1. Adhere a single layer of indicated thickness of duct liner with at least 90 percent adhesive coverage at liner contact surface area. Attaining indicated thickness with multiple layers of duct liner is prohibited.
2. Apply adhesive to transverse edges of liner facing upstream that do not receive metal nosing.
3. Butt transverse joints without gaps, and coat joint with adhesive.
4. Fold and compress liner in corners of rectangular ducts or cut and fit to ensure butted-edge overlapping.
5. Do not apply liner in rectangular ducts with longitudinal joints, except at corners of ducts, unless duct size and dimensions of standard liner make longitudinal joints necessary.

6. Apply adhesive coating on longitudinal seams in ducts with air velocity of 2500 fpm.

7. Secure liner with mechanical fasteners 4 inches from corners and at intervals not exceeding 12 inches transversely; at 3 inches from transverse joints and at intervals not exceeding 18 inches longitudinally.

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8. Secure transversely oriented liner edges facing the airstream with metal nosings that have either channel or "Z" profiles or are integrally formed from duct wall. Fabricate edge facings at the following locations:
   a. Fan discharges.
   b. Intervals of lined duct preceding unlined duct.
   c. Upstream edges of transverse joints in ducts where air velocities are higher than 2500 fpm or where indicated.

9. Secure insulation between perforated sheet metal inner duct of same thickness as specified for outer shell. Use mechanical fasteners that maintain inner duct at uniform distance from outer shell without compressing insulation.
   a. Sheet Metal Inner Duct Perforations: 3/32-inch diameter, with an overall open area of 23 percent.

10. Terminate inner ducts with buildouts attached to fire-damper sleeves, dampers, turning vane assemblies, or other devices. Fabricated buildouts (metal hat sections) or other buildout means are optional; when used, secure buildouts to duct walls with bolts, screws, rivets, or welds.

2.5 SEALANT AND GASKETS

A. General Sealant and Gasket Requirements: Surface-burning characteristics for sealants and gaskets shall be a maximum flame-spread index of 25 and a maximum smoke-developed index of 50 when tested according to UL 723; certified by an NRTL.

B. Two-Part Tape Sealing System:

1. Tape: Woven cotton fiber impregnated with mineral gypsum and modified acrylic/silicone activator to react exothermically with tape to form hard, durable, airtight seal.
2. Tape Width: 3 inches.
3. Sealant: Modified styrene acrylic.
4. Water resistant.
5. Mold and mildew resistant.
6. Maximum Static-Pressure Class: 10-inch wg, positive and negative.
7. Service: Indoor and outdoor.
8. Service Temperature: Minus 40 to plus 200 deg F.
9. Substrate: Compatible with galvanized sheet steel (both PVC coated and bare), stainless steel, or aluminum.

10. For indoor applications, sealant shall have a VOC content of 250 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).

11. Sealant shall comply with the testing and product requirements of the California Department of Health Services' "Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers."

C. Water-Based Joint and Seam Sealant:

1. Application Method: Brush on.
2. Solids Content: Minimum 65 percent.
3. Shore A Hardness: Minimum 20.
4. Water resistant.
5. Mold and mildew resistant.

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6. VOC: Maximum 75 g/L (less water).
7. Maximum Static-Pressure Class: 10-inch wg, positive and negative.
8. Service: Indoor or outdoor.
9. Substrate: Compatible with galvanized sheet steel (both PVC coated and bare), stainless steel, or aluminum sheets.

D. Solvent-Based Joint and Seam Sealant:

1. Application Method: Brush on.
2. Base: Synthetic rubber resin.
3. Solvent: Toluene and heptane.
4. Solids Content: Minimum 60 percent.
5. Shore A Hardness: Minimum 60.
6. Water resistant.
7. Mold and mildew resistant.
8. For indoor applications, sealant shall have a VOC content of 250 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).
9. VOC: Maximum 395 g/L.
10. Sealant shall comply with the testing and product requirements of the California Department of Health Services' "Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers."
11. Maximum Static-Pressure Class: 10-inch wg, positive or negative.
12. Service: Indoor or outdoor.
13. Substrate: Compatible with galvanized sheet steel (both PVC coated and bare), stainless steel, or aluminum sheets.

E. Flanged Joint Sealant: Comply with ASTM C 920.

1. General: Single-component, acid-curing, silicone, elastomeric.
2. Type: S.
3. Grade: NS.
4. Class: 25.
5. Use: O.
6. For indoor applications, sealant shall have a VOC content of 250 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).
7. Sealant shall comply with the testing and product requirements of the California Department of Health Services' "Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers."

F. Flange Gaskets: Butyl rubber, neoprene, or EPDM polymer with polyisobutylene plasticizer.

G. Round Duct Joint O-Ring Seals:

1. Seal shall provide maximum leakage class of 3 cfm/100 sq. ft. at 1-inch wg and shall be rated for 10-inch wg static-pressure class, positive or negative.
2. EPDM O-ring to seal in concave bead in coupling or fitting spigot.
3. Double-lipped, EPDM O-ring seal, mechanically fastened to factory-fabricated couplings and fitting spigots.

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2.6 HANGERS AND SUPPORTS

A. Hanger Rods for Noncorrosive Environments: Cadmium-plated steel rods and nuts.

B. Hanger Rods for Corrosive Environments: Electrogalvanized, all-thread rods or galvanized rods with threads painted with zinc-chromate primer after installation.

C. Strap and Rod Sizes: Comply with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible," Table 5-1, "Rectangular Duct Hangers Minimum Size," and Table 5-2, "Minimum Hanger Sizes for Round Duct."

D. Steel Cables for Galvanized-Steel Ducts: Galvanized steel complying with ASTM A 603.

E. Steel Cables for Stainless-Steel Ducts: Stainless steel complying with ASTM A 492.

F. Steel Cable End Connections: Cadmium-plated steel assemblies with brackets, swivel, and bolts designed for duct hanger service; with an automatic-locking and clamping device.

G. Duct Attachments: Sheet metal screws, blind rivets, or self-tapping metal screws; compatible with duct materials.

H. Trapeze and Riser Supports:

1. Supports for Galvanized-Steel Ducts: Galvanized-steel shapes and plates.
2. Supports for Stainless-Steel Ducts: Stainless-steel shapes and plates.
3. Supports for Aluminum Ducts: Aluminum or galvanized steel coated with zinc chromate.

2.7 SEISMIC-RESTRAINT DEVICES

A. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:

1. Hilti Corp.
2. TOLCO; a brand of NIBCO Inc.
3. Unistrut Corporation; Tyco International, Ltd.

B. General Requirements for Restraint Components: Rated strengths, features, and applications shall be as defined in reports by the Office of Statewide Health Planning and Development for the State of California.

C. Channel Support System: Shop- or field-fabricated support assembly made of slotted steel channels rated in tension, compression, and torsion forces and with accessories for attachment to braced component at one end and to building structure at the other end. Include matching components and corrosion-resistant coating.

D. Restraint Cables: ASTM A 603, galvanized-steel cables with end connections made of cadmium-plated steel assemblies with brackets, swivel, and bolts designed for restraining cable service; and with an automatic-locking and clamping device or double-cable clips.

E. Hanger Rod Stiffener: Reinforcing steel angle or channel unistrut clamped to hanger rod.

F. Mechanical Anchor Bolts: Drilled-in and stud-wedge or female-wedge type. Select anchor bolts with strength required for anchor and as tested according to ASTM E 488.

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PART 3 - EXECUTION

3.1 DUCT INSTALLATION

A. Drawing plans, schematics, and diagrams indicate general location and arrangement of duct system. Indicated duct locations, configurations, and arrangements were used to size ducts and calculate friction loss for air-handling equipment sizing and for other design considerations. Install duct systems as indicated unless deviations to layout are approved on Shop Drawings and Coordination Drawings.

B. Install ducts according to SMACNA's "HVAC Duct Construction Standards - Metal and Flexible" unless otherwise indicated.

C. Install round and flat-oval ducts in maximum practical lengths.

D. Install ducts with fewest possible joints.

E. Install factory- or shop-fabricated fittings for changes in direction, size, and shape and for branch connections.

F. Unless otherwise indicated, install ducts vertically and horizontally, and parallel and perpendicular to building lines.

G. Install ducts close to walls, overhead construction, columns, and other structural and permanent enclosure elements of building.

H. Install ducts with a clearance of 1 inch, plus allowance for insulation thickness.

I. Route ducts to avoid passing through transformer vaults and electrical equipment rooms and enclosures.

J. Where ducts pass through non-fire-rated interior partitions and exterior walls and are exposed to view, cover the opening between the partition and duct or duct insulation with sheet metal flanges of same metal thickness as the duct. Overlap openings on four sides by at least 1-1/2 inches.

K. Where ducts pass through fire-rated interior partitions and exterior walls, install fire dampers as required by NFPA 90A. Comply with requirements in Section 233300 "Air Duct Accessories" for fire and smoke dampers.

L. Protect duct interiors from moisture, construction debris and dust, and other foreign materials. Comply with SMACNA's "IAQ Guidelines for Occupied Buildings Under Construction," Appendix G, "Duct Cleanliness for New Construction Guidelines."

3.2 INSTALLATION OF EXPOSED DUCTWORK

A. Protect ducts exposed in finished spaces from being dented, scratched, or damaged.

B. Trim duct sealants flush with metal. Create a smooth and uniform exposed bead. Do not use two-part tape sealing system.

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C. Grind welds to provide smooth surface free of burrs, sharp edges, and weld splatter. When welding stainless steel with a No. 3 or 4 finish, grind the welds flush, polish the exposed welds, and treat the welds to remove discoloration caused by welding.

D. Maintain consistency, symmetry, and uniformity in the arrangement and fabrication of fittings, hangers and supports, duct accessories, and air outlets.

E. Repair or replace damaged sections and finished work that does not comply with these requirements.

3.3 ADDITIONAL INSTALLATION REQUIREMENTS FOR COMMERCIAL KITCHEN HOOD EXHAUST DUCT

A. Install commercial kitchen hood exhaust ducts without dips and traps that may hold grease, and sloped a minimum of 2 percent to drain grease back to the hood.

B. Install fire-rated access panel assemblies at each change in direction and at maximum intervals of 12 feet in horizontal ducts, and at every floor for vertical ducts, or as indicated on Drawings.

C. Do not penetrate fire-rated assemblies except as allowed by applicable building codes and authorities having jurisdiction.

3.4 DUCT SEALING

A. Seal ducts for duct static-pressure, seal classes, and leakage classes specified in "Duct Schedule" Article according to SMACNA's "HVAC Duct Construction Standards - Metal and Flexible."

B. Seal ducts to the following seal classes according to SMACNA's "HVAC Duct Construction Standards - Metal and Flexible":

1. Comply with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible."
2. Outdoor, Supply-Air Ducts: Seal Class A.
3. Outdoor, Exhaust Ducts: Seal Class B.
4. Outdoor, Return-Air Ducts: Seal Class A.
5. Unconditioned Space, Supply-Air Ducts in Pressure Classes 1-Inch wg and Lower: Seal Class B.
6. Unconditioned Space, Supply-Air Ducts in Pressure Classes Higher Than 1-Inch wg: Seal Class A.
7. Unconditioned Space, Exhaust Ducts: Seal Class B.
8. Unconditioned Space, Return-Air Ducts: Seal Class A.
9. Conditioned Space, Supply-Air Ducts in Pressure Classes 1-Inch wg and Lower: Seal Class B.
10. Conditioned Space, Supply-Air Ducts in Pressure Classes Higher Than 1-Inch wg: Seal Class A.
11. Conditioned Space, Exhaust Ducts: Seal Class A.
12. Conditioned Space, Return-Air Ducts: Seal Class A.

3.5 HANGER AND SUPPORT INSTALLATION

A. Comply with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible," Chapter 5, "Hangers and Supports."

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B. Building Attachments: Concrete inserts, powder-actuated fasteners, or structural-steel fasteners appropriate for construction materials to which hangers are being attached.

1. Where practical, install concrete inserts before placing concrete.
2. Install powder-actuated concrete fasteners after concrete is placed and completely cured.
3. Use powder-actuated concrete fasteners for standard-weight aggregate concretes or for slabs more than 4 inches thick.
4. Do not use powder-actuated concrete fasteners for lightweight-aggregate concretes or for slabs less than 4 inches thick.

5. Do not use powder-actuated concrete fasteners for seismic restraints.

C. Hanger Spacing: Comply with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible," Table 5-1, "Rectangular Duct Hangers Minimum Size," and Table 5-2, "Minimum Hanger Sizes for Round Duct," for maximum hanger spacing; install hangers and supports within 24 inches of each elbow and within 48 inches of each branch intersection.

D. Hangers Exposed to View: Threaded rod and angle or channel supports.

E. Support vertical ducts with steel angles or channel secured to the sides of the duct with welds, bolts, sheet metal screws, or blind rivets; support at each floor and at a maximum interval of 16 feet.

F. Install upper attachments to structures. Select and size upper attachments with pull-out, tension, and shear capacities appropriate for supported loads and building materials where used.

3.6 SEISMIC-RESTRAINT-DEVICE INSTALLATION

A. Install ducts with hangers and braces designed to support the duct and to restrain against seismic forces required by applicable building codes. Comply with [SMACNA's "Seismic Restraint Manual: Guidelines for Mechanical Systems"] [OSHPD Preapproved Manufacturer's Certification (OPM)].

1. Space lateral supports a maximum of 40 feet o.c., and longitudinal supports a maximum of 80 feet o.c.
2. Brace a change of direction longer than 12 feet.

B. Select seismic-restraint devices with capacities adequate to carry present and future static and seismic loads.

C. Install cables so they do not bend across edges of adjacent equipment or building structure.

D. Install cable restraints on ducts that are suspended with vibration isolators.

E. Install seismic-restraint devices using methods approved by an evaluation service member of the ICC Evaluation Service.

F. Attachment to Structure: If specific attachment is not indicated, anchor bracing and restraints to structure, to flanges of beams, to upper truss chords of bar joists, or to concrete members.

G. Drilling for and Setting Anchors:

1. Identify position of reinforcing steel and other embedded items prior to drilling holes for anchors. Do not damage existing reinforcement or embedded items during drilling. Notify the Architect if reinforcing steel or other embedded items are encountered during drilling. Locate and avoid prestressed tendons, electrical and telecommunications conduit, and gas lines.
2. Do not drill holes in concrete or masonry until concrete, mortar, or grout has achieved full design strength.
3. Wedge Anchors: Protect threads from damage during anchor installation. Heavy-duty sleeve anchors shall be installed with sleeve fully engaged in the structural element to which anchor is to be fastened.
4. Set anchors to manufacturer's recommended torque, using a torque wrench.
5. Install zinc-coated steel anchors for interior applications and stainless-steel anchors for applications exposed to weather.

3.7 CONNECTIONS

A. Make connections to equipment with flexible connectors complying with Section 233300 "Air Duct Accessories."

B. Comply with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible" for branch, outlet and inlet, and terminal unit connections.

3.8 PAINTING

A. Paint interior of metal ducts that are visible through registers and grilles and that do not have duct liner. Apply one coat of flat, black, latex paint over a compatible galvanized-steel primer. Paint materials and application requirements are specified in Section 099113 "Exterior Painting" and Section 099123 "Interior Painting."

3.9 FIELD QUALITY CONTROL

A. Perform tests and inspections.

B. Leakage Tests:

1. Comply with SMACNA's "HVAC Air Duct Leakage Test Manual." Submit a test report for each test.
2. Test the following systems:
   a. Ducts with a Pressure Class Higher Than 3-Inch wg: Test representative duct sections, selected by Engineer from sections installed, totaling no less than 25 percent of total installed duct area for each designated pressure class.
3. Disassemble, reassemble, and seal segments of systems to accommodate leakage testing and for compliance with test requirements.
4. Test for leaks before applying external insulation.
5. Conduct tests at static pressures equal to maximum design pressure of system or section being tested. If static-pressure classes are not indicated, test system at maximum system design pressure. Do not pressurize systems above maximum design operating pressure.
6. Give seven days advance notice for testing.

C. Duct System Cleanliness Tests:

1. Visually inspect duct system to ensure that no visible contaminants are present.

D. Contractor shall develop and implement an IAQ Management Plan for the construction and pre-occupancy phases of the building as follows:

1. During construction meet or exceed the recommended control measures of the Sheet Metal and Air Conditioning National Contractors Association (SMACNA) IAQ Guidelines for Occupied Buildings Under Construction, and Edition 2007, ANSI/SMACNA 008-2008 (Chapter 3).
2. Protect stored materials on-site and installed absorptive materials from moisture damage.
3. If permanently installed air handlers are used during construction, then filtration media with a minimum efficiency reporting value (MERV) of 8 must be used at each return air grille, as determined by ASHRAE Standard 52.2-2012 (with errata, but without addenda). Replace air filtration media immediately prior to occupancy.

E. Duct system will be considered defective if it does not pass tests and inspections.

F. Prepare test and inspection reports.

3.10 DUCT CLEANING

A. Clean [**new**] [**and**] [**existing**] duct system(s) before testing, adjusting, and balancing.

B. Use service openings for entry and inspection.

1. Create new openings and install access panels appropriate for duct static-pressure class if required for cleaning access. Provide insulated panels for insulated or lined duct. Patch insulation and liner as recommended by duct liner manufacturer. Comply with Section 233300 "Air Duct Accessories" for access panels and doors.
2. Disconnect and reconnect flexible ducts as needed for cleaning and inspection.
3. Remove and reinstall ceiling to gain access during the cleaning process.

C. Particulate Collection and Odor Control:

1. When venting vacuuming system inside the building, use HEPA filtration with 99.97 percent collection efficiency for 0.3-micron-size (or larger) particles.
2. When venting vacuuming system to outdoors, use filter to collect debris removed from HVAC system, and locate exhaust downwind and away from air intakes and other points of entry into building.

D. Clean the following components by removing surface contaminants and deposits:

1. Air outlets and inlets (registers, grilles, and diffusers).
2. Supply, return, and exhaust fans including fan housings, plenums (except ceiling supply and return plenums), scrolls, blades or vanes, shafts, baffles, dampers, and drive assemblies.
3. Air-handling unit internal surfaces and components including mixing box, coil section, air wash systems, spray eliminators, condensate drain pans, humidifiers and dehumidifiers, filters and filter sections, and condensate collectors and drains.
4. Coils and related components.
5. Return-air ducts, dampers, actuators, and turning vanes except in ceiling plenums and mechanical equipment rooms.
6. Supply-air ducts, dampers, actuators, and turning vanes.

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7. Dedicated exhaust and ventilation components and makeup air systems.

E. Mechanical Cleaning Methodology:

1. Clean metal duct systems using mechanical cleaning methods that extract contaminants from within duct systems and remove contaminants from building.
2. Use vacuum-collection devices that are operated continuously during cleaning. Connect vacuum device to downstream end of duct sections so areas being cleaned are under negative pressure.
3. Use mechanical agitation to dislodge debris adhered to interior duct surfaces without damaging integrity of metal ducts, duct liner, or duct accessories.
4. Clean fibrous-glass duct liner with HEPA vacuuming equipment; do not permit duct liner to get wet. Replace fibrous-glass duct liner that is damaged, deteriorated, or delaminated or that has friable material, mold, or fungus growth.
5. Clean coils and coil drain pans according to NADCA 1992. Keep drain pan operational. Rinse coils with clean water to remove latent residues and cleaning materials; comb and straighten fins.
6. Provide drainage and cleanup for wash-down procedures.
7. Antimicrobial Agents and Coatings: Apply EPA-registered antimicrobial agents if fungus is present. Apply antimicrobial agents according to manufacturer's written instructions after removal of surface deposits and debris.

3.11 START UP

A. Air Balance: Comply with requirements in Section 230593 "Testing, Adjusting, and Balancing for HVAC."

3.12 DUCT SCHEDULE

A. Fabricate ducts with galvanized sheet steel except as otherwise indicated and as follows:

1. Underground Ducts: Fiberglass.

B. Supply Ducts:

1. Ducts Connected to Fan Coil Units, Furnaces, Heat Pumps, and Terminal Units:
   a. Pressure Class: Positive 1-inch wg.
   b. Minimum SMACNA Seal Class: B.
   c. SMACNA Leakage Class for Rectangular: 8.
   d. SMACNA Leakage Class for Round and Flat Oval: 4.

2. Ducts Connected to Constant-Volume Air-Handling Units:
   a. Pressure Class: Positive 3-inch wg.
   b. Minimum SMACNA Seal Class: A.
   c. SMACNA Leakage Class for Rectangular: 4.
   d. SMACNA Leakage Class for Round and Flat Oval: 2.

3. Ducts Connected to Variable-Air-Volume Air-Handling Units:
   a. Pressure Class: Positive 3-inch wg.
   b. Minimum SMACNA Seal Class: A.
   c. SMACNA Leakage Class for Rectangular: 4.
   d. SMACNA Leakage Class for Round and Flat Oval: 2.

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4. Ducts Connected to Equipment Not Listed Above:
   a. Pressure Class: Positive 2-inch wg.
   b. Minimum SMACNA Seal Class: A.
   c. SMACNA Leakage Class for Rectangular: 4.
   d. SMACNA Leakage Class for Round and Flat Oval: 2.

C. Return Ducts:

1. Ducts Connected to Fan Coil Units, Furnaces, Heat Pumps, and Terminal Units:
   a. Pressure Class: Positive or negative 1-inch wg.
   b. Minimum SMACNA Seal Class: B.
   c. SMACNA Leakage Class for Rectangular: 8.
   d. SMACNA Leakage Class for Round and Flat Oval: 4.

2. Ducts Connected to Air-Handling Units:
   a. Pressure Class: Positive or negative 3-inch wg.
   b. Minimum SMACNA Seal Class: A.
   c. SMACNA Leakage Class for Rectangular: 4.
   d. SMACNA Leakage Class for Round and Flat Oval: 2.

3. Ducts Connected to Equipment Not Listed Above:
   a. Pressure Class: Positive or negative 2-inch wg.
   b. Minimum SMACNA Seal Class: A.
   c. SMACNA Leakage Class for Rectangular: 4.
   d. SMACNA Leakage Class for Round and Flat Oval: 2.

D. Exhaust Ducts:

1. Ducts Connected to Fans Exhausting (ASHRAE 62.1, Class 1 and 2) Air:
   a. Pressure Class: Negative 2-inch wg.
   b. Minimum SMACNA Seal Class: B if negative pressure, and A if positive pressure.
   c. SMACNA Leakage Class for Rectangular: 4.
   d. SMACNA Leakage Class for Round and Flat Oval: 2.

2. Ducts Connected to Air-Handling Units:
   a. Pressure Class: Positive or negative 3-inch wg.
   b. Minimum SMACNA Seal Class: A.
   c. SMACNA Leakage Class for Rectangular: 4.
   d. SMACNA Leakage Class for Round and Flat Oval: 2.

3. Ducts Connected to Commercial Kitchen Hoods: Comply with NFPA 96.
   a. Exposed to View: Type 304, stainless-steel sheet, No. 4 finish.
   b. Concealed: Type 304, stainless-steel sheet, No. 2D finish.
   c. Welded seams and joints.
   d. Pressure Class: Positive or negative 4-inch wg.
   e. Minimum SMACNA Seal Class: Welded seams, joints, and penetrations.
   f. SMACNA Leakage Class: 3.

4. Ducts Connected to Dishwasher Hoods:
   a. Type 304L, stainless-steel sheet.
   b. Exposed to View: No. 3 finish.
   c. Concealed: No. 2D finish.
   d. Welded seams and flanged joints with watertight EPDM gaskets.
   e. Pressure Class: Positive or negative 3-inch wg.

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f. Minimum SMACNA Seal Class: Welded seams, joints, and penetrations.
g. SMACNA Leakage Class: 3.

5. Ducts Connected to Fans Exhausting Laboratory and Process (ASHRAE 62.1, Class 3 and 4) Air:
   a. Type 316L, stainless-steel sheet.
      1) Exposed to View: No. 4 finish.
      2) Concealed: No. 2D finish.
   b. PVC-coated, galvanized sheet steel with thicker coating on duct interior.
   c. Pressure Class: Positive or negative 4-inch wg.
   d. Minimum SMACNA Seal Class: Welded seams, joints, and penetrations.
   e. SMACNA Leakage Class: 3.

6. Ducts Connected to Equipment Not Listed Above:
   a. Pressure Class: Positive or negative 3-inch wg.
   b. Minimum SMACNA Seal Class: A if positive pressure.
   c. SMACNA Leakage Class for Rectangular: 4.
   d. SMACNA Leakage Class for Round and Flat Oval: 2.

E. Outdoor-Air (Not Filtered, Heated, or Cooled) Ducts:

1. Ducts Connected to Fan Coil Units, Furnaces, Heat Pumps, and Terminal Units:
   a. Pressure Class: Positive or negative 2-inch wg.
   b. Minimum SMACNA Seal Class: A.
   c. SMACNA Leakage Class for Rectangular: 4.
   d. SMACNA Leakage Class for Round and Flat Oval: 2.

2. Ducts Connected to Air-Handling Units:
   a. Pressure Class: Positive or negative 2-inch wg.
   b. Minimum SMACNA Seal Class: A.
   c. SMACNA Leakage Class for Rectangular: 4.
   d. SMACNA Leakage Class for Round and Flat Oval: 2.

3. Ducts Connected to Equipment Not Listed Above:
   a. Pressure Class: Positive or negative 2-inch wg.
   b. Minimum SMACNA Seal Class: A.
   c. SMACNA Leakage Class for Rectangular: 4.
   d. SMACNA Leakage Class for Round and Flat Oval: 2.

F. Intermediate Reinforcement:

1. Galvanized-Steel Ducts: Galvanized steel.
2. PVC-Coated Ducts:
   a. Exposed to Airstream: Match duct material.
   b. Not Exposed to Airstream: Match duct material.

3. Stainless-Steel Ducts:
   a. Exposed to Airstream: Match duct material.
   b. Not Exposed to Airstream: Match duct material.

4. Aluminum Ducts: Aluminum.

G. Liner:

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1. Supply Air Ducts: [**Fibrous glass, Type I**] [**Flexible elastomeric**], [1 inch] [1-1/2 inches] [2 inches] thick.
2. Return Air Ducts: [**Fibrous glass, Type I**] [**Flexible elastomeric**], [1 inch] [1-1/2 inches] [2 inches] thick.
3. Supply Fan Plenums: [**Fibrous glass, Type II**] [**Flexible elastomeric**], [1 inch] [1-1/2 inches] [2 inches] thick.
4. Return Fan Plenums: [**Fibrous glass, Type II**] [**Flexible elastomeric**], [2 inches] thick.
5. Transfer Ducts: [**Fibrous glass, Type I**] [**Flexible elastomeric**], [1 inch] [1-1/2 inches] [2 inches] thick.

H. Double-Wall Duct Interstitial Insulation:

1. Supply Air Ducts: 2 inches thick.
2. Return Air Ducts: 2 inches thick.
3. Exhaust Air Ducts: 2 inches thick.

I. Elbow Configuration:

1. Rectangular Duct: Comply with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible," Figure 4-2, "Rectangular Elbows."
   a. Velocity 1000 fpm or Lower:
      1) Radius Type RE 1 with minimum 1.0 radius-to-diameter ratio.
      2) Mitered Type RE 4 with single-thickness turning vanes.
   b. Velocity 1000 to 1500 fpm:
      1) Radius Type RE 1 with minimum 1.0 radius-to-diameter ratio.
      2) Radius Type RE 3 with minimum 1.0 radius-to-diameter ratio and single-thickness turning vanes.
      3) Mitered Type RE 2 with single-thickness vanes complying with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible," Figure 4-3, "Vanes and Vane Runners," and Figure 4-4, "Vane Support in Elbows."
   c. Velocity 1500 fpm or Higher:
      1) Radius Type RE 1 with minimum 1.5 radius-to-diameter ratio.
      2) Radius Type RE 3 with minimum 1.5 radius-to-diameter ratio and single-thickness turning vanes.
      3) Mitered Type RE 2 with single-thickness vanes complying with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible," Figure 4-3, "Vanes and Vane Runners," and Figure 4-4, "Vane Support in Elbows."
2. Rectangular Duct: Comply with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible," Figure 4-2, "Rectangular Elbows."
   a. Radius Type RE 1 with minimum 1.5 radius-to-diameter ratio.
   b. Radius Type RE 3 with minimum 1.0 radius-to-diameter ratio and single-thickness turning vanes.
   c. Mitered Type RE 2 with single-thickness vanes complying with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible," Figure 4-3, "Vanes and Vane Runners," and Figure 4-4, "Vane Support in Elbows."
3. Round Duct: Comply with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible," Figure 3-4, "Round Duct Elbows."
   a. Minimum Radius-to-Diameter Ratio and Elbow Segments: Comply with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible," Table 3-1, "Mitered

Elbows." Elbows with less than 90-degree change of direction have proportionately fewer segments.

1) Velocity 1000 fpm or Lower: 1.0 radius-to-diameter ratio and three segments for 90-degree elbow.
2) Velocity 1000 to 1500 fpm: 1.5 radius-to-diameter ratio and four segments for 90-degree elbow.
3) Velocity 1500 fpm or Higher: 1.5 radius-to-diameter ratio and five segments for 90-degree elbow.
4) Radius-to Diameter Ratio: 1.5.

b. Round Elbows, 10 Inches and Smaller in Diameter: Stamped or pleated.
c. Round Elbows, 12 Inches and Larger in Diameter: Welded.

J. Branch Configuration:

1. Rectangular Duct: Comply with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible," Figure 4-6, "Branch Connection."
   a. Rectangular Main to Rectangular Branch: 45-degree entry.
   b. Rectangular Main to Round Branch: Spin in.

2. Taps shall be the more stringent of what is shown on the mechanical drawings and the criteria listed below. Round and Flat Oval: Comply with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible," Figure 3-5, "90 Degree Tees and Laterals," and Figure 3-6, "Conical Tees." Saddle taps are permitted in existing duct.
   a. Velocity 900 fpm or Lower: 90-degree tap.
   b. Velocity 901 to 1500 fpm: Conical tap.
   c. Velocity 1501 fpm or Higher: 45-degree lateral.

END OF SECTION 233113

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SECTION 23 7416 - PACKAGED , ROOFTOP AIR-CONDITIONING UNITS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section includes packaged, large-capacity, rooftop air conditioning units (RTUs) with the following components and accessories:

1. Casings.
2. Fans.
3. Motors.
4. Coils.
5. Refrigerant circuit components.
6. Air filtration.
7. Dampers.
8. Electrical power connections.
9. Controls.
10. Accessories
11. Roof curbs.

1.3 DEFINITIONS

A. DDC: Direct-digital controls.

B. ECM: Electronically commutated motor.

C. Outdoor-Air Refrigerant Coil: Refrigerant coil in the outdoor-air stream to reject heat during cooling operations and to absorb heat during heating operations. "Outdoor air" is defined as the air outside the building or taken from outdoors and not previously circulated through the system.

D. RTU: Rooftop unit. As used in this Section, this abbreviation means packaged, large-capacity, rooftop air-conditioning units. This abbreviation is used regardless of whether the unit is mounted on the roof or on a concrete base on ground.

E. Supply-Air Fan: The fan providing supply air to conditioned space. "Supply air" is defined as the air entering a space from air-conditioning, heating, or ventilating apparatus.

F. Supply-Air Refrigerant Coil: Refrigerant coil in the supply-air stream to absorb heat (provide cooling) during cooling operations and to reject heat (provide heating) during heating operations. "Supply air" is defined as the air entering a space from air-conditioning, heating, or ventilating apparatus.

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1.4 ACTION SUBMITTALS

A. Submittals shall be formatted per Section 230000 "General Mechanical Requirements". The manufacturer shall resubmit the specification section showing compliance with each respective paragraphs and specified items and features in that particular specification section. All **exceptions** shall be clearly identified by referencing respective paragraph and other requirements. Next to each specification item, indicate the following:

1. "No Exception Taken".
2. "Exception". All exceptions shall be clearly identified by referencing respective paragraph and other requirements along with proposed alternative.

B. Product Data: Include manufacturer's technical data for each RTU, including rated capacities, dimensions, required clearances, characteristics, furnished specialties, and accessories.

1. Factory selection calculations for each antimicrobial ultraviolet lamp installation.

C. Shop Drawings:

1. Include details of equipment assemblies. Indicate dimensions, weights, loads, required clearances, method of field assembly, components, and location and size of each field connection.
2. Include diagrams for power, signal, and control wiring.

D. Delegated-Design Submittal: For RTU supports indicated to comply with performance requirements and design criteria, including analysis data signed and sealed by the qualified professional engineer responsible for their preparation.

1. Design Calculations: Calculate requirements for selecting vibration isolators and seismic restraints and for designing vibration isolation bases.
2. Detail mounting, securing, and flashing of roof curb to roof structure. Indicate coordinating requirements with roof membrane system.
3. Seismic Restraint Details: Detail fabrication and attachment of wind and seismic restraints and snubbers. Show anchorage details and indicate quantity, diameter, and depth of penetration of anchors.

1.5 INFORMATIONAL SUBMITTALS

A. Coordination Drawings: Plans and other details, 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 members to which RTUs will be attached.
2. Required roof penetrations for ducts, pipes, and electrical raceways, including size and location of each penetration.
3. Roof curbs and flashing.
4. Roof curb mounting details.

B. Seismic Qualification Data: Certificates, for RTUs, accessories, and components, from manufacturer.

1. Basis for Certification: Indicate whether withstand certification is based on actual test of assembled components or on calculation.

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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.
4. Restraint of internal components, including fans, coils, and refrigeration components.

C. Field quality-control reports.

D. Startup service report.

E. Sample Warranty: For special warranty.

1.6 CLOSEOUT SUBMITTALS

A. Operation and Maintenance Data: For RTUs to include in emergency, operation, and maintenance manuals.

1.7 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. Fan Belts: One set for each belt-driven fan.
2. Filters: One set of filters for each unit.

1.8 WARRANTY

A. Special Warranty: Manufacturer agrees to repair or replace components of RTUs that fail in materials or workmanship within specified warranty period.

1. Warranty Period for Compressors: Manufacturer's standard, but not less than five years from date of Substantial Completion.
2. Warranty Period for Gas Furnace Heat Exchangers: Manufacturer's standard, but not less than ten years from date of Substantial Completion.
3. Warranty Period for Solid-State Ignition Modules: Manufacturer's standard, but not less than three years from date of Substantial Completion.
4. Warranty Period for Control Boards: Manufacturer's standard, but not less than three years from date of Substantial Completion.
5. Warranty Period for Antimicrobial Ultraviolet Lamp System: Lifetime with exception of lamps.
6. Warranty Period for Economizer Dampers and Assembly: Not less than five years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 SYSTEM DESCRIPTION

A. AHRI Compliance:

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1. Comply with AHRI 340/360 for testing and rating energy efficiencies for RTUs.
2. Comply with AHRI 270 for testing and rating sound performance for RTUs.
3. Comply with AHRI 1060 for testing and rating performance for air-to-air exchanger.
4. Comply with AHRI 210/240 for testing and rating energy efficiencies for RTUs.

B. AMCA Compliance:

1. Comply with AMCA 11 and bear the AMCA-Certified Ratings Seal for air and sound performance according to AMCA 211 and AMCA 311.
2. Damper leakage tested in accordance with AMCA 500-D.
3. Operating Limits: Classify according to AMCA 99.

C. ASHRAE Compliance:

1. Comply with ASHRAE 15 for refrigeration system safety.
2. Comply with ASHRAE 33 for methods of testing cooling and heating coils.
3. Comply with applicable requirements in ASHRAE 62.1, Section 5 - "Systems and Equipment" and Section 7 - "Construction and Startup."

D. ASHRAE/IES 90.1 Compliance: Applicable requirements in ASHRAE/IES 90.1, Section 6 - "Heating, Ventilating, and Air-Conditioning."

E. NFPA Compliance: Comply with NFPA 90A or NFPA 90B.

F. UL Compliance: Comply with UL 1995.

G. 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.

2.2 MANUFACTURERS

A. Manufacturers: Subject to compliance with the requirements, provide products by one of the following:

1. Basis of Design: Daikin
2. Trane
3. Or Approved Equal

2.3 PERFORMANCE REQUIREMENTS

A. Delegated Design: Engage a qualified professional engineer, as defined in Section 014000 "Quality Requirements," to design mounting and restraints for RTUs, including comprehensive engineering analysis.

1. Design RTU supports to comply with seismic performance requirements.

B. Seismic Performance: RTUs shall withstand the effects of earthquake motions determined according to ASCE 7.

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1. The term "withstand" means "the unit will remain in place without separation of any parts when subjected to the seismic forces specified"

2.4 CASINGS

A. Cabinet: Galvanized steel, phosphatized, and finished with paint coating certified at 1000 hours in salt spray test in compliance with ASTM B117.

B. Cabinet top cover shall be one piece construction or where seams exits, it shall be double-hemmed and gasket-sealed.

C. Access Panels: Water- and air-tight panels with handles shall provide access to filters, heating section, return air fan section, supply air fan section, evaporator coil section, and unit control section.

D. Units base pan shall have a raised 1 1/8 inch high lip around the supply and return openings for water integrity.

E. Insulation: Provide 1/2 inch thick fiberglass insulation with foil face on all exterior panels in contact with the return and conditioned air stream. All edges must be captured so that there is no insulation exposed in the air stream.

F. Provide openings either on side of unit or through the base for power, control, condensate.

G. Condensate Drain Pans: Fabricated using non-corrosive material 0.028-inch thick, a minimum of 2 inches deep, and complying with ASHRAE 62.1 for design and construction of drain pans.

1. Double-Wall Construction: Fill space between walls with foam insulation and seal moisture tight.
2. Drain Connections: Threaded nipple.

H. The base of the units shall have rigging/lifting holes for crane maneuvering.

I. Interior Casing: G-90-coated galvanized steel, 0.034 inch thick, perforated 40 percent free area.

J. Airstream Surfaces: Surfaces in contact with the airstream shall comply with requirements in ASHRAE 62.1.

2.5 FANS

A. Supply-Air Fans: Aluminum or painted-steel wheels, and galvanized- or painted-steel fan scrolls.

1. Direct-Driven Supply-Air Fans: Motor shall be resiliently mounted in the fan inlet.
2. Where direct-drive fans are not available by manufacturer, belt-driven fans shall be used. For belt-driven fans motors shall be installed on an adjustable fan base resiliently mounted in the casing.

B. Condenser-Coil Fan: Variable-speed propeller, mounted on shaft of permanently lubricated multispeed] motors.

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C. Relief-air Fan: Propeller shaft mounted on permanently lubricated motor.

D. For units with modulating power exhaust fan shall be centrifugal type.

E. Seismic Fabrication Requirements: Fabricate fan section, internal mounting frame and attachment to fans, fan housings, motors, casings, accessories, and other fan section components with reinforcement strong enough to withstand seismic forces defined in Section 230548 "Vibration and Seismic Controls for HVAC" when fan-mounted frame and RTU-mounted frame are anchored to building structure.

2.6 MOTORS

A. Comply with Section 230513 "Common Motor Requirements for HVAC Equipment" and the requirements of this Article.

B. Motor Sizes: Minimum size as indicated. If not indicated, large enough so driven load will not require motor to operate in service factor range above 1.0.

2.7 COILS

A. Supply-Air Refrigerant Coil:

1. Aluminum plate fin and seamless copper tube in steel casing with equalizing-type vertical distributor.
2. Polymer strip shall prevent all copper coils from contacting steel coil frame or condensate pan.
3. Coil Split: Interlaced.
4. Condensate Drain Pan: Galvanized steel with corrosion-resistant coating, formed with pitch and drain connections complying with ASHRAE 62.

B. Outdoor-Air Refrigerant Coil:

1. Aluminum-plate fin and seamless copper tube in steel casing with equalizing-type vertical distributor.
2. Polymer strip shall prevent all copper coils from contacting steel coil frame or condensate pan.

2.8 REFRIGERANT CIRCUIT COMPONENTS

A. Compressor: Hermetic, 2-stage scroll compressor, mounted on vibration isolators; with internal overcurrent and high-temperature protection, internal pressure relief.

B. Refrigeration Specialties:

1. Refrigerant: R-454B
2. Expansioni valve with replaceable thermostatic element.
3. Refrigeratn filter/dryer.
4. Manual-reset high-pressure safety switch.
5. Automatic-reset low-pressure safety switch.

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6. Minimum off-time relay.
7. Automatic-reset compressor motor thermal overload.
8. Brass service valves installed in compressor suction and liquid lines.
9. Low-ambient kit high-pressure sensor.
10. Four-way reversing valve with a replaceable magnetic coil, thermostatic expansion valves with bypass check valves, and a suction line accumulator.

2.9 AIR FILTRATION

A. General: Each filter section shall be designed and constructed to house specific type of filter indicated on equipment schedule. Provide filters of type indicated on schedule. A hinged access door shall be provided on side of section. Internal blank-offs shall be provided to prevent air bypass around filters.

1. Filters shall be standard, commercially available sizes.

B. Filter tracks in flat or cartridge filter sections: Filter tracks in flat or cartridge filter sections shall be upstream loaded Type 8 constructed from galvanized steel to ensure rigidity and tight tolerances. Tracks must be field adjustable without tools and designed to accept standard-size filters with one inch, 2-inch, or 4-inch widths.

C. Filter tracks in angle filter sections: Filter tracks in angle filter sections shall be constructed from galvanized steel to ensure rigidity and tight tolerances. Angle filter sections shall be designed to hold 2-inch filters of standard sizes, arranged in horizontal V-formation.

D. Bag or cartridge filter sections: Bag or cartridge filter sections shall be capable of accepting standard size 12-inch deep rigid media or bag filters. When bag/cartridge filters are installed in a positive pressure application, section shall be furnished with upstream service filter access and doors shall open inward against pressure for safety and leak integrity. For filters with lengths longer than 12 inches, additional plenum sections shall be furnished. Filter sizes shall be 24 by 24-inch or 12 by 24-inch only.

2.10 DAMPERS

A. Outdoor- and Return-Air Mixing Dampers: Parallel blade galvanized-steel dampers mechanically fastened to cadmium plated or galvanized-steel operating rod in reinforced cabinet.

1. Leakage Rate: Damper leakage shall not exceed 7 CFM/ft2 at 1.0" of static pressure when tested in accordance with AMCA standard 500.
2. Damper Reliability Testing: Comply with current version California Title 24, Part 6
3. Damper Motor: Modulating with adjustable minimum position.

B. Relief-Air Damper: Gravity actuated or motorized.

2.11 ELECTRICAL POWER CONNECTIONS

A. RTU shall have a single connection of power to unit with unit-mounted disconnect switch accessible from outside unit and control-circuit transformer with built-in overcurrent protection.

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B. For units with power exhaust that require separate power connection contractor shall provide disconnect switch and field mount near power exhaust.

2.12 CONTROLS

A. Thermostat shall be Honeywell TR71 thermostat and provided with web based controls system.

1. Control Voltage Transformer

2. Wall-mounted thermostat or sensor with the following features:
   a. Heat-cool-off switch.
   b. Fan on-auto switch.
   c. Fan-speed switch.
   d. Automatic changeover.
   e. Adjustable deadband.
   f. Exposed set point.
   g. Exposed indication.
   h. Degree F indication.
   i. Unoccupied-period-override push button with maximum 4-hour override.
   j. Data entry and access port to input temperature set points, occupied and unoccupied periods, and output room temperature, supply-air temperature, operating mode, and status.
   k. Occupied and unoccupied periods on seven day clock with a minimum of four programmable periods within 24 hours.

3. Provide all necessary wiring, controllers, and appurtenances for a complete system, including but not limited to wireless gateways, access points, repeaters, RTU controllers, economizer controllers, sensors, power control modules and temperature and alarm sensors.
4. Ptovide a 5 year prepaid subscription to Honeywell .

B. Integral controller

1. Unit shall be complete with low-voltage control circuit protected by a resettable circuit breaker on the 24-volt transformer side.
2. Unit shall incorporate a lockout circuit which provides reset capability at the space thermostat or base unit should any of the following standard safety devices trip and shut off compressor:
   a. Loss-of-charge/Low-pressure switch.
   b. High-pressure switch.
   c. Freeze-protection thermostat, evaporator coil. If any of the above safety devices trip, an LED (light-emitting diode) indicator shall flash a diagnostic code that indicates which safety switch has tripped.

3. Unit shall incorporate "AUTO RESET" compressor over temperature, over current protection.
4. Unit shall operate with conventional thermostat designs and have a low voltage terminal strip for easy hook-up.
5. Unit control board shall have on-board diagnostics and fault code display.
6. Standard controls shall include anti-short cycle and low voltage protection, and permit cooling operation down to 0 °F.
7. Control board shall monitor each refrigerant safety switch independently.

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8. Control board shall retain last 5 fault codes in non-volatile memory, which will not be lost in the event of a power loss.

C. Fault Detection: Provide Fault Detection and Diagnostics (FDD) system in accordance with Title 24.

2.13 ACCESSORIES

A. Filter differential pressure switch with sensor tubing on either side of filter. Set for final filter pressure loss.

B. Remote potentiometer to adjust minimum economizer damper position.

C. Return-air bypass damper.

D. Factory- or field-installed demand-controlled ventilation.

E. Safeties:

1. Smoke detector. Shall be capable of interfacing with fire-alarm control panel.
2. Condensate overflow switch.
3. Phase-loss protection.
4. High pressure control.

F. Concentric diffuser with white louvers and polished aluminum return grilles, insulated diffuser box with mounting flanges, and interior transition.

G. Vertical vent extensions to increase the separation between the outdoor-air intake and the flue-gas outlet.

H. Door switches to disable heating or reset set point when open.

I. Outdoor air intake weather hood.

J. Duplex, 115-V, ground-fault-interrupter outlet with 15-A overcurrent protection. Include transformer if required

2.14 ROOF CURBS

A. Materials: Galvanized steel with corrosion-protection coating, watertight gaskets, and factory-installed wood nailer; complying with NRCA standards.

1. Curb Insulation and Adhesive: Comply with NFPA 90A or NFPA 90B.
   a. Materials: ASTM C 1071, Type I or II.
   b. Thickness:1 inch

2. Application: Factory applied with adhesive and mechanical fasteners to the internal surface of curb.
   a. Liner Adhesive: Comply with ASTM C 916, Type I.

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b. Mechanical Fasteners: Galvanized steel, suitable for adhesive attachment, mechanical attachment, or welding attachment to duct without damaging liner when applied as recommended by manufacturer and without causing leakage in cabinet.
c. Liner materials applied in this location shall have air-stream surface coated with a temperature-resistant coating or faced with a plain or coated fibrous mat or fabric depending on service air velocity.
d. Liner Adhesive: Comply with ASTM C 916, Type I.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of RTUs.

B. Examine roughing-in for RTUs to verify actual locations of piping and duct connections before equipment installation.

C. Examine roofs for suitable conditions where RTUs will be installed.

D. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

A. Roof Curb: Install on roof structure or concrete base, level and secure, according to NRCA's "NRCA Roofing Manual: Membrane Roof Systems. Install RTUs on curbs and coordinate roof penetrations and flashing with roof construction specified in Section 077200 "Roof Accessories." Secure RTUs to upper curb rail, and secure curb base to roof framing or concrete base with anchor bolts.

3.3 CONNECTIONS

A. Install condensate drain, minimum connection size, with trap and indirect connection to nearest roof drain or area drain.

B. Duct installation requirements are specified in other HVAC Sections. Drawings indicate the general arrangement of ducts. The following are specific connection requirements:

1. Install ducts to termination at top of roof curb.
2. Remove roof decking only as required for passage of ducts. Do not cut out decking under entire roof curb.
3. Connect supply ducts to RTUs with flexible duct connectors specified in Section 233300 "Air Duct Accessories."
4. Install return-air duct continuously through roof structure.

C. Connect electrical wiring according to Section 260519 "Low-Voltage Electrical Power Conductors and Cables."

D. Ground equipment according to Section 260526 "Grounding and Bonding for Electrical Systems."

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E. Install nameplate for each electrical connection, indicating electrical equipment designation and circuit number feeding connection.

1. Nameplate shall be laminated acrylic or melamine plastic signs as specified in Section 260553 "Identification for Electrical Systems."
2. Locate nameplate where easily visible.

3.4 FIELD QUALITY CONTROL

A. Manufacturer's Field Service: Engage a factory-authorized service representative to test and inspect components, assemblies, and equipment installations, including connections.

B. RTU will be considered defective if it does not pass tests and inspections.

C. Prepare test and inspection reports.

3.5 STARTUP SERVICE

A. Engage a factory-authorized service representative to perform startup service.

B. Complete installation and startup checks according to manufacturer's written instructions.

1. Inspect for visible damage to unit casing.
2. Inspect for visible damage to furnace combustion chamber.
3. Inspect for visible damage to compressor, coils, and fans.
4. Inspect internal insulation.
5. Verify that labels are clearly visible.
6. Verify that clearances have been provided for servicing.
7. Verify that controls are connected and operable.
8. Verify that filters are installed.
9. Clean condenser coil and inspect for construction debris.
10. Remove packing from vibration isolators.
11. Inspect operation of barometric relief dampers.
12. Verify lubrication on fan and motor bearings.
13. Inspect fan-wheel rotation for movement in correct direction without vibration and binding.
14. Adjust fan belts to proper alignment and tension.
15. Start unit according to manufacturer's written instructions.
    a. Start refrigeration system.
    b. Do not operate below recommended low-ambient temperature.
    c. Complete startup sheets and attach copy with Contractor's startup report.
16. Inspect and record performance of interlocks and protective devices; verify sequences.
17. Operate unit for an initial period as recommended or required by manufacturer.
18. Calibrate thermostats.
19. Adjust and inspect high-temperature limits.
20. Inspect outdoor-air dampers for proper stroke and interlock with return-air dampers.
21. Start refrigeration system and measure and record the following when ambient is a minimum of 15 deg F above return-air temperature:

a. Coil leaving-air, dry- and wet-bulb temperatures.
b. Coil entering-air, dry- and wet-bulb temperatures.
c. Outdoor-air, dry-bulb temperature.
d. Outdoor-air-coil, discharge-air, dry-bulb temperature.

22. Inspect controls for correct sequencing of heating, mixing dampers, refrigeration, and normal and emergency shutdown.
23. Measure and record the following minimum and maximum airflows. Plot fan volumes on fan curve.
    a. Supply-air volume.
    b. Return-air volume.
    c. Relief-air volume.
    d. Outdoor-air intake volume.

24. Simulate maximum cooling demand and inspect the following:
    a. Compressor refrigerant suction and hot-gas pressures.
    b. Short circuiting of air through condenser coil or from condenser fans to outdoor-air intake.

25. After startup and performance testing and prior to Substantial Completion, replace existing filters with new filters.

3.6 CLEANING AND ADJUSTING

A. Occupancy Adjustments: When requested within 12 months from date of Substantial Completion, provide on-site assistance in adjusting system to suit actual occupied conditions. Provide up to two visits to Project during other-than-normal occupancy hours for this purpose.

B. After completing system installation and testing, adjusting, and balancing RTU and air-distribution systems, clean filter housings and install new filters.

3.7 DEMONSTRATION

A. Engage a factory-authorized service representative to train Owner's maintenance personnel to adjust, operate, and maintain RTUs.

END OF SECTION 237416

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SECTION 260000 – GENERAL ELECTRICAL REQUIREMENTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SCOPE

A. Basic electrical requirements specifically applicable to Division 26 Sections.

B. Work includes but is not necessarily limited to the following:

1. Labor, materials, services, equipment, and appliances required for completion of tasks as indicated on drawing or in specification or as inherently necessary to provide complete and operational electrical systems including:
   a. All temporary construction power including test power, temporary heat and lighting;
   b. Incidental items not indicated on the drawings nor mentioned in the Specifications that belong to the work described, or are required to provide complete and operable systems, as though called out here in every detail;
   c. Cleaning, cutting, patching, repairing and painting;
   d. Testing and commissioning;
   e. The Contractor shall coordinate this Section with all other Sections of the Specification.

1.3 DRAWINGS AND SPECIFICATIONS

A. Drawings accompanying these Specifications show intent of Work to be done. Specifications shall identify quality and grade of installation and where equipment and hardware is not particularly specified, Contractor shall provide submittals for all products and install them per manufacturers' recommendations, and in a workmanlike manner.

B. Examine Drawings and Specifications for elements in connection with this Work; determine existing and new general construction conditions and be familiar with all limitations caused by such conditions.

C. In the event of a conflict or inconsistency between items indicated on the plans and/or specifications or with code requirements, the note, specification or code which prescribes and establishes the more complete job or the higher standard prevail.

D. Plans are intended to show general arrangement and extent of Work contemplated. Exact location and arrangement of parts shall be determined after the Owner has reviewed equipment, as Work progresses, to conform in best possible manner with surroundings, and as directed by the Owner's Representative.

E. For purposes of clearness and legibility, the electrical drawings are essentially diagrammatic. The size and location of equipment is shown to scale where possible. The contractor shall verify

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all conditions, data information as indicated on the drawings and in the specification sections where electrical work interfaces with other trades.

F. Contract Documents are intended to show the scope and general arrangement of the Work under this Contract. Drawings are not intended to be scaled for roughing in measurements or to serve as shop drawings. Where job conditions require minor changes or adjustments in the indicated locations or arrangement of the Work, such changes shall be made without change in the Contract amount.

G. The contractor shall maintain as built drawings to reflect all changes made during construction and any deviations from the electrical drawings. This includes deviations from circuit numbers and any addition, deletion or relocation of fixtures/outlets shown on working drawings.

1.4 UTILITIES

A. Location and sizes of electrical, mechanical and plumbing service facilities are shown in accordance with data secured from existing record drawings and site observations. Data shown are offered as an estimating guide without guarantee of accuracy. Check and verify all data given, and verify exact location of all utility services pertaining to Work prior to excavation or performing Work.

1.5 APPLICABLE REFERENCE STANDARDS, CODES AND REGULATIONS

A. Meet requirements of all state codes having jurisdiction.

B. State of California Code of Regulations:

1. Title 8, Chapter 4. Division of Industrial Safety, Subchapter 5. Electrical Safety Orders (Cal/OSHA):
   a. Low-Voltage Electrical Safety Orders (Sections 2299 - 2599)
   b. High-Voltage Electrical Safety Orders (Sections 2700 - 2989)
2. Title 19, State Fire Marshal Regulations
3. Current California Building Code (CBC), Title 24, Part 2
4. Current California Electrical Code, Title 24, Part 3
5. Current California Mechanical Code, Title 24, Part 4
6. Current California Plumbing Code, Title 24, Part 5
7. Current California Energy Code, Title 24, Part 6
8. Current California Fire Code, Title 24, Part 9
9. Current California Standards Code, Title 24, Part 12

C. Additional Referenced Standards:

1. ANSI American National Standards Institute
2. IEEE Institute of Electrical and Electronic Engineers
3. NEMA National Electrical Manufacturer's Association
4. NFPA National Fire Protection Association Standards
5. UL Underwriters Laboratories

D. Codes and ordinances having jurisdiction over Work are minimum requirements; but, if Contract Documents indicate requirements, which are in excess of those minimum requirements, then requirements of the Contract Documents shall be followed. Nothing in these drawings and spec-

ifications shall be construed to permit work not conforming to governing codes or regulations. Should there be any conflicts between Contract Documents or codes or any ordinances having jurisdiction, report these to the Owner's Representative.

E. Obtain permits, and request inspections from authority having jurisdiction.

1.6 PROJECT AND SITE CONDITIONS

A. The arrangement of and connection to equipment shown on the Drawings is based upon information available and is not intended to show exact dimensions peculiar to a specific manufacturer. The Drawings are, in part, diagrammatic and some features of the illustrated equipment installations may require revision to meet actual equipment installation requirements. Structural supports, housekeeping pads, piping connections and adjacent equipment may have to be altered to accommodate the equipment provided. No additional payment will be made for such revisions or alterations.

B. Examine all Drawings and Specifications to be fully cognizant of all work required under this Division.

C. Examine site related work and surfaces before starting work of any Section.

D. Install Work in locations shown on approved Drawings, unless prevented by Project conditions.

E. Prepare drawings showing proposed rearrangement of Work to meet Project conditions, including changes to Work specified in other Sections. Obtain permission from the Owner's Representative before proceeding.

1.7 COOPERATION WITH WORK UNDER OTHER DIVISIONS

A. Cooperate with other trades to facilitate general progress of Work. Allow all other trades every reasonable opportunity for installation of their work.

B. Work under this Division shall follow general building construction closely. Set pipe sleeves and inserts and verify that openings for chases and pipes are provided.

C. Work with other trades in determining exact location of outlets, conduits, pipes, and pieces of equipment to avoid interference with lines required to maintain proper installation of Work.

D. Make such progress in the Work to not delay work of other trades.

1.8 DISCREPANCIES

A. The contractor shall check all drawings furnished to him immediately upon their receipt and shall promptly notify the owner of any discrepancies. Figures marked on drawings shall in general be followed in preference to scale measurements. Large scale drawings in general govern small scale drawings. The contractor shall compare all drawings and verify the figures before laying out the work and will be responsible for any errors which might have been avoided thereby. Where no figures or notations are given, the plans shall be followed

B. Omissions from the Drawings or Specifications or the erroneous description of details of work which are manifestly necessary to carry out the intent of the Drawings and Specifications, or

which are customarily performed, shall not relieve the Contractor from performing such omitted or erroneously described details of the work but they shall be performed as if fully and correctly set forth and described in the drawings and specifications.

C. If any part of the Specifications or Drawings appears unclear or contradictory, apply to Owner's Representative for interpretation and decision as early as possible, including during bidding period. Do not proceed with such work without Owner Representatives decision. Beginning work of any Section constitutes acceptance of conditions.

1.9 CHANGES

A. The Contractor shall be responsible to make and obtain approval from the Owner's Representative for all necessary adjustments in piping and equipment layouts as required to accommodate the relocations of equipment and/or devices, which are affected by any approved authorized changes or Product substitutions. All changes shall be clearly indicated on the "Record" drawings.

1.10 SUBMITTALS

A. Refer to Division 01 for additional requirements.

B. The manufacturer, contractor or supplier shall include a written statement that the submitted equipment, hardware or accessory complies with the requirement of that particular specification section.

C. The manufacturer shall resubmit the specification section showing compliance with each respective paragraphs and specified items and features in that particular specification section.

D. All exceptions shall be clearly identified by referencing respective paragraph and other requirements along with proposed alternative.

E. Note that prior to acceptance of submittals for review, a submittal schedule shall be submitted to the Owner's Representative.

F. Submit all Division 26 shop drawings and product data grouped and referenced by the specification technical section number in one complete submittal package.

G. Shop Drawings:

1. Include installation details of equipment indicating proposed location, layout and arrangement, accessories, piping, and other items that must be shown to assure a coordinated installation.
2. Indicate adequate clearance for operation, maintenance, and replacement of operating equipment devices.
3. If equipment is rejected, revise drawings to show acceptable equipment and resubmit.
4. Whenever more than one (1) manufacturer's product is specified, the first named product is the basis of design used in the Drawings and the use of alternate-named manufacturer's products or substitutes may require modifications to the design.
5. The Contractor shall be responsible for all equipment ordered and/or installed prior to receipt of shop drawings returned from the Owner's Representative bearing the Owner's Representative stamp of "Reviewed". All corrections or modifications to the equipment as

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noted on the shop drawings shall be performed and equipment removed from the job site at the request of the Owner's Representative without additional compensation.

6. Manufacturer's Data: For each manufactured item, provide current manufacturer's descriptive literature of cataloged products, certified equipment drawings, diagrams, performance and characteristic curves if applicable, and catalog cuts.
7. Standard Compliance: When materials or equipment provided by the Contractor must conform to the standards of organizations such as American National Standards Institute (ANSI) or UL, submit proof of such conformance to the Owner Representative for approval. If an organization uses a label or listing to indicate compliance with a particular standard, the label or listing will be acceptable evidence, unless otherwise specified. In lieu of the label or listing, submit a certificate from an independent testing organization, which is competent to perform acceptance testing and is approved by the Owner Representative. The certificate shall state that the item has been tested in accordance with the specified organization's test methods and that the item conforms to the specified organization's standard.
8. Certified Test Reports: Before delivery of materials and equipment, certified copies of all test reports specified in individual sections shall be submitted for approval.
9. Certificates of Compliance or Conformance: Submit manufacturer's certifications as required on products, materials, finish, and equipment indicated in the technical sections. Certifications shall be documents prepared specifically for this Contract. Pre-printed certifications and copies of previously submitted documents will not be acceptable. The manufacturer's certifications shall name the appropriate products, equipment, or materials and the publication specified as controlling the quality of that item. Certification shall not contain statements to imply that the item does not meet requirements specified, such as "as good as"; or "achieve the same end use and results as materials formulated in accordance with the referenced publications"; or "equal or exceed the service and performance of the specified material." Certifications shall simply state that the item conforms to the requirements specified. Certificates shall be printed on the manufacturer's letterhead and shall be signed by the manufacturer's official authorized to sign certificates of compliance or conformance.

H. The Contractor shall submit all passcodes and passwords for any hardware and software required for the operations and troubleshooting in all systems and components no less than fourteen (14) calendar days prior to Final Completion.

1.11 PROJECT RECORD DOCUMENTS

A. Refer to Division 01 for additional requirements.

1. All changes, deviations and information recorded on the "Project Record Drawings" set during Construction shall be redrafted using the latest version of AutoCAD or Revit, where applicable.
2. Submit completed shop drawings to the Owner prior to completion in digital format.
3. Contractor hand-marked or drafted redlined "Project Record Drawings" will not be accepted.

1.12 PRODUCT ALTERNATIVES OR SUBSTITUTIONS

A. Refer to General Conditions and Division 01 for additional requirements.

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1.13 OPERATING INSTRUCTIONS

A. Furnish approved operating instructions for systems and equipment indicated in the technical sections for use by operation and maintenance personnel.

1.14 MANUFACTURER'S RECOMMENDATIONS

A. Where installation procedures or any part thereof are required to be in accordance with manufacturer's recommendations, furnish printed copies of the recommendations prior to installation. Installation of the item shall not proceed until recommendations are received. Failure to furnish recommendations shall be cause for rejection of the equipment or material.

1.15 DELIVERY AND STORAGE

A. Refer to Division 01 for additional requirements.

B. Handle, store, and protect equipment and materials in accordance with the manufacturer's recommendations and with the requirements of NFPA 70B P, Appendix I, titled "Equipment Storage and Maintenance During Construction." Replace damaged or defective items with new items.

1.16 GUARANTEE

A. Except as may be specified under other sections in the Specifications, guarantee all equipment furnished under the Specifications for a period of one year from date of project acceptance against defective workmanship and material and improper installation. Upon notification of failure, correct deficiency immediately and without cost to the Owner.

B. Standard warranty of manufacturer shall apply for replacement of parts after expiration of the above period. Manufacturer shall furnish replacement parts to the Owner for their service agency as directed.

PART 2 - PRODUCTS

2.1 COMPETITIVE PRODUCTS

A. Unless otherwise noted, any reference in the Specification to any article, device, product, material, fixture, form, or type of construction by name, make, or catalog number shall be interpreted as establishing a standard of quality and shall not be construed as limiting competition. The Contractor may at his option propose substitutions for such material in accordance with the substitution procedure outlined in the Contract Documents.

2.2 MATERIALS

A. Provide all new materials and equipment, free from any defects, in first-class condition, and suitable for the space provided. Provide materials and equipment approved by UL authority having jurisdiction approved testing agency, wherever standards have been established by that agency.

B. Where two or more units of the same class of material or equipment are required, provide products of a single manufacturer. Component parts of units or equipment need not be products of the same manufacturer.

C. Unless otherwise indicated, provide materials and equipment which are the standard products of manufacturers regularly engaged in the production of such materials and equipment. Provide the manufacturers' latest standard design that conforms to these Specifications.

D. Provide materials and equipment with manufacturers' standard finish system, except where otherwise specified. Provide manufacturers' standard finish color, except where specific color is indicated. If manufacturer has no standard color, finish equipment with ANSI Number 61, light gray color.

E. Environmental and Seismic Conditions: Material and Equipment shall be designed to insure satisfactory operation and operational life in the environmental and seismic conditions which will prevail where they are being installed. Electrical equipment and enclosures shall be designed, constructed and certified to withstand external loading conditions as prescribed by the California Building Code for the locations of the equipment. Supplied equipment shall either be shake table tested and certified or comprehensive seismic calculations shall be provided. All seismic calculations and structural drawings shall bear the seal of a Structural Professional Engineer currently licensed in the State of California. Earthquake design shall be based on the equivalent lateral force analysis procedure (ASCE 7-05 Section 12.8) with the following factors:

1. Location: 34.443160 LAT, -119.780544 LONG
   Site Class E
   S_S = 1.592 g, S_1 = 0.600 g,
   S_{MS} = 1.433 g, S_{M1} = 1.440 g,
   S_{DS} = 0.955 g, S_{D1} = 0.960 g
2. R = 2 (Enclosure Attachment)
   R = 1.5 (Transformer Attachment)
3. CS = 0.51
4. SDC = D
5. V = 52 k (Enclosure and Electrical Equipment)

PART 3 - EXECUTION

3.1 GENERAL

A. Obtain and pay for all permits and inspections, including any independent testing required to verify standard compliance, and deliver certificates for same to the Owner's Representative.

3.2 WORK RESPONSIBILITIES

A. The drawings indicate diagrammatically the desired locations or arrangement of piping, equipment, etc., and are to be followed as closely as possible. Proper judgment must be exercised in executing the work to secure the best possible installation in the available space and to overcome local difficulties due to space limitations or interference with structural conditions.

B. The Contractor is responsible for the correct placing of Work and the proper location and connection of Work in relation to the work of other trades. Advise appropriate trade as to locations of access panels.

C. In the event changes in the indicated locations or arrangements are necessary, due to developed conditions in the construction or rearrangement of furnishings or equipment, such changes shall be made without extra cost, providing the change is ordered before the conduit runs, etc. and work directly connected to same is installed and no extra materials are required.

D. Where equipment is furnished by others, verify dimensions and the correct locations of this equipment before proceeding with the roughing-in of connections.

E. All scaled and figured dimensions are approximate of typical equipment of the class indicated. Before proceeding with any work, carefully check and verify all dimensions, sizes, etc. with the drawings to see that the equipment will fit into the spaces provided without violation of applicable codes.

F. Should any changes to the Work indicated on the Drawings or described in the Specifications be necessary in order to comply with the above requirements, notify the Owner immediately and cease work on all parts of the contract, which are affected until approval for any required modifications to the construction has been obtained from the Owner.

G. Be responsible for any cooperative work, which must be altered due to lack of proper supervision or failure to make proper provisions in time. Such changes shall be under direction of the Owner and shall be made to his satisfaction. Perform all Work with competent and skilled personnel.

H. The electrical drawings do not indicate all fittings, hardware, or appurtenances required for a complete operating installation.

I. Wiring diagrams are not intended to indicate the exact course of raceways.

J. One-line and riser diagrams are only schematics and do not show physical arrangements of equipment.

K. All workmanship, including aesthetic as well as electrical aspects of the Work, shall be of the highest quality consistent with the best practices of the trade.

L. Replace or repair, without additional compensation, any Work, which, in the opinion of the Owner, does not comply with these requirements.

3.3 CLEANING & PAINTING OF EQUIPMENT

A. Refer to Division 09 for additional requirements.

B. Factory Applied:

1. Electrical equipment shall have factory-applied painting systems, which shall, as a minimum, meet the requirements of NEMA ICS 6 corrosion-resistance test, except equipment specified to meet requirements of ANSI C37.20 shall have a finish as specified in ANSI C37.20.
2. Refer to individual sections of this Division for more stringent requirements.

C. Field Applied: Paint electrical equipment as required to touch up, to match finish on other equipment in adjacent spaces, or to meet safety criteria.

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D. After installation, all metal finishes shall be polished and cleaned of all dirt, rust, cement, plaster, grease, and paint.

END OF SECTION 260000

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SECTION 260519 - LOW-VOLTAGE ELECTRICAL POWER CONDUCTORS AND CABLES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Building wires and cables rated 600 V and less.
2. Connectors, splices, and terminations rated 600 V and less.

B. Related Requirements:

1. Section 260533 "Raceways and Boxes for Electrical Systems"

1.3 DEFINITIONS

A. ASTM: American Society of Testing Materials.

B. ICEA: Insulated Cable Engineers Association.

C. IEEE: Institute of Electrical & Electronics Engineers.

D. NEMA: National Electrical Manufacturers Association.

E. NETA ATS: InterNational Electrical Testing Association - Acceptance Testing Specification.

F. VFD: Variable frequency drive.

1.4 ACTION SUBMITTALS

A. Product Data: Submit manufacturer's technical data for each type of product, indicating conductor/cable construction, insulation material, thickness of insulation, jacket, cable stranding, and voltage rating of each type of conductor/cable specified, splices and terminations. Indicate date and place of manufacture for each conductor/cable, cable, splice and termination.

B. Manufacturer's ISO certification.

C. Product Cable Schedule: Indicate type, use, location, and termination locations.

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1.5 INFORMATIONAL SUBMITTALS

A. Field quality-control reports. Perform field testing of cables per para 3.8. Submit six (6) copies of field test reports to owner's representative within two (2) weeks of completion of test.

1.6 QUALITY ASSURANCE

A. General Requirements: The low voltage power conductors and cable shall be copper, minimum 600V rated unless otherwise indicated. Aluminum conductors and cables shall not be accepted unless otherwise indicated.

B. Materials and installation shall meet or exceed requirements in the following referenced standards and shall be listed and labelled by UL.

1. ICEA S-95-658/ NEMA WC 70.
2. IEEE.
3. ASTM.
4. NEMA.

C. Conductors and cables shall be of the same manufacturer and shipped to the job site in original unbroken reels.

D. Conductors and cables shall be manufactured with in twelve (12) months of installation. Date of manufacture shall be clearly marked on conductors or conductor reels.

E. Manufacturer shall have minimum ten (10) years experience in the manufacturer of conductors and cables similar to those specified on this project.

F. Manufacturer shall have ISO 9001 and ISO 9002 certification.

G. All conductors and cables shall be new and supplied by a local distributor.

H. If alternate manufacturer of products other than what are specified in this section are submitted, all necessary documents not limited to cut sheets, technical information, test reports from recognized testing labs and factory test reports shall be submitted to the satisfaction of the owner/engineer to ensure quality and conformance to the specifications. Additional testing shall be undertaken if it is concluded by the owner/engineer that the submitted test reports are either insufficient or do not include all tests necessary for product acceptance. The tests shall be conducted by a recognized lab acceptable to the owner/engineer and all tests shall be witnessed by owner's/engineer's personnel. All testing procedures and test results shall be satisfactory to the owner/engineer. Contractor shall be responsible for arranging the tests, for transportation, food and lodging for minimum of one owner's/engineer's representative to witness the test at the testing lab. Include all costs for the above in the bid.

I. Testing: Provide the services of an independent qualified testing laboratory to perform the specified field tests. Notify the University's Representative fourteen (14) days in advance of performance of work requiring testing.

J. Conductors, cables, splices and terminations shall be manufactured within twelve (12) months of installation. Each item shall have a permanent marking on the product or the original manufacturers' package indicating the date of manufacture unless otherwise noted.

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PART 2 - PRODUCTS

2.1 CONDUCTORS AND CABLES

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following manufacturers:

1. General Cable Technologies Corporation.
2. Southwire Incorporated
3. Alpha Wire.
4. Belden Inc.
5. Encore Wire Corporation..

B. Conductor Material: Electrical grade, soft drawn annealed copper, 98 percent conductivity, and fabricated in accordance with ASTM and ICEA standards. Minimum size is number 12 for branch circuits, number 14 stranded for control wiring. Aluminum conductors are not permitted.

C. **Copper** Conductors: Comply with NEMA WC 70/ICEA S-95-658.

D. Conductor Insulation: Comply with NEMA WC 70/ICEA S-95-658 for Type THHN-2-THWN-2.

E. Provide separate neutral with each branch circuit serving outlets. When dedicated neutrals are provided, use color spiral to match associated phase.

2.2 CONNECTORS AND SPLICES

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following manufacturers:

1. Ideal Industries, Inc.
2. Ilsco.
3. NSi Industries LLC.
4. O-Z/Gedney; a brand of Emerson Industrial Automation.
5. 3M; Electrical Markets Division.
6. TE Connectivity - Raychem.

B. Description: Factory-fabricated connectors and splices of size, ampacity rating, material, type, and class for application and service indicated.

C. Copper conductors shall be terminated in copper or bronze mechanical connectors or lugs or tool applied compression connections made of copper for all connections except those on wiring devices.

D. Splices in wires No. 10 and smaller shall be made with twist-on splicing connector in accordance with UL486-C. Connections in wires No. 8 and larger shall be made with compression type connectors in accordance with UL486-A and wrapped with insulated tape in accordance with UL501. Insulating tape shall be applied in a minimum of two layers of half wrap or built to match the overall insulation of the wire.

E. Pressure type connectors are not permitted.

2.3 SYSTEM DESCRIPTION

A. Electrical Components, Devices, and Accessories: UL Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

B. Comply with NFPA 70.

PART 3 - EXECUTION

3.1 CONDUCTOR MATERIAL APPLICATIONS

A. Feeders: Copper. Stranded.

B. Branch Circuits: Copper. Stranded.

3.2 CONDUCTOR INSULATION AND MULTICONDUCTOR CABLE APPLICATIONS AND WIRING METHODS

A. Exposed Feeders: Type THHN-2-THWN-2, single conductors in raceway.

B. Feeders Concealed in Ceilings, Walls, Partitions, and Crawlspaces: Type THHN-2-THWN-2, single conductors in raceway.

C. Exposed Branch Circuits, Including in Crawlspaces: Type THHN-2-THWN-2, single conductors in raceway.

D. Branch Circuits Concealed in Ceilings, Walls, and Partitions: Type THHN-2-THWN-2, single conductors in raceway.

3.3 INSTALLATION OF CONDUCTORS AND CABLES

A. All conductors and cables shall be installed in a raceway.

B. Before installing conductors and cables in existing conduits, verify the continuity of each conduit; each surface conduit is properly supported per code and clear of any debris.

C. Complete raceway installation between conductor and cable termination points according to Section 260533 "Raceways and Boxes for Electrical Systems" prior to pulling conductors and cables.

D. Use manufacturer-approved pulling compound or lubricant where necessary; compound used must not deteriorate conductor or insulation. Do not exceed manufacturer's recommended maximum pulling tensions and sidewall pressure values.

E. Use pulling means, including fish tape, cable, rope, and basket-weave wire/cable grips, that will not damage cables or raceway.

F. Install exposed cables parallel and perpendicular to surfaces of exposed structural members and follow surface contours where possible.

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G. Support cables according to Section 260529 "Hangers and Supports for Electrical Systems."

3.4 CONNECTIONS

A. Tighten electrical connectors and terminals according to manufacturer's published torque-tightening values. If manufacturer's torque values are not indicated, use those specified in UL 486A-486B.

B. Make splices, terminations, and taps that are compatible with conductor material and that possess equivalent or better mechanical strength and insulation ratings than unspliced conductors.

C. Wiring at Outlets: Install conductor at each outlet, with at least 12 inches (300 mm) of slack.

3.5 IDENTIFICATION

A. Each conductor shall be factory color coded by conductor manufacturer. Identify and color-code conductors and cables according to Section 260553 "Identification for Electrical Systems."

B. Identify each spare conductor at each end with identity number and location of other end of conductor and identify as spare conductor.

3.6 FIELD QUALITY CONTROL

A. Perform the following tests and inspections:

1. After installing conductors and cables and before electrical circuitry has been energized, test service entrance conductors, feeder conductors and the conductors feeding the following critical equipment for compliance with requirements.
   a. Rooftop Mechanical Equipment.

2. Perform each visual and mechanical inspection and electrical tests stated in latest NETA Acceptance Testing Specification section 7.3.2 (Inspection and Test Procedures-Cables, Low Voltage-600V Maximum). Certify compliance with test parameters per NETA tables.

B. Test and Inspection Reports: Prepare a written report to record the following:

1. Procedures used.
2. Results that comply with requirements. Include color scan images.
3. Results that do not comply with requirements and corrective action taken to achieve compliance with requirements.

C. Cables will be considered defective if they do not pass tests and inspections.

END OF SECTION 260519

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SECTION 260526 - GROUNDING AND BONDING FOR ELECTRICAL SYSTEMS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes: Grounding systems and equipment.

1.3 DEFINITIONS:

A. NETA ATS: InterNational Electrical Testing Association - Acceptance Testing Specification.

B. NETA MTS: InterNational Electrical Testing Association - Maintenance Testing Specification.

C. NFPA : National Fire Protection Association.

D. IEEE: Institute of Electrical and Electronics Engineers

1.4 ACTION SUBMITTALS

A. Product Data: Submit manufacturer's technical catalog cuts for each type of product indicated.

B. Shop Drawings: Site drawings to scale including details showing location and size of each field connection of grounding system.

1. Wiring Diagrams: Differentiate between manufacturer installed and field installed wiring.

1.5 INFORMATIONAL SUBMITTALS

A. Field quality-control reports. Submit written test reports including the following:

1. Test procedures used.
2. Test results that comply with requirements.
3. Results of failed tests and corrective action taken to achieve test results that comply with requirements.

1.6 CLOSEOUT SUBMITTALS

A. Operation and Maintenance Data: For grounding to include in emergency, operation, and maintenance manuals.

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1.7 QUALITY ASSURANCE

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. Comply with UL 467 for grounding and bonding materials and equipment.

PART 2 - PRODUCTS

2.1 GROUNDING ELECTRODES, CONDUCTORS, CONNECTOR, BUS:

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following, or equal:

1. Grounding Connectors, Bars and Rods:
   a. Erico - Pentair Electrical Fastening Solutions
   b. Burndy – A Hubbell Company.
   c. Ideal Industries, Inc.
   d. O-Z/Gedney Co. - A brand of Emerson Industrial Automation.
   e. Thomas & Betts - A Member of the ABB Group.

2. Grounding Conductors and cables:
   a. Southwire
   b. American Insulated Wire
   c. Okonite

2.2 CONDUCTORS

A. Insulated Conductors: Copper wire or cable insulated for 600 V unless otherwise required by applicable Code or authorities having jurisdiction.

B. Bare Copper Conductors:

1. Solid Conductors: ASTM B 3.
2. Stranded Conductors: ASTM B 8.

3. Bonding Cable: 28 kcmil, 14 strands of No. 17 AWG conductor, 1/4 inch (6 mm) in diameter.
4. Bonding Conductor: No. 4 or No. 6 AWG, stranded conductor.
5. Bonding Jumper: Copper tape, braided conductors terminated with copper ferrules; 1-5/8 inches (41 mm) wide and 1/16 inch (1.6 mm) thick.

C. Grounding Bus: Predrilled rectangular bars of annealed copper, 1/4 by 4 inches (6.3 by 100 mm) in cross section, with 9/32-inch (7.14-mm) holes spaced 1-1/8 inches (28 mm) apart. Stand-off insulators for mounting shall comply with UL 891 for use in switchboards, 600 V. Lexan or PVC, impulse tested at 5000 V.

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2.3 CONNECTORS

A. Listed and labeled by UL for applications in which used and for specific types, sizes, and combinations of conductors and other items connected.

B. Bolted Connectors for Conductors, Rods and Pipes: Copper or copper alloy, pressure type with at least two bolts.

1. Pipe Connectors: Clamp type, sized for pipe.

C. Welded Connectors: Exothermic-welding kits of types recommended by kit manufacturer for materials being joined and installation conditions.

D. Bus-bar Connectors: Mechanical type, cast silicon bronze, solderless compression-type wire terminals, and long-barrel, two-bolt connection to ground bus bar.

PART 3 - EXECUTION

3.1 APPLICATIONS

A. Conductors: Install stranded conductors

B. Grounding Bus: Install in electrical and telephone equipment rooms, in rooms housing service equipment or IT rooms, and elsewhere as indicated.

1. Install bus on insulated spacers 2 inches (50 mm) minimum from wall, 6 inches (150 mm) above finished floor unless otherwise indicated.
2. Where indicated on both sides of doorways, route bus up to top of door frame, across top of doorway, and down to specified height above floor; connect to horizontal bus.

C. Conductor Terminations and Connections:

1. Pipe and Equipment Grounding Conductor Terminations: Bolted connectors.
2. Connections to Structural Steel: Welded connectors.

3.2 EQUIPMENT GROUNDING

A. Install insulated equipment grounding conductors with all feeders and branch circuits in the same conduit containing phase and neutral conductors. Comply with NFPA 70, Article 250, for types, sizes, and quantities of equipment grounding conductors, unless specific types, larger sizes, or more conductors than required by NFPA 70 are indicated.

B. Metallic Fences or Other Metal Structures: Comply with requirements of IEEE C2. Bond metallic fences and other metal structures located within 8 feet (2.5 m) vertically or 16 feet (5 m) horizontally of exposed conductors or equipment.

1. Grounding Conductor: Bare, copper, not less than No. 8 AWG.
2. Gates: Shall be bonded to the gate support post with a flexible bonding jumper. Bond each gate support post to the grounding electrode system in the area.

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3. Provide bond across fence openings with 2 AWG bonding jumper buried 18 inches (460 mm) minimum below finished grade. Extend local grounding electrode system to cover swing of gates.
4. Barbed Wire: Strands shall be bonded to the grounding conductor.

3.3 INSTALLATION

A. Grounding Conductors: Route along shortest and straightest paths possible unless otherwise indicated or required by Code. Avoid obstructing access or placing conductors where they may be subjected to strain, impact, or damage.

B. Bonding Straps and Jumpers: Install in locations accessible for inspection and maintenance except where routed through short lengths of conduit.

1. Bonding to Structure: Bond straps directly to basic structure, taking care not to penetrate any adjacent parts.
2. Bonding to Equipment Mounted on Vibration Isolation Hangers and Supports: Install bonding so vibration is not transmitted to rigidly mounted equipment.
3. Use exothermic-welded connectors for outdoor locations; if a disconnect-type connection is required, use a bolted clamp.

C. Grounding and Bonding for Piping:

1. Metal Water Service Pipe: Install insulated copper grounding conductors, in conduit, from building's main service equipment, or grounding bus, to main metal water service entrances to building. Connect grounding conductors to main metal water service pipes; use a bolted clamp connector or bolt a lug-type connector to a pipe flange by using one of the lug bolts of the flange. Where a dielectric main water fitting is installed, connect grounding conductor on street side of fitting. Bond metal grounding conductor conduit or sleeve to conductor at each end.
2. Water Meter Piping: Use braided-type bonding jumpers to electrically bypass water meters. Connect to pipe with a bolted connector.
3. Bond each aboveground portion of gas piping system downstream from equipment shutoff valve.

D. Bonding Interior Metal Ducts: Bond metal air ducts to equipment grounding conductors of associated fans, blowers, electric heaters, and air cleaners. Installbonding jumper to bond across flexible duct connections to achieve continuity.

3.4 LABELING

A. Comply with requirements in Section 260553 "Identification for Electrical Systems" for instruction signs. The label or its text shall be green.

3.5 FIELD QUALITY CONTROL

A. Perform tests and inspections.

B. Tests and Inspections:

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1. After installing grounding system but before permanent electrical circuits have been energized, test for compliance with requirements.
2. Inspect physical and mechanical condition. Verify tightness of accessible, bolted, electrical connections with a calibrated torque wrench according to manufacturer's written instructions.

C. Grounding system will be considered defective if it does not pass tests and inspections.

D. Prepare test and inspection reports.

END OF SECTION 260526

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SECTION 260529 - HANGERS AND SUPPORTS FOR ELECTRICAL SYSTEMS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes the following:

1. Hangers and supports for electrical equipment and systems.
2. Construction requirements for concrete bases.

1.3 DEFINITIONS

A. EMT: Electrical metallic tubing.

B. RMC: Rigid metal conduit.

1.4 PERFORMANCE REQUIREMENTS

A. Design equipment supports capable of supporting combined operating weight of supported equipment and connected systems and components.

B. Rated Strength: Adequate in tension, shear, and pullout force to resist maximum loads calculated or imposed for this Project, with a minimum structural safety factor of five. times the applied force.

1.5 ACTION SUBMITTALS

A. Product Data: For the following:

1. Steel slotted support systems.

B. Shop Drawings: Show fabrication and installation details and include calculations for the following:

1. Trapeze hangers. Include Product Data for components.
2. Steel slotted channel systems. Include Product Data for components.
3. Equipment supports.

1.6 INFORMATIONAL SUBMITTALS

A. Welding certificates.

1.7 QUALITY ASSURANCE

A. Welding: Qualify procedures and personnel according to AWS D1.1/D1.1M, "Structural Welding Code - Steel."

B. Comply with NFPA 70.

1.8 COORDINATION

A. Coordinate size and location of concrete bases. Cast anchor-bolt inserts into bases. Concrete, reinforcement, and formwork requirements are specified together with concrete Specifications.

B. Coordinate installation of roof curbs, equipment supports, and roof penetrations. These items are specified in Section 077200 "Roof Accessories."

PART 2 - PRODUCTS

2.1 SUPPORT, ANCHORAGE, AND ATTACHMENT COMPONENTS

A. Steel Slotted Support Systems: Comply with MFMA-4, factory-fabricated components for field assembly.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
   a. Allied Tube & Conduit: Part of Atkore International.
   b. Cooper B-Line, Inc.; a division of Eaton Inc.
   c. ERICO International Corporation.
   d. GS Metals Corp.
   e. Thomas & Betts Corporation: A Member of the ABB Group.
   f. Unistrut; Part of Atkore International.
   g. Wesanco, Inc.
2. Metallic Coatings: Hot-dip galvanized after fabrication and applied according to MFMA-4.
3. Nonmetallic Coatings: Manufacturer's standard PVC, polyurethane, or polyester coating applied according to MFMA-4.
4. Painted Coatings: Manufacturer's standard painted coating applied according to MFMA-4.
5. Channel Dimensions: Selected for applicable load criteria.

B. Raceway and Cable Supports: As described in NECA 1 and NECA 101.

C. Conduit and Cable Support Devices: Steel hangers, clamps, and associated fittings, designed for types and sizes of raceway or cable to be supported.

D. Support for Conductors in Vertical Conduit: Factory-fabricated assembly consisting of threaded body and insulating wedging plug or plugs for non-armored electrical conductors or cables in

riser conduits. Plugs shall have number, size, and shape of conductor gripping pieces as required to suit individual conductors or cables supported. Body shall be malleable iron.

E. Structural Steel for Fabricated Supports and Restraints: ASTM A 36/A 36M, steel plates, shapes, and bars; black and galvanized.

F. Mounting, Anchoring, and Attachment Components: Items for fastening electrical items or their supports to building surfaces include the following:

1.
2. Mechanical-Expansion Anchors: Insert-wedge-type, [**zinc-coated**] [**stainless**] steel, for use in hardened portland cement concrete with tension, shear, and pullout capacities appropriate for supported loads and building materials in which used.
   a. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
      1) Cooper B-Line, Inc.; a division of Cooper Industries.
      2) Empire Tool and Manufacturing Co., Inc.
      3) Hilti Inc.
      4) ITW Ramset/Red Head; a division of Illinois Tool Works, Inc.
      5) MKT Fastening, LLC.
3. Concrete Inserts: Steel or malleable-iron, slotted support system units similar to MSS Type 18; complying with MFMA-4 or MSS SP-58.
4. Clamps for Attachment to Steel Structural Elements: MSS SP-58, type suitable for attached structural element.
5. Through Bolts: Structural type, hex head, and high strength. Comply with ASTM A 325.
6. Toggle Bolts: All-steel springhead type.
7. Hanger Rods: Threaded steel.

2.2 FABRICATED METAL EQUIPMENT SUPPORT ASSEMBLIES

A. Description: Welded or bolted, structural-steel shapes, shop or field fabricated to fit dimensions of supported equipment.

B. Materials: Comply with requirements in Section 055000 "Metal Fabrications" for steel shapes and plates.

PART 3 - EXECUTION

3.1 APPLICATION

A. Comply with NECA 1 and NECA 101 for application of hangers and supports for electrical equipment and systems except if requirements in this Section are stricter.

B. Maximum Support Spacing and Minimum Hanger Rod Size for Raceway: Space supports for EMT, and RMC as scheduled in NECA 1, where its Table 1 lists maximum spacings less than stated in NFPA 70. Minimum rod size shall be 1/4 inch in diameter.

C. Multiple Raceways or Cables: Install trapeze-type supports fabricated with steel slotted support system, sized so capacity can be increased by at least 25 percent in future without exceeding specified design load limits.

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1. Secure raceways and cables to these supports with two-bolt conduit clamps.

D. Spring-steel clamps designed for supporting single conduits without bolts may be used for 1-1/2-inch and smaller raceways serving branch circuits and communication systems above suspended ceilings and for fastening raceways to trapeze supports.

3.2 SUPPORT INSTALLATION

A. Comply with NECA 1 and NECA 101 for installation requirements except as specified in this Article.

B. Raceway Support Methods: In addition to methods described in NECA 1, EMT and RMC may be supported by openings through structure members, as permitted in NFPA 70.

C. Strength of Support Assemblies: Where not indicated, select sizes of components so strength will be adequate to carry present and future static loads within specified loading limits. Minimum static design load used for strength determination shall be weight of supported components plus 200 lb.

D. Mounting and Anchorage of Surface-Mounted Equipment and Components: Anchor and fasten electrical items and their supports to building structural elements by the following methods unless otherwise indicated by code:

1. To Wood: Fasten with lag screws or through bolts.
2. To New Concrete: Bolt to concrete inserts.
3. To Masonry: Approved toggle-type bolts on hollow masonry units and expansion anchor fasteners on solid masonry units.
4. To Existing Concrete: Expansion anchor fasteners.
5. To Steel: Beam clamps (MSS Type 19, 21, 23, 25, or 27) complying with MSS SP-69.
6. To Light Steel: Sheet metal screws.
7. Items Mounted on Hollow Walls and Nonstructural Building Surfaces: Mount cabinets, panelboards, disconnect switches, control enclosures, pull and junction boxes, transformers, and other devices on slotted-channel racks attached to substrate by means that meet seismic-restraint strength and anchorage requirements.

E. Drill holes for expansion anchors in concrete at locations and to depths that avoid reinforcing bars.

3.3 INSTALLATION OF FABRICATED METAL SUPPORTS

A. Comply with installation requirements in Section 055000 "Metal Fabrications" for site-fabricated metal supports.

B. Cut, fit, and place miscellaneous metal supports accurately in location, alignment, and elevation to support and anchor electrical materials and equipment.

C. Field Welding: Comply with AWS D1.1/D1.1M.

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3.4 CONCRETE BASES

A. Construct concrete bases of dimensions indicated but not less than 4 inches larger in both directions than supported unit, and so anchors will be a minimum of 10 bolt diameters from edge of the base.

B. Use 3000-psi 28-day compressive-strength concrete. Concrete materials, reinforcement, and placement requirements are specified in Section 033000 "Cast-in-Place Concrete."

C. Anchor equipment to concrete base.

1. Place and secure anchorage devices. Use supported equipment manufacturer's setting drawings, templates, diagrams, instructions, and directions furnished with items to be embedded.
2. Install anchor bolts to elevations required for proper attachment to supported equipment.
3. Install anchor bolts according to anchor-bolt manufacturer's written instructions.

3.5 PAINTING

A. Touchup: Clean field welds and abraded areas of shop paint. Paint exposed areas immediately after erecting hangers and supports. Use same materials as used for shop painting. Comply with SSPC-PA 1 requirements for touching up field-painted surfaces.

1. Apply paint by brush or spray to provide minimum dry film thickness of 2.0 mils.

B. Galvanized Surfaces: Clean welds, bolted connections, and abraded areas and apply galvanizing-repair paint to comply with ASTM A 780.

END OF SECTION 260529

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SECTION 260533 - RACEWAYS AND BOXES FOR ELECTRICAL SYSTEMS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Metal conduits, tubing, and fittings.
2. Nonmetal conduits, tubing, and fittings.
3. Metal wireways and auxiliary gutters.
4. Nonmetal wireways and auxiliary gutters.
5. Surface raceways.
6. Boxes, enclosures, and cabinets.
7. Handholes and boxes for exterior underground cabling.

B. Related Requirements:

1. Section 260543 "Underground Ducts and Raceways for Electrical Systems" for exterior ductbanks, manholes, and underground utility construction.

1.3 DEFINITIONS

A. EMT: Electrical metal tubing

B. GRC: Galvanized rigid steel conduit.

C. LFMC: Liquidtite flexible metal conduit

D. RNC: Rigid non-metallic conduit

1.4 QUALITY ASSURANCE:

A. Each conduit shall bear manufacturer's trademark and UL label.

B. Each type of conduit and fittings shall be of a single manufacturer. Multiple manufacturer's of the same material are not acceptable.

C. Comply with California Electric Code (CEC)

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1.5 ACTION SUBMITTALS

A. Product Data: For surface raceways, wireways and fittings, floor boxes, hinged-cover enclosures, and cabinets.

B. LEED Submittals:

1. Product Data for Credit IEQ 4.1: For solvent cements and adhesive primers, documentation including printed statement of VOC content.

2. Laboratory Test Reports for Credit IEQ 4: For solvent cements and adhesive primers, documentation indicating that products comply with the testing and product requirements of the California Department of Health Services' "Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers."

C. Shop Drawings: For custom enclosures and cabinets. Include plans, elevations, sections, and attachment details.

D. Samples: For [**wireways**] [] [**and**] [**surface raceways**] and for each color and texture specified, 12 incheslong.

1.6 INFORMATIONAL SUBMITTALS

A. Coordination Drawings: Conduit routing plans, drawn to scale, on which the following items are shown and coordinated with each other, using input from installers of items involved:

1. Structural members in paths of conduit groups with common supports.
2. HVAC and plumbing items and architectural features in paths of conduit groups with common supports.

B. Qualification Data: For professional engineer.

C. Seismic Qualification Certificates: For enclosures, cabinets, and conduit racks and their mounting provisions, including those for internal components, from manufacturer.

1. Basis for Certification: Indicate whether withstand certification is based on actual test of assembled components or on calculation.
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.
4. Detailed description of conduit support devices and interconnections on which the certification is based and their installation requirements.

D. Source quality-control reports.

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PART 2 - PRODUCTS

2.1 METAL CONDUITS, TUBING, AND FITTINGS

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1. Allied Tube & Conduit; a Tyco International Ltd. Co.
2. Electri-Flex Company.
3. O-Z/Gedney; a brand of EGS Electrical Group.
4. Republic Conduit.
5. Robroy Industries.
6. Thomas & Betts Corporation.

B. Listing and Labeling: Metal conduits, tubing, and fittings shall be UL listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

C. GRC: Comply with ANSI C80.1 and UL 6.

D. PVC-Coated Steel Conduit: PVC-coated [**rigid steel conduit**] [**IMC**].

1. Comply with ANSI C80.1 ETL PVC-001, NEMA RN 1 and UL 6.
2. Coating Thickness: 0.040 inch, minimum.
3. A PVC Coated Sealing Locknut shall be used on all exposed male threads transitioning into female NPT threads which do not have sealing sleeves, including transitions from PVC couplings/female adapters to PVC coated GRC elbows in direct burial applications. PVC Coated Sealing Locknuts are not to be used in place of a conduit hub.

E. EMT: Comply with ANSI C80.3 and UL 797.

F. FMC: Comply with UL 1; [**zinc-coated steel**]

G. LFMC: Flexible steel conduit with PVC jacket and complying with UL 360.

H. Fittings for Metal Conduit: Comply with NEMA FB 1 and UL 514B.

1. Conduit Fittings for Hazardous (Classified) Locations: Comply with UL 886 and NFPA 70.
2. Fittings for EMT:
   a. Material: [**Steel**] [**or**] [**die cast**].
   b. Type: [**Setscrew**] [**or**] [**compression**].
3. Expansion Fittings: PVC or steel to match conduit type, complying with UL 651, rated for environmental conditions where installed, and including flexible external bonding jumper.
4. Coating for Fittings for PVC-Coated Conduit: Minimum thickness of 0.040 inch, with overlapping sleeves protecting threaded joints.

I. PVC-Coated Fittings:

1. Fittings shall be Form 8 with a V-Seal tongue-in-groove gasket and supplied with plastic encapsulated stainless steel cover screws. Form 8 fittings shall be UL Type 4X listed and IEC IP69 certified. Fittings shall be from the same manufacturer as the conduit in order to

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maintain system continuity and warranty. PVC Coated fittings for hazardous locations must be UL 1203 listed.

2.

J. Joint Compound for IMC, GRC, or ARC: Approved, as defined in NFPA 70, by authorities having jurisdiction for use in conduit assemblies, and compounded for use to lubricate and protect threaded conduit joints from corrosion and to enhance their conductivity.

2.2 NONMETALLIC CONDUITS, TUBING, AND FITTINGS

A. Manufacturers: Subject to compliance with requirements, [**provide products by one of the following**]

1. Condux International, Inc.
2. Electri-Flex Company.
3. Lamson & Sessions; Carlon Electrical Products.
4. RACO; a Hubbell company.
5. Thomas & Betts Corporation.

B. Listing and Labeling: Nonmetallic conduits, tubing, and fittings shall be listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

C. Fittings for RNC: Comply with NEMA TC 3; match to conduit or tubing type and material.

2.3 METAL WIREWAYS AND AUXILIARY GUTTERS

A. Manufacturers: Subject to compliance with requirements [**provide products by one of the following**]

1. Cooper B-Line, Inc.
2. Hoffman; a Pentair company.
3. Mono-Systems, Inc.
4. Square D; a brand of Schneider Electric.

B. Description: Sheet metal, complying with UL 870 and NEMA 250, [**Type 3R**] unless otherwise indicated, and sized according to NFPA 70.

1. Metal wireways installed outdoors shall be listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

C. Fittings and Accessories: Include covers, couplings, offsets, elbows, expansion joints, adapters, hold-down straps, end caps, and other fittings to match and mate with wireways as required for complete system.

D. Wireway Covers: [[**Flanged-and-gasketed type**] unless otherwise indicated.

E. Finish: Manufacturer's standard enamel finish.

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2.4 SURFACE RACEWAYS

A. Listing and Labeling: Surface raceways and tele-power poles shall be UL listed and labeled as defined in NFPA 70, and marked for intended location and application.

B. Surface Metal Raceways: Galvanized steel with snap-on covers complying with UL 5. [**Manufacturer's standard enamel finish in color selected by Architect**]

1. Manufacturers: Subject to compliance with requirements [**provide products by one of the following**]
   a. Hubbell Wiring Systems
   b. Wiremold / Legrand.
   c. Mono-Systems, Inc.
   d. Panduit Corp.

2.5 BOXES, ENCLOSURES, AND CABINETS

A. Manufacturers: Subject to compliance with requirements, [**provide products by one of the following**]

1. Cooper Technologies Company; Cooper Crouse-Hinds.
2. EGS/Appleton Electric.
3. Hoffman; a Pentair company.
4. Hubbell Incorporated; Killark Division.
5. O-Z/Gedney; a brand of EGS Electrical Group.
6. RACO; a Hubbell Company.
7. Robroy Industries.
8. Thomas & Betts Corporation.
9. Wiremold / Legrand.

B. General Requirements for Boxes, Enclosures, and Cabinets: Boxes, enclosures, and cabinets installed in wet locations shall be listed for use in wet locations.

C. Sheet Metal Outlet and Device Boxes: Comply with NEMA OS 1 and UL 514A.

D. Cast-Metal Outlet and Device Boxes: Comply with NEMA FB 1, [**ferrous alloy**] Type FD, with gasketed cover.

E. Metal Floor Boxes:

1. Material: [**sheet metal**].
2. Type: [**Fully adjustable**]
3. Shape: Rectangular.
4. Listing and Labeling: Metal floor boxes shall be listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

F. Paddle Fan Outlet Boxes: Nonadjustable, designed for attachment of paddle fan weighing 70 lb.

1. Listing and Labeling: Paddle fan outlet boxes shall be UL listed and labeled as defined in NFPA 70, and marked for intended location and application.

G. Small Sheet Metal Pull and Junction Boxes: NEMA OS 1.

H. Cast-Metal Access, Pull, and Junction Boxes: Comply with NEMA FB 1 and UL 1773, [**galvanized, cast iron**] with gasketed cover.

I. Box extensions used to accommodate new building finishes shall be of same material as recessed box.

J. Device Box Dimensions: [**4 inches square by 2-1/8 inches deep**]

K. Gangable boxes] [**are prohibited**].

L. Hinged-Cover Enclosures: Comply with UL 50 and NEMA 250, [**Type 3R**] with continuous-hinge cover with flush latch unless otherwise indicated.

1. Metal Enclosures: Steel, finished inside and out with manufacturer's standard enamel.
2. Interior Panels: Steel; all sides finished with manufacturer's standard enamel.

M. Cabinets:

1. NEMA 250, [**Type 3R**galvanized-steel box with removable interior panel and removable front, finished inside and out with manufacturer's standard enamel.
2. Hinged door in front cover with flush latch and concealed hinge.
3. Key latch to match panelboards.
4. Metal barriers to separate wiring of different systems and voltage.
5. Accessory feet where required for freestanding equipment.

PART 3 - EXECUTION

3.1 RACEWAY APPLICATION

A. Outdoors: Apply raceway products as specified below unless otherwise indicated:

1. Exposed Conduit: [**GRC**]
2. Concealed Conduit, Aboveground: [**GRC**] Use EPC-40PVC inside concrete walls and columns only.
3. Underground Conduit: [**Type EPC-40-PVC**] [**Type EPC-80-PVC**], [**direct buried**] [**concrete encased**].
4. Connection to Vibrating Equipment (Including Transformers and Hydraulic, Pneumatic, Electric Solenoid, or Motor-Driven Equipment): [**LFMC**] [~~**LFNC**~~].
5. Boxes and Enclosures, Aboveground: NEMA 250, [**Type 3R**] [**Type 4**].

B. Indoors: Apply raceway products as specified below unless otherwise indicated:

1. Exposed, Not Subject to Physical Damage: [**EMT**] [~~**ENT**~~] [**or**] [**RNC**].
2. Exposed, Not Subject to Severe Physical Damage: [**EMT**] [~~**RNC identified for such use**~~].
3. Exposed and Subject to Severe Physical Damage: [**GRC**] [**IMC**]. Raceway locations include the following:
   a. Loading dock.
   b. Corridors used for traffic of mechanized carts, forklifts, and pallet-handling units.
   c. Mechanical rooms.
   d. Gymnasiums.

e. **<Insert designations of applicable spaces or locations>.**

4. Concealed in Ceilings and Interior Walls and Partitions: [**EMT**] [**ENT**] [**or**] [**RNC, Type EPC-40-PVC**].
5. Concealed in concrete walls and columns: RNC Type EPC-40-PVC.
6. Connection to Vibrating Equipment (Including Transformers and Hydraulic, Pneumatic, Electric Solenoid, or Motor-Driven Equipment): FMC, except use LFMC in damp or wet locations.
7. Damp or Wet Locations: [**GRC**] [**IMC**].
8. Boxes and Enclosures: NEMA 250, Type 1, except use NEMA 250, Type 4 [**stainless steel**] [**nonmetallic**] in institutional and commercial kitchens and damp or wet locations.

C. Minimum Raceway Size: [~~**1/2-inch**~~] [**3/4-inch**] trade size. **1/2-inch**

D. Raceway Fittings: Compatible with raceways and suitable for use and location.

1. Rigid and Intermediate Steel Conduit: Use threaded rigid steel conduit fittings unless otherwise indicated. Comply with NEMA FB 2.10.
2. PVC Externally Coated, Rigid Steel Conduits: Use only fittings listed for use with this type of conduit. Patch and seal all joints, nicks, and scrapes in PVC coating after installing conduits and fittings. Use sealant recommended by fitting manufacturer and apply in thickness and number of coats recommended by manufacturer.
3. EMT: Use [**setscrew**] [**or**] [**compression**], [**steel**] [**cast-metal**] fittings. Comply with NEMA FB 2.10.
4. Flexible Conduit: Use only fittings listed for use with flexible conduit. Comply with NEMA FB 2.20.

E. Install nonferrous conduit or tubing for circuits operating above 60 Hz. Where aluminum raceways are installed for such circuits and pass through concrete, install in nonmetallic sleeve.

F. Do not install aluminum conduits, boxes, or fittings in contact with concrete or earth.

G. Install surface raceways only where indicated on Drawings.

H. Do not install nonmetallic conduit where ambient temperature exceeds [**120 deg F**] **<Insert temperature>**.

3.2 INSTALLATION

A. Comply with NECA 1 and NECA 101 for installation requirements except where requirements on Drawings or in this article are stricter. Comply with NECA 102 for aluminum conduits. Comply with NFPA 70 limitations for types of raceways allowed in specific occupancies and number of floors.

B. Keep raceways at least 6 inches away from parallel runs of flues and steam or hot-water pipes. Install horizontal raceway runs above water and steam piping.

C. Complete raceway installation before starting conductor installation.

D. Comply with requirements in Section 260529 "Hangers and Supports for Electrical Systems" for hangers and supports.

E. Arrange stub-ups so curved portions of bends are not visible above finished slab.

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F. Install no more than the equivalent of three 90-degree bends in any conduit run except for control wiring conduits, for which fewer bends are allowed. Support within 12 inches of changes in direction.

G. Conceal conduit and EMT within finished walls, ceilings, and floors unless otherwise indicated. Install conduits parallel or perpendicular to building lines.

H. Support conduit within 12 inchesof enclosures to which attached.

I. Raceways Embedded in Slabs:

1. Run conduit larger than 1-inch trade size, parallel or at right angles to main reinforcement. Where at right angles to reinforcement, place conduit close to slab support. Secure raceways to reinforcement at maximum 10-footintervals.
2. Arrange raceways to cross building expansion joints at right angles with expansion fittings.
3. Arrange raceways to keep a minimum of [**1 inch**] [**2 inches**] <**Insert dimension**> of concrete cover in all directions.
4. Do not embed threadless fittings in concrete unless specifically approved by Architect for each specific location.

5. Change from ENT to [**RNC, Type EPC-40-PVC,**] [**GRC**] [**or**] [**IMC**] before rising above floor.

J. Stub-ups to Above Recessed Ceilings:

1. Use EMT, IMC, or RMC for raceways.
2. Use a conduit bushing or insulated fitting to terminate stub-ups not terminated in hubs or in an enclosure.

K. Threaded Conduit Joints, Exposed to Wet, Damp, Corrosive, or Outdoor Conditions: Apply listed compound to threads of raceway and fittings before making up joints. Follow compound manufacturer's written instructions.

L. PVC Externally Coated, Rigid Steel Conduits: Use only fittings listed for use with this type of conduit. Patch and seal all joints, nicks, and scrapes with PVC touch-up compound after installing conduits and fittings. Use sealant recommended by fitting manufacturer and apply in thickness and number of coats recommended by manufacturer. Coat field-cut threads on PVC-coated raceway with a corrosion-preventing conductive compound prior to assembly. All installers shall be certified by the manufacturer and be able to present a valid unexpired installer certification card prior to installation beginning.

M. Raceway Terminations at Locations Subject to Moisture or Vibration: Use insulating bushings to protect conductors including conductors smaller than No. 4 AWG.

N. Terminate threaded conduits into threaded hubs or with locknuts on inside and outside of boxes or cabinets. Install bushings on conduits up to 1-1/4-inch trade size and insulated throat metal bushings on 1-1/2-inch trade size and larger conduits terminated with locknuts. Install insulated throat metal grounding bushings on service conduits.

O. Install raceways square to the enclosure and terminate at enclosures with locknuts. Install locknuts hand tight plus 1/4 turn more.

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P. Do not rely on locknuts to penetrate nonconductive coatings on enclosures. Remove coatings in the locknut area prior to assembling conduit to enclosure to assure a continuous ground path.

Q. Cut conduit perpendicular to the length. For conduits 2-inch trade size and larger, use roll cutter or a guide to make cut straight and perpendicular to the length.

R. Install pull wires in empty raceways. Use polypropylene or monofilament plastic line with not less than ~~200-lb~~ 250lbs (113 kgs) tensile strength. Leave at least 12 inches of slack at each end of pull wire. Provide acrylic identification tags (2"X4") at each end indicating the source. Cap underground raceways designated as spare above grade alongside raceways in use.

S. Surface Raceways:

1. Install surface raceway with a minimum 2-inchradius control at bend points.
2. Secure surface raceway with screws or other anchor-type devices at intervals not exceeding 48 inches and with no less than two supports per straight raceway section. Support surface raceway according to manufacturer's written instructions. Tape and glue are not acceptable support methods.

T. Install raceway sealing fittings at accessible locations according to NFPA 70 and fill them with listed sealing compound. For concealed raceways, install each fitting in a flush steel box with a blank cover plate having a finish similar to that of adjacent plates or surfaces. Install raceway sealing fittings according to NFPA 70.

U. Install devices to seal raceway interiors at accessible locations. Locate seals so no fittings or boxes are between the seal and the following changes of environments. Seal the interior of all raceways at the following points:

1. Where conduits pass from warm to cold locations, such as boundaries of refrigerated spaces.
2. Where an underground service raceway enters a building or structure.
3. Where otherwise required by NFPA 70.

V. Comply with manufacturer's written instructions for solvent welding RNC and fittings.

W. Expansion-Joint Fittings:

1. Install in each run of aboveground RNC that is located where environmental temperature change may exceed 30 deg F and that has straight-run length that exceeds 25 feet. Install in each run of aboveground RMC[**and EMT**] conduit that is located where environmental temperature change may exceed 100 deg F and that has straight-run length that exceeds 100 feet.
2. Install type and quantity of fittings that accommodate temperature change listed for each of the following locations:
   a. Outdoor Locations Not Exposed to Direct Sunlight: [**125 deg F**] <**Insert temperature**> temperature change.
   b. Outdoor Locations Exposed to Direct Sunlight: [**155 deg F**] <**Insert temperature**> temperature change.
   c. Indoor Spaces Connected with Outdoors without Physical Separation: [**125 deg F**] <**Insert temperature**> temperature change.
   d. Attics: [**135 deg F**] <**Insert temperature**> temperature change.
   e. <**Insert location and corresponding temperature change**>.

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3. Install fitting(s) that provide expansion and contraction for at least 0.00041 inch per foot of length of straight run per deg F of temperature change for PVC conduits. Install fitting(s) that provide expansion and contraction for at least 0.000078 inch per foot of length of straight run per deg F of temperature change for metal conduits.
4. Install expansion fittings at all locations where conduits cross building or structure expansion joints.
5. Install each expansion-joint fitting with position, mounting, and piston setting selected according to manufacturer's written instructions for conditions at specific location at time of installation. Install conduit supports to allow for expansion movement.

X. Flexible Conduit Connections: Comply with NEMA RV 3. Use a maximum of 72 inches of flexible conduit for [**recessed and semirecessed luminaires,**], equipment subject to vibration, noise transmission, or movement; and for transformers and motors.

1. Use LFMC in damp or wet locations ~~subject to severe physical damage.~~

Y. Mount boxes at heights indicated on Drawings. If mounting heights of boxes are not individually indicated, give priority to ADA requirements. Install boxes with height measured to [**center**] [**top**] [**bottom**] of box unless otherwise indicated.

Z. Recessed Boxes in Masonry Walls: Saw-cut opening for box in center of cell of masonry block, and install box flush with surface of wall. Prepare block surfaces to provide a flat surface for a raintight connection between box and cover plate or supported equipment and box.

AA. Horizontally separate boxes mounted on opposite sides of walls so they are not in the same vertical channel.

BB. Locate boxes so that cover or plate will not span different building finishes.

CC. Support boxes of three gangs or more from more than one side by spanning two framing members or mounting on brackets specifically designed for the purpose.

DD. Fasten junction and pull boxes to or support from building structure. Do not support boxes by conduits.

EE. Set metal floor boxes level and flush with finished floor surface.

FF. Set nonmetallic floor boxes level. Trim after installation to fit flush with finished floor surface.

3.3 INSTALLATION OF UNDERGROUND CONDUIT

A. Direct-Buried Conduit:

1. Excavate trench bottom to provide firm and uniform support for conduit. Prepare trench bottom as specified in Section 312000 "Earth Moving" for pipe less than 6 inches in nominal diameter.
2. Install backfill as specified in Section 312000 "Earth Moving."
3. After installing conduit, backfill and compact. Start at tie-in point, and work toward end of conduit run, leaving conduit at end of run free to move with expansion and contraction as temperature changes during this process. Firmly hand tamp backfill around conduit to provide maximum supporting strength. After placing controlled backfill to within 12 inches of finished grade, make final conduit connection at end of run and complete backfilling with normal compaction as specified in Section 312000 "Earth Moving."

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4. Install manufactured duct elbows for stub-ups at poles and equipment and at building entrances through floor unless otherwise indicated. Encase elbows for stub-up ducts throughout length of elbow.
5. Install manufactured rigid steel conduit elbows for stub-ups at poles and equipment and at building entrances through floor.
   a. Couple steel conduits to ducts with adapters designed for this purpose, and encase coupling with 3 inches of concrete for a minimum of 12 inches on each side of the coupling.
   b. For stub-ups at equipment mounted on outdoor concrete bases and where conduits penetrate building foundations, extend steel conduit horizontally a minimum of 60 inches from edge of foundation or equipment base. Install insulated grounding bushings on terminations at equipment.
6. Warning Planks: Bury warning planks approximately 12 inches above direct-buried conduits but a minimum of 6 inches below grade. Align planks along centerline of conduit.
7. Underground Warning Tape: Comply with requirements in Section 260553 "Identification for Electrical Systems."

3.4 INSTALLATION OF UNDERGROUND HANDHOLES AND BOXES

A. Install handholes and boxes level and plumb and with orientation and depth coordinated with connecting conduits to minimize bends and deflections required for proper entrances. Top of conduits inside the handhole/box shall be minimum **[3][4]** inches above the bottom of the handhole/box.

B. Unless otherwise indicated, support units on a level bed of crushed stone or gravel (minimum 6 inch high), graded from 1/2-inch sieve to No. 4 sieve and compacted to same density as adjacent undisturbed earth.

C. Elevation: In paved areas, set so cover surface will be flush with finished grade. Set covers of other enclosures 1 inch above finished grade.

D. Install handholes with bottom below frost line, <**Insert depth of frost line below grade at Project site**> below grade.

E. Install removable hardware, including pulling eyes, cable stanchions, cable arms, and insulators, as required for installation and support of cables and conductors and as indicated. Select arm lengths to be long enough to provide spare space for future cables but short enough to preserve adequate working clearances in enclosure.

F. Field-cut openings for conduits according to enclosure manufacturer's written instructions. Cut wall of enclosure with a tool designed for material to be cut. Size holes for terminating fittings to be used, and seal around penetrations after fittings are installed.

3.5 SLEEVE AND SLEEVE-SEAL INSTALLATION FOR ELECTRICAL PENETRATIONS

A. Install sleeves and sleeve seals at penetrations of exterior floor and wall assemblies. Comply with requirements in Section 260544 "Sleeves and Sleeve Seals for Electrical Raceways and Cabling."

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3.6 FIRESTOPPING

A. Install firestopping at penetrations of fire-rated floor and wall assemblies. Comply with requirements in Section 078413 "Penetration Firestopping."

3.7 PROTECTION

A. Protect coatings, finishes, and cabinets from damage and deterioration.

1. Repair damage to galvanized finishes with zinc-rich paint recommended by manufacturer.
2. Repair damage to PVC coatings or paint finishes with matching touchup coating recommended by manufacturer.

END OF SECTION 260533

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SECTION 260553 - IDENTIFICATION FOR ELECTRICAL SYSTEMS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Color and legend requirements for raceways, conductors, and warning labels and signs.
2. Labels.
3. Bands and tubes.
4. Tapes and stencils.
5. Tags.
6. Signs.
7. Cable ties.
8. Paint for identification.
9. Fasteners for labels and signs.

1.3 ACTION SUBMITTALS

A. Product Data: For each type of product.

1. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for electrical identification products.

B. Samples: For each type of label and sign to illustrate composition, size, colors, lettering style, mounting provisions, and graphic features of identification products.

C. Identification Schedule: For each piece of electrical equipment and electrical system components to be an index of nomenclature for electrical equipment and system components used in identification signs and labels. Use same designations indicated on Drawings.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Comply with ASME A13.1and IEEE C2.

B. Comply with NFPA 70.

C. Comply with 29 CFR 1910.144 and 29 CFR 1910.145.

D. Comply with ANSI Z535.4 for safety signs and labels.

E. Comply with NFPA 70E and Section 26 0573 "Short Circuit, Coordination and Arc-Flash Study" requirements for arc-flash warning labels.

F. Adhesive-attached labeling materials, including label stocks, laminating adhesives, and inks used by label printers, shall comply with UL 969.

G. Thermal Movements: Allow for thermal movements from ambient and surface temperature changes.

1. Temperature Change: 120 deg F, ambient; 180 deg F, material surfaces.

2.2 COLOR AND LEGEND REQUIREMENTS

A. Raceways and Cables Carrying Circuits at 600 V or Less:

1. Black letters on an orange field.
2. Legend: Indicate voltage and system or service type.

B. Color-Coding for Phase- and Voltage-Level Identification, 600 V or Less: Use colors listed below for ungrounded service' feeder and branch-circuit conductors.

1. Color shall be factory applied.
2. Colors for 208/120-V Circuits:
   a. Phase A: Black.
   b. Phase B: Red.
   c. Phase C: Blue.

3. Colors for 240-V Circuits:
   a. Phase A: Black.
   b. Phase B: Red.

4. Colors for 480/277-V Circuits:
   a. Phase A: Brown.
   b. Phase B: Orange.
   c. Phase C: Yellow.

5. Color for Neutral: White.
6. Color for Equipment Grounds: Green.

C. Warning Label Colors:

1. Identify system voltage with black letters on an orange background.

D. Equipment Identification Labels:

1. Black letters on a white field for equipment connected to normal power and Red letters on a white field for equipment connected to emergency/standby power unless otherwise indicated

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2.3 LABELS

A. Vinyl Wraparound Labels: Preprinted, flexible labels laminated with a clear, weather- and chemical-resistant coating and matching wraparound clear adhesive tape for securing label ends.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
   a. Brady Corporation.
   b. HellermannTyton.
   c. Marking Services, Inc.
   d. Panduit Corp.
   e. Seton Identification Products.

B. Snap-around Labels: Slit, pretensioned, flexible, preprinted, color-coded acrylic sleeves, with diameters sized to suit diameters and that stay in place by gripping action.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
   a. Brady Corporation.
   b. HellermannTyton.
   c. Marking Services, Inc.
   d. Panduit Corp.
   e. Seton Identification Products.

C. Self-Adhesive Wraparound Labels: Preprinted, 3-mil-thick, polyesterflexible label with acrylic pressure-sensitive adhesive.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
   a. Brady Corporation.
   b. Grafoplast Wire Markers.
   c. Ideal Industries, Inc.
   d. Marking Services, Inc.
   e. Panduit Corp.
   f. Seton Identification Products.

2. Self-Lamination: Clear; UV-, weather- and chemical-resistant; self-laminating, protective shield over the legend. Labels sized such that the clear shield overlaps the entire printed legend.

3. Marker for Labels: Permanent, waterproof, black ink marker recommended by tag manufacturer.
4. Marker for Labels: Machine-printed, permanent, waterproof, black ink recommended by printer manufacturer.

D. Self-Adhesive Labels: Vinyl, thermal, transfer-printed, 3-mil-thick, multicolor, weather- and UV-resistant, pressure-sensitive adhesive labels, configured for intended use and location.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
   a. Brady Corporation.
   b. Grafoplast Wire Markers.
   c. HellermannTyton.
   d. Ideal Industries, Inc.

e. Marking Services, Inc.
f. Panduit Corp.
g. Seton Identification Products.

2. Minimum Nominal Size:
a. 1-1/2 by 6 inchesfor raceway and conductors.
b. 3-1/2 by 5 inchesfor equipment.
c. As required by authorities having jurisdiction.

2.4 BANDS AND TUBES

A. Snap-around, Color-Coding Bands: Slit, pretensioned, flexible, solid-colored acrylic sleeves, 2 inches long, with diameters sized to suit diameters and that stay in place by gripping action.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
a. Brady Corporation.
b. HellermannTyton.
c. Marking Services, Inc.
d. Panduit Corp.

B. Heat-Shrink Preprinted Tubes: Flame-retardant polyolefin tubes with machine-printed identification labels, sized to suit diameter and shrunk to fit firmly. Full shrink recovery occurs at a maximum of 200 deg F. Comply with UL 224.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
a. Brady Corporation.
b. Panduit Corp.

2.5 TAPES AND STENCILS

A. Marker Tapes: Vinyl or vinyl-cloth, self-adhesive wraparound type, with circuit identification legend machine printed by thermal transfer or equivalent process.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
a. Carlton Industries, LP.
b. HellermannTyton.
c. Ideal Industries, Inc.
d. Marking Services, Inc.
e. Panduit Corp.

B. Self-Adhesive Vinyl Tape: Colored, heavy duty, waterproof, fade resistant; not less than 3 mils thick by 1 to 2 inches wide; compounded for outdoor use.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
a. Brady Corporation.
b. Carlton Industries, LP.
c. emedco.
d. Marking Services, Inc.

C. Tape and Stencil: 4-inch-wide black stripes on 10-inch centers placed diagonally over orange background and is 12 inches wide. Stop stripes at legends.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
   a. HellermannTyton.
   b. LEM Products Inc.
   c. Marking Services, Inc.
   d. Seton Identification Products.

D. Floor Marking Tape: 2-inch-wide, 5-mil pressure-sensitive vinyl tape, with yellow and black stripes and clear vinyl overlay.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
   a. Carlton Industries, LP.
   b. Seton Identification Products.

E. Underground-Line Warning Tape:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
   a. Brady Corporation.
   b. Ideal Industries, Inc.
   c. Marking Services, Inc.
   d. Seton Identification Products.

2. Tape:
   a. Recommended by manufacturer for the method of installation and suitable to identify and locate underground electrical and communications utility lines.
   b. Printing on tape shall be permanent and shall not be damaged by burial operations.
   c. Tape material and ink shall be chemically inert and not subject to degradation when exposed to acids, alkalis, and other destructive substances commonly found in soils.

3. Color and Printing:
   a. Comply with ANSI Z535.1, ANSI Z535.2, ANSI Z535.3, ANSI Z535.4, and ANSI Z535.5.
   b. Inscriptions for Red-Colored Tapes: "CAUTION BURIED ELECTRIC LINE, HIGH VOLTAGE" .
   c. Inscriptions for Orange-Colored Tapes: "CAUTION BURIED TELEPHONE CABLE, CATV CABLE, COMMUNICATIONS CABLE, OPTICAL FIBER CABLE" .

4. Tag: Type IID:
   a. Reinforced, detectable three-layer laminate, consisting of a printed pigmented woven scrim, a solid aluminum-foil core, and a clear protective film that allows inspection of the continuity of the conductive core; bright-colored, continuous-printed on one side with the inscription of the utility, compounded for direct-burial service.
   b. Width: 6 inches.
   c. Overall Thickness: 5 mils.
   d. Foil Core Thickness: 0.35 mil.
   e. Weight: 34 lb/1000 sq. ft..
   f. Tensile according to ASTM D 882: 300 lbf and 12,500 psi.

F. Stenciled Legend: In nonfading, waterproof, black ink or paint. Minimum letter height shall be inchunless otherwise indicated. If requested by Architect, match Owner's existing legend type, size etc.

2.6 TAGS

A. Metal Tags: Brass or aluminum, 2 by 2 by 0.05 inch, with stamped legend, punched for use with self-locking cable tie fastener.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
   a. Brady Corporation.
   b. Carlton Industries, LP.
   c. emedco.
   d. Marking Services, Inc.
   e. Seton Identification Products.

2.7 SIGNS

A. Baked-Enamel Signs:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
   a. Carlton Industries, LP.
   b. Champion America.
   c. emedco.
   d. Marking Services, Inc.

2. Preprinted aluminum signs, high-intensity reflective, punched or drilled for fasteners, with colors, legend, and size required for application.
3. 1/4-inch grommets in corners for mounting.
4. Nominal Size: 7 by 10 inches.

B. Metal-Backed Butyrate Signs:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
   a. Brady Corporation.
   b. Champion America.
   c. emedco.
   d. Marking Services, Inc.

2. Weather-resistant, nonfading, preprinted, cellulose-acetate butyrate signs, with 0.0396-inch galvanized-steel backing, punched and drilled for fasteners, and with colors, legend, and size required for application.
3. 1/4-inch grommets in corners for mounting.
4. Nominal Size: 10 by 14 inches.

C. Laminated Acrylic or Melamine Plastic Signs:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

a. Brady Corporation.
b. Carlton Industries, LP.
c. emedco.
d. Marking Services, Inc.

2. Engraved legend.
3. Thickness:
   a. For signs up to 20 sq. in., minimum 1/16 inch thick.
   b. For signs larger than 20 sq. in., 1/8 inch thick.
   c. Engraved legend with black letters on white face background for equipment connected to normal power and red letters on white face background for equipment connected to emergency/standby power. Verify with Architect if legend has to match Owner's existing signs.
   d. Punched or drilled for mechanical fasteners with 1/4-inch grommets in corners for mounting.
   e. Framed with mitered acrylic molding and arranged for attachment at applicable equipment.

2.8 CABLE TIES

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1. HellermannTyton.
2. Ideal Industries, Inc.
3. Marking Services, Inc.
4. Panduit Corp.

B. General-Purpose Cable Ties: Fungus inert, self-extinguishing, one piece, self-locking, and Type 6/6 nylon.

1. Minimum Width: 3/16 inch.
2. Tensile Strength at 73 Deg F according to ASTM D 638: 12,000 psi.
3. Temperature Range: Minus 40 to plus 185 deg F.
4. Color: Black, except where used for color-coding.

C. UV-Stabilized Cable Ties: Fungus inert, designed for continuous exposure to exterior sunlight, self-extinguishing, one piece, self-locking, and Type 6/6 nylon.

1. Minimum Width: 3/16 inch.
2. Tensile Strength at 73 Deg F according to ASTM D 638: 12,000 psi.
3. Temperature Range: Minus 40 to plus 185 deg F.
4. Color: Black.

D. Plenum-Rated Cable Ties: Self-extinguishing, UV stabilized, one piece, and self-locking.

1. Minimum Width: 3/16 inch.
2. Tensile Strength at 73 Deg F according to ASTM D 638: 7000 psi.
3. UL 94 Flame Rating: 94V-0.
4. Temperature Range: Minus 50 to plus 284 deg F.
5. Color: Black.

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2.9 MISCELLANEOUS IDENTIFICATION PRODUCTS

A. Paint: Comply with requirements in painting Sections for paint materials and application requirements. Retain paint system applicable for surface material and location (exterior or interior).

B. Fasteners for Labels and Signs: Self-tapping, stainless-steel screws or stainless-steel machine screws with nuts and flat and lock washers.

PART 3 - EXECUTION

3.1 PREPARATION

A. Self-Adhesive Identification Products: Before applying electrical identification products, clean substrates of substances that could impair bond, using materials and methods recommended by manufacturer of identification product.

3.2 INSTALLATION

A. Verify and coordinate identification names, abbreviations, colors, and other features with requirements in other Sections requiring identification applications, Drawings, Shop Drawings, manufacturer's wiring diagrams, and operation and maintenance manual. Use consistent designations throughout Project.

B. Install identifying devices before installing acoustical ceilings and similar concealment.

C. Verify identity of each item before installing identification products.

D. Coordinate identification with Project Drawings, manufacturer's wiring diagrams, and operation and maintenance manual.

E. Apply identification devices to surfaces that require finish after completing finish work.

F. Install signs with approved legend to facilitate proper identification, operation, and maintenance of electrical systems and connected items.

G. System Identification for Raceways and Cables under 600 V: Identification shall completely encircle cable or conduit. Place identification of two-color markings in contact, side by side.

1. Secure tight to surface of conductor, cable, or raceway.

H. Auxiliary Electrical Systems Conductor Identification: Identify field-installed alarm, control, and signal connections.

I. Emergency Operating Instruction Signs: Install instruction signs with white legend on a red background with minimum 3/8-inch-high letters for emergency instructions at equipment used for power transfer. Refer to drawings for additional information.

J. Elevated Components: Increase sizes of labels, signs, and letters to those appropriate for viewing from the floor.

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K. Vinyl Wraparound Labels:

1. Secure tight to surface of raceway or cable at a location with high visibility and accessibility.
2. Attach labels that are not self-adhesive type with clear vinyl tape, with adhesive appropriate to the location and substrate.

L. Snap-around Labels: Secure tight to surface at a location with high visibility and accessibility.

M. Self-Adhesive Wraparound Labels: Secure tight to surface at a location with high visibility and accessibility.

N. Self-Adhesive Labels:

1. On each item, install unique designation label that is consistent with wiring diagrams, schedules, and operation and maintenance manual.
2. Unless otherwise indicated, provide a single line of text with 1/2-inch-high letters on 1-1/2-inch-high label; where two lines of text are required, use labels 2 inches high.

O. Marker Tapes: Secure tight to surface at a location with high visibility and accessibility.

P. Self-Adhesive Vinyl Tape: Secure tight to surface at a location with high visibility and accessibility.

1. Field-Applied, Color-Coding Conductor Tape: Apply in half-lapped turns for a minimum distance of 6 inches where splices or taps are made. Apply last two turns of tape with no tension to prevent possible unwinding.

Q. Tape and Stencil: Comply with requirements in painting Sections for surface preparation and paint application.

R. Floor Marking Tape: Apply stripes to finished surfaces following manufacturer's written instructions.

S. Metal Tags:

1. Place in a location with high visibility and accessibility.
2. Secure using general-purpose UV-stabilized cable ties for all area except use plenum-rated cable ties in plenum areas.

T. Nonmetallic Preprinted Tags:

1. Place in a location with high visibility and accessibility.
2. Secure using general-purpose UV-stabilized in all areas except use plenum-rated cable ties in plenum areas.

U. Baked-Enamel Signs:

1. Attach signs that are not self-adhesive type with mechanical fasteners appropriate to the location and substrate.
2. Unless otherwise indicated, provide a single line of text with 1/2-inch-high letters on minimum 1-1/2-inch-high sign; where two lines of text are required, use signs minimum 2 inches high.

V. Metal-Backed Butyrate Signs:

1. Attach signs that are not self-adhesive type with mechanical fasteners appropriate to the location and substrate.
2. Unless otherwise indicated, provide a single line of text with 1/2-inch-high letters on 1-1/2-inch-high sign; where two lines of text are required, use labels 2 inches high.

W. Laminated Acrylic or Melamine Plastic Signs:

1. Attach signs that are not self-adhesive type with mechanical fasteners appropriate to the location and substrate.
2. Unless otherwise indicated, provide a single line of text with 1/2-inch-high letters on 1-1/2-inch-high sign; where two lines of text are required, use labels 2 inches high.

X. Cable Ties: General purpose, for attaching tags, except as listed below:

1. Outdoors: UV-stabilized nylon.
2. In Spaces Handling Environmental Air: Plenum rated.

3.3 IDENTIFICATION SCHEDULE

A. Install identification materials and devices at locations for most convenient viewing without interference with operation and maintenance of equipment. Install access doors or panels to provide view of identifying devices.

B. Identify conductors, cables, and terminals in enclosures and at junctions, terminals, pull points, and locations of high visibility. Identify by system and circuit designation.

C. Accessible Raceways and Metal-Clad Cables, 600 V or Less, for Service, Feeder, and Branch Circuits, More Than 30 A and 120 V to Ground: Identify with self-adhesive raceway labels.

1. Locate identification at changes in direction, at penetrations of walls and floors, at 50-foot maximum intervals in straight runs, and at 25-foot maximum intervals in congested areas.

D. Accessible Fittings for Raceways and Cables within Buildings: Identify the covers of each junction and pull box of the following systems with self-adhesive labels containing the wiring system legend and system voltage. System legends shall be as follows:

1. "EMERGENCY POWER."
2. "POWER."
3. "UPS."

E. Power-Circuit Conductor Identification, 600 V or Less: For conductors in vaults, pull and junction boxes, manholes, and handholes, use self-adhesive wraparound labels to identify the phase.

1. Locate identification at changes in direction, at penetrations of walls and floors, at 50-foot maximum intervals in straight runs, and at 25-foot maximum intervals in congested areas.

F. Control-Circuit Conductor Identification: For conductors and cables in pull and junction boxes, manholes, and handholes, use self-adhesive labels with the conductor or cable designation, origin, and destination.

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G. Control-Circuit Conductor Termination Identification: For identification at terminations, provide heat-shrink preprinted tubes with the conductor designation.

H. Conductors to Be Extended in the Future: Attach write-on tags to conductors and list source.

I. Auxiliary Electrical Systems Conductor Identification: Self-adhesive vinyl tape that is uniform and consistent with system used by manufacturer for factory-installed connections.

1. Identify conductors, cables, and terminals in enclosures and at junctions, terminals, and pull points. Identify by system and circuit designation.

J. Locations of Underground Lines: Underground-line warning tape for power, lighting, communication, and control wiring and optical-fiber cable.

K. Workspace Indication: Apply floor marking tape to finished surfaces. Show working clearances in the direction of access to live parts. Workspace shall comply with NFPA 70 and 29 CFR 1926.403 unless otherwise indicated. Do not install at flush-mounted panelboards and similar equipment in finished spaces.

L. Instructional Signs: Self-adhesive labels, including the color code for grounded and ungrounded conductors.

M. Warning Labels for Indoor Cabinets, Boxes, and Enclosures for Power and Lighting: Metal-backed, butyrate warning signs.

1. Apply to exterior of door, cover, or other access.
2. For equipment with multiple power or control sources, apply to door or cover of equipment, including, but not limited to, the following:
   a. Power-transfer switches.
   b. Controls with external control power connections.

N. Operating Instruction Signs: Laminated acrylic or melamine plastic signs.

O. Emergency Operating Instruction Signs: Laminated acrylic or melamine plastic signs with white legend on a red background with minimum 3/8-inch-high letters for emergency instructions at equipment used for power transfer.

P. Equipment Identification Labels:

1. Indoor Equipment: Laminated acrylic or melamine plastic sign.
2. Outdoor Equipment: Laminated acrylic or melamine sign. Stenciled legend 4 inches high shall also be provided when requested by Architect.
3. Equipment to Be Labeled:
   a. Panelboards: Typewritten directory of circuits in the location provided by panelboard manufacturer. Panelboard identification shall be in the form of a engraved, laminated acrylic or melamine label.
   b. Enclosures and electrical cabinets.
   c. Access doors and panels for concealed electrical items.
   d. Switchboards.

END OF SECTION 260553

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SECTION 262413 - SWITCHBOARDS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Disconnecting and overcurrent protective devices.

1.3 DEFINITIONS

A. GFCI: Ground-fault circuit interrupter.

B. AIC: Interrupting capacity (RMS symmetrical) in amperes.

1.4 ACTION SUBMITTALS

A. Product Data: For each type of overcurrent protective device. Include dimensions and manufacturers' technical data on features, performance, electrical characteristics, ratings, accessories, and finishes.

1.5 INFORMATIONAL SUBMITTALS

A. Coordination Drawings: Ceiling and floor plans, drawn to scale (1/4"=1"-0"), on which the following items are shown and coordinated with each other, based on input from installers of the items involved:

1. Show structural members e.g columns, beams, doors etc. within the area where switchboards are located.

B. Qualification Data: For qualified testing agency.

C. Seismic Qualification Certificates: Submit certification that switchboards, overcurrent protective devices, accessories, and components will withstand seismic forces." Include the following:

1. Basis for Certification: Indicate whether withstand certification is based on actual test of assembled components or on calculation.
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.

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D. Field Quality-Control Reports:

1. Test procedures used.
2. Test results that comply with requirements.
3. Results of failed tests and corrective action taken to achieve test results that comply with requirements.
4. Submit within two (2) weeks of completion of tests.

1.6 CLOSEOUT SUBMITTALS

A. Operation and Maintenance Data: For switchboards and components to include in emergency, operation, and maintenance manuals. In addition to items specified in Section 017823 "Operation and Maintenance Data," include the following:

1. Routine maintenance requirements for switchboards and all installed components.
2. Manufacturer's written instructions for testing and adjusting overcurrent protective devices.

1.7 QUALITY ASSURANCE

A. If alternate manufacturer of products other than what are specified in this section are submitted, all necessary documents not limited to cut sheets, technical information, test reports from recognized testing labs and factory test reports shall be submitted to the satisfaction of the owner/engineer to ensure quality and conformance to the specifications. Additional testing shall be undertaken if it is concluded by the owner/engineer that the submitted test reports are either insufficient or do not include all tests necessary for product acceptance. The tests shall be conducted by a recognized lab acceptable to the owner/engineer and all tests shall be witnessed by owner's/engineer's personnel. All testing procedures and test results shall be satisfactory to the owner/engineer. Contractor shall be responsible for arranging the tests, for transportation, food and lodging for minimum of one owner's/engineer's representative to witness the test at the testing lab. Include all costs for the above in the bid.

B. Manufacturer shall have ISO 9001 or 9002 Certification.

C. Manufacturer shall have ability to readily provide replacement parts for a minimum period of ten (10) years, from the date of completion of the project. Furnish a letter from the manufacturer confirming the availability.

D. transformer, and switchboard) shall be .

E. Source Limitations: Obtain overcurrent protective devices and accessories through one source from a single manufacturer through a local distributor unless otherwise indicated. All power distribution equipment shall be of the same manufacturer as the substation.

F. Comply with NEMA PB 2.

G. Comply with NFPA 70.

H. Comply with UL 891.

I. Installer Qualifications: An employer of workers qualified as defined in NEMA PB 2.1 and trained in electrical safety as required by NFPA 70E.

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J. Electrical Components, Devices, and Accessories: UL Listed and labeled as defined in NFPA 70, Article 100-and marked for intended location and application.

K. Testing Agency Qualifications: Member of NETA;

1. Testing agency shall be an independent company; shall have been a member of NETA for a minimum of ten (10) years and has permanent in-house testing engineers and technicians involved with testing of switchboards and OCPDs similar to those specified on this project.
2. Testing company shall be located with 50 miles radius of the project.
3. Testing Agency's Field Supervisor: Certified by NETA to supervise on-site testing to supervise on-site testing specified in Part 3.
4. Field Testing technician and supervisor shall have minimum ten (10) years experience in field testing of switchboards similar to the type and rating specified on this project.

1.8 DELIVERY, STORAGE, AND HANDLING

A. Deliver, store, protect and handle circuit breakers in accordance with manufacturer's recommended practices and as listed in Installation and Maintenance Manual.

B. Handle and prepare circuit breakers for installation according to NEMA PB 2.1.

1.9 PROJECT CONDITIONS

A. Service Conditions: NEMA PB 2, usual service conditions, as follows:

1. Ambient temperatures within limits specified.
2. Altitude not exceeding 6600 feet (2000 m).

B. Interruption of Existing Electric Service: Do not interrupt electric service to facilities occupied by Owner or others unless permitted under the following conditions and then only after arranging to provide temporary electric service according to requirements indicated:

1. Notify Owner no fewer than fourteen (14) days in advance of proposed interruption of electric service.
2. Do not proceed with interruption of electric service without Owner's written permission.
3. All utility shutdowns will be done by Owner's authorized personnel unless otherwise noted. Coordinate through Owner's Representative.
4. Comply with NFPA 70E.
5. Provide temporary standby power through a standby diesel quiet type back-up generator complete with fuel and 7/24 monitoring if the existing service interruption exceeds 2 hours. Coordinate additional requirements with owner minimum fourteen days in advance. Indicate method of providing temporary electric service.

PART 2 - PRODUCTS

2.1 MANUFACTURED UNITS

A. Manufacturers: Subject to compliance with requirements, provide products matching the manufacturer of the existing electrical distribution equipment in the building.

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B. Nominal System Voltage: 208Y/120 V.

C. Buses and Connections: Three phase, four wire unless otherwise indicated.

2.2 DISCONNECTING AND OVERCURRENT PROTECTIVE DEVICES

A. Molded-Case Circuit Breaker (MCCB): Comply with UL 489, with interrupting capacity (AIC) to meet available fault currents.

1. Thermal-Magnetic Circuit Breakers: Inverse time-current element for low-level overloads, and instantaneous magnetic trip element for short circuits. Adjustable magnetic trip setting for circuit-breaker frame sizes 250 A and larger.
2. Molded-Case Circuit-Breaker (MCCB) Features and Accessories:
   a. Standard frame sizes, trip ratings, and number of poles.
   b. Lugs: Mechanical style, suitable for number, size, trip ratings, and conductor material.
   c. Application Listing: Appropriate for application; Type SWD for switching fluorescent lighting loads; Type HID for feeding fluorescent and high-intensity discharge (HID) lighting circuits.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Receive, inspect, handle, and store switchboards according to NEMA PB 2.1.

B. Examine switchboards before installation to verify compliance with approved shop drawings. Reject switchboards that are moisture damaged or physically damaged.

C. Examine elements and surfaces to receive switchboards for compliance with installation tolerances and other conditions affecting performance of the Work.

D. Proceed with installation only after unsatisfactory conditions have been corrected to the satisfaction of the owner.

3.2 INSTALLATION

A. Install switchboards and accessories according to NEMA PB 2.1.

B. Install overcurrent protective devices, surge protection devices, and instrumentation.

C. Comply with NECA 1.

3.3 CONNECTIONS

A. Connect wiring according to Section 260519 "Low-Voltage Electrical Power Conductors and Cables."

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3.4 IDENTIFICATION

A. Device Nameplates: Label each disconnecting, and overcurrent protective device and each meter and control device mounted in compartment doors with a nameplate complying with requirements for identification specified in Section 260553 "Identification for Electrical Systems."

3.5 FIELD QUALITY CONTROL

A. Perform tests and inspections.

B. Acceptance Testing Preparation:

1. Test insulation resistance for each switchboard bus, component, connecting supply, feeder, and control circuit.
2. Test continuity of each circuit.

C. Tests and Inspections:

1. Perform each visual and mechanical inspection and electrical test stated in NETA Acceptance Testing Specification. Certify compliance with test parameters.
2. All tests shall be witnessed by owner's representative. Provide minimum fourteen (14) days advance notice.
3. Correct malfunctioning units on-site, where possible, and retest to demonstrate compliance; otherwise, replace with new units and retest.

D. Switchboard will be considered defective if it does not pass tests and inspections.

E. Prepare test and inspection reports, including a certified report that identifies switchboards included and that describes scanning results. Include notation of deficiencies detected, remedial action taken, and observations after remedial action.

3.6 ADJUSTING

A. Adjust moving parts and operable components to function smoothly and lubricate as recommended by manufacturer.

END OF SECTION 262413

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SECTION 262813 - FUSES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Cartridge fuses rated 600-V ac and less for use in enclosed switches.
2. Spare-fuse cabinets.

1.3 ACTION SUBMITTALS

A. Product Data: For each type of product indicated. Include construction details, material, dimensions, descriptions of individual components, and finishes for spare-fuse cabinets. Include the following for each fuse type indicated:

1. Ambient Temperature Adjustment Information: If ratings of fuses have been adjusted to accommodate ambient temperatures, provide list of fuses with adjusted ratings.
   a. For each fuse having adjusted ratings, include location of fuse, original fuse rating, local ambient temperature, and adjusted fuse rating.
   b. Provide manufacturer's technical data on which ambient temperature adjustment calculations are based.

2. Dimensions and manufacturer's technical data on features, performance, electrical characteristics, and ratings.

3. Time-current coordination curves (average melt) and current-limitation curves (instantaneous peak let-through current) for each type and rating of fuse.
4. Coordination charts and tables and related data.

1.4 CLOSEOUT SUBMITTALS

A. Operation and Maintenance Data: For fuses to include in emergency, operation, and maintenance manuals. include the following:

1. Ambient temperature adjustment information.

2. Time-current coordination curves (average melt) and current-limitation curves (instantaneous peak let-through current) for each type and rating of fuse.
3. Coordination charts and tables and related data.

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1.5 MAINTENANCE MATERIAL SUBMITTALS

A. Furnish extra materials that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.

1. Fuses: Equal to 10 percent of quantity installed for each size and type, but no fewer than two of each size and type.

1.6 QUALITY ASSURANCE

A. Source Limitations: Obtain fuses, for use within a specific product or circuit, from single source from single manufacturer.

B. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

C. Comply with NEMA FU 1 for cartridge fuses.

D. Comply with NFPA 70.

1.7 PROJECT CONDITIONS

A. Where ambient temperature to which fuses are directly exposed is less than 40 deg F (5 deg C) or more than 100 deg F (38 deg C) apply manufacturer's ambient temperature adjustment factors to fuse ratings.

1.8 COORDINATION

A. Coordinate fuse ratings with utilization equipment nameplate limitations of maximum fuse size and with system short-circuit current levels.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1. Edison Fuse, Inc.
2. Ferraz Shawmut, Inc.
3. Littelfuse, Inc.

2.2 CARTRIDGE FUSES

A. Characteristics: NEMA FU 1, nonrenewable cartridge fuses with voltage ratings consistent with circuit voltages.

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2.3 SPARE-FUSE CABINET

A. Characteristics: Wall-mounted steel unit with full-length, recessed piano-hinged door and key-coded cam lock and pull.

1. Size: Adequate for storage of spare fuses specified with 15 percent spare capacity minimum.
2. Finish: Gray, baked enamel.
3. Identification: "SPARE FUSES" in 1-1/2-inch- (38-mm-) high letters on exterior of door.
4. Fuse Pullers: For each size of fuse, where applicable and available, from fuse manufacturer.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine fuses before installation. Reject fuses that are moisture damaged or physically damaged.

B. Examine holders to receive fuses for compliance with installation tolerances and other conditions affecting performance, such as rejection features.

C. Examine utilization equipment nameplates and installation instructions. Install fuses of sizes and with characteristics appropriate for each piece of equipment.

D. Evaluate ambient temperatures to determine if fuse rating adjustment factors must be applied to fuse ratings.

E. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 FUSE APPLICATIONS

A. Cartridge Fuses:

1. Feeders: Class J, time delay.
2. Motor Branch Circuits: Class RK5, time delay.
3. Other Branch Circuits: Class J, time delay.
4. Control Circuits: Class CC, fast acting.

3.3 INSTALLATION

A. Install fuses in fusible devices. Arrange fuses so rating information is readable without removing fuse.

B. Install spare-fuse cabinet(s).

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3.4 IDENTIFICATION

A. Install labels complying with requirements for identification specified in Section 260553 "Identification for Electrical Systems" and indicating fuse replacement information on inside door of each fused switch and adjacent to each fuse block, socket, and holder.

END OF SECTION 262813

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SECTION 262816 - ENCLOSED SWITCHES AND CIRCUIT BREAKERS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Fusible switches.
2. Enclosures.

1.3 DEFINITIONS

A. NC: Normally closed.

B. NO: Normally open.

C. SPDT: Single pole, double throw.

1.4 PERFORMANCE REQUIREMENTS

A. Seismic Performance: Enclosed switches and circuit breakers shall withstand the effects of earthquake motions determined according to ASCE/SEI 7.

1. 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."

1.5 ACTION SUBMITTALS

A. Product Data: For each type of enclosed switch, circuit breaker, accessory, and component indicated. Include dimensioned elevations, sections, weights, and manufacturers' technical data on features, performance, electrical characteristics, ratings, accessories, and finishes.

1. Enclosure types and details for types other than NEMA 250, Type 1.
2. Current and voltage ratings.
3. Short-circuit current ratings (interrupting and withstand, as appropriate).

4. Include evidence of NRTL listing for series rating of installed devices.
5. Detail features, characteristics, ratings, and factory settings of individual overcurrent protective devices, accessories, and auxiliary components.

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6. Include time-current coordination curves (average melt) for each type and rating of overcurrent protective device; include selectable ranges for each type of overcurrent protective device.

B. Shop Drawings: For enclosed switches and circuit breakers. Include plans, elevations, sections, details, and attachments to other work.

1. Wiring Diagrams: For power, signal, and control wiring.

1.6 INFORMATIONAL SUBMITTALS

A. Seismic Qualification Certificates: For enclosed switches and circuit breakers, accessories, and components, from manufacturer.

1. Basis for Certification: Indicate whether withstand certification is based on actual test of assembled components or on calculation.
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.

B. Field quality-control reports.

1. Test procedures used.
2. Test results that comply with requirements.
3. Results of failed tests and corrective action taken to achieve test results that comply with requirements.

C. Manufacturer's field service report.

1.7 CLOSEOUT SUBMITTALS

A. Operation and Maintenance Data: For enclosed switches and circuit breakers to include in emergency, operation, and maintenance manuals include the following:

1. Manufacturer's written instructions for testing and adjusting enclosed switches and circuit breakers.

2. Time-current coordination curves (average melt) for each type and rating of overcurrent protective device; include selectable ranges for each type of overcurrent protective device.

1.8 MAINTENANCE MATERIAL SUBMITTALS

A. Furnish extra materials that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.

1. Fuses: Equal to 10 percent of quantity installed for each size and type, but no fewer than three of each size and type.
2. Fuse Pullers: Two for each size and type.

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1.9 QUALITY ASSURANCE

A. Source Limitations: Obtain enclosed switches and circuit breakers, overcurrent protective devices, components, and accessories, within same product category, from single source from single manufacturer.

B. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

C. Comply with NFPA 70.

1.10 PROJECT CONDITIONS

A. Environmental Limitations: Rate equipment for continuous operation under the following conditions unless otherwise indicated:

1. Ambient Temperature: Not less than minus 22 deg F and not exceeding 104 deg F.
2. Altitude: Not exceeding 6600 feet.

B. Interruption of Existing Electric Service: Do not interrupt electric service to facilities occupied by Owner or others unless permitted under the following conditions and then only after arranging to provide temporary electric service according to requirements indicated:

1. Notify Owner no fewer than fourteen days in advance of proposed interruption of electric service.
2. Indicate method of providing temporary electric service.
3. Do not proceed with interruption of electric service Owner's written permission.
4. Comply with NFPA 70E.

1.11 COORDINATION

A. Coordinate layout and installation of switches, circuit breakers, and components with equipment served and adjacent surfaces. Maintain required workspace clearances and required clearances for equipment access doors and panels.

PART 2 - PRODUCTS

2.1 FUSIBLE SWITCHES

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1. Eaton Electrical Inc.; Cutler-Hammer Business Unit.
2. General Electric Company; GE Consumer & Industrial - Electrical Distribution.
3. Siemens Energy & Automation, Inc.
4. Square D; a brand of Schneider Electric.

B. Type HD, Heavy Duty, Single Throw, 600V ac, 1200 A and Smaller: UL 98 and NEMA KS 1, horsepower rated, lockable handle with capability to accept three padlocks, and interlocked with cover in closed position.

C. Accessories:

1. Equipment Ground Kit: Internally mounted and labeled for copper and aluminum ground conductors.
2. Neutral Kit: Internally mounted; insulated, capable of being grounded and bonded; labeled for copper and aluminum neutral conductors.
3. Class R Fuse Kit: Provides rejection of other fuse types when Class R fuses are specified.
4. Hookstick Handle: Allows use of a hookstick to operate the handle.
5. Lugs: Mechanical type, suitable for number, size, and conductor material.

2.2 ENCLOSURES

A. Enclosed Switches and Circuit Breakers: NEMA AB 1, NEMA KS 1, NEMA 250, and UL 50, to comply with environmental conditions at installed location.

1. Outdoor Locations: NEMA 250, Type 3R.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine elements and surfaces to receive enclosed switches and circuit breakers for compliance with installation tolerances and other conditions affecting performance of the Work.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

A. Install individual wall-mounted switches and circuit breakers with tops at uniform height unless otherwise indicated.

B. Temporary Lifting Provisions: Remove temporary lifting eyes, channels, and brackets and temporary blocking of moving parts from enclosures and components.

C. Install fuses in fusible devices.

D. Comply with NFPA 70 and NECA 1.

3.3 IDENTIFICATION

A. Comply with requirements in Section 260553 "Identification for Electrical Systems."

1. Identify field-installed conductors, interconnecting wiring, and components; provide warning signs.
2. Label each enclosure with engraved metal or laminated-plastic nameplate.

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3.4 FIELD QUALITY CONTROL

A. Perform tests and inspections.

B. Acceptance Testing Preparation:

1. Test insulation resistance for each enclosed switch and circuit breaker, component, connecting supply, feeder, and control circuit.
2. Test continuity of each circuit.

C. Tests and Inspections:

1. Perform each visual and mechanical inspection and electrical test stated in NETA Acceptance Testing Specification. Certify compliance with test parameters.
2. Correct malfunctioning units on-site, where possible, and retest to demonstrate compliance; otherwise, replace with new units and retest.
3. Test and adjust controls, remote monitoring, and safeties. Replace damaged and malfunctioning controls and equipment.

D. Enclosed switches and circuit breakers will be considered defective if they do not pass tests and inspections.

E. Prepare test and inspection reports, including a certified report that identifies enclosed switches and circuit breakers and that describes scanning results. Include notation of deficiencies detected, remedial action taken, and observations after remedial action.

3.5 ADJUSTING

A. Adjust moving parts and operable components to function smoothly and lubricate as recommended by manufacturer.

END OF SECTION 262816

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EXHIBIT B

BID

Docusign Envelope ID: 17CE9CA1-680B-446D-A24A-6403D2AC0C25

BID FORM

1. Pursuant to and in compliance with your Notice to Bidders and the Contract Documents relating to the construction of:

COUNTY OF SANTA BARBARA
Santa Maria Administration Building HVAC Upgrade
511 East Lakeside Parkway
Santa Maria, CA, 93455

Project No. 23018
Bid Due Date: October 14, 2025, 3 P.M.

including Addendum No(s). 1, ___, ___, ___, ___, ___, ___, the undersigned bidder, having become thoroughly familiar with the terms and conditions of the Contract Documents and with local conditions affecting the performance and the costs of the Work at the place where the Work is to be done, hereby proposes and agrees to fully perform the Work within the time stated in and in strict accordance with the Contract Documents (including the furnishing of any and all labor, materials, tools, expendable equipment and utility and transportation services necessary to fully perform the work and complete it in a workmanlike manner) for the total sum of:

2. **BASE BID:**

$ [ ][ ] , [4][2][2] , [8][8][8] . [0][0]

(Place figures in appropriate boxes.)

Estimated number of work days: 10

3. If the project has additive bid items or additive groups, the lowest responsible bidder will be determined in accordance with Public Contract Code Division II, Part 3, Chapter 1, Section 20103.8, Subdivision (c) and as follows:
   a. The project funding amount will be disclosed before the first bid is opened.
   b. The lowest responsible bidder will be determined based on the Total Base Bid plus Total Additive Items or Total Base Bid plus Total Additive Groups, if any.
   c. In the event that all bids including Total Base Bid plus Total Additive Items or Total Base Bid plus Total Additive Groups exceeds the project funding amount, the lowest bid will be determined on the basis of the Total Base Bid plus those additive items or Total Base Bid plus those additive groups that, when taken in numerical order from the additive list, and added to the Total Base Bid are less than or equal to the funds available.

4. It is understood that Owner reserves the right to reject the proposal and that it shall remain open and not be withdrawn for a period of sixty (60) calendar days from the date prescribed for its opening.

5. Attached hereto and incorporated herein is the complete and entire list of subcontractors to be employed by the undersigned and in the performance of the Work.

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6. It is understood and agreed that if written notice of the acceptance of this proposal is mailed or delivered personally to the undersigned bidder within thirty (30) calendar days after the opening of the proposal, or at any time thereafter before it is withdrawn, the undersigned bidder will execute and deliver the Contract Documents to Owner in accordance with the proposal as accepted, and will also furnish and deliver to Owner any Payment Bond required under the provisions of California Civil Code Section 3247 through 3252 and Performance Bond as required under the provisions of the California Government Code and/or California Public Contract Code all within fourteen (14) calendar days after personal delivery or deposit in the mails, as the case may be, of the notifications of award. The work under the contract shall be commenced by the undersigned bidder on the date stated in the COUNTY'S written Notice to Proceed and shall be completed within **180 calendar** days thereafter.

7. Notice of acceptance or request for additional information may be addressed to the undersigned bidder at the business address set forth below.

8. The bid, contract or other submittal of the CONTRACTOR identified below in connection with the foregoing project is not made in the interest of or on behalf or any undisclosed person, partnership, company, association, organization, or corporation; and that the bid is genuine, and not collusive or sham; that the undersigned bidder has not directly or indirectly induced or solicited any other bidder to put in a false or sham bid and has not directly or indirectly colluded, conspired, connived or agreed with any bidder or anyone else to put in a sham bid, or to refrain from bidding; that the undersigned bidder has not directly or indirectly sought by agreement, communication or conference with anyone to fix his bid price or the bid price of any other bidder or to fix any overhead, profit or cost element of such bid price or of that of any other bidder or to secure any advantage against the COUNTY of Santa Barbara of anyone interested in the proposed contract; or all statements contained in this proposal are true; and that the undersigned bidder has not directly or indirectly, submitted his or her bid price or any breakdown thereof, or the contents thereof, or divulged information or data relative thereto, or paid, and will not pay any fee to any corporation, partnership, company association, organization, Bid Depository or to any member or agent thereof to effectuate a collusive or sham bid. I declare under the penalty of perjury under the laws of the State of California that the foregoing is true and correct.

9. Wherever in this proposal an amount is stated in both words and figures, in case of discrepancy between words and figures the words shall prevail; if all or any portion of the proposal is required to be given in unit prices and totals and a discrepancy existing between any such unit prices and totals so given, the unit prices shall prevail.

10. In accordance with the provisions of Sections 1860 and 1861 of the California Labor Code, every CONTRACTOR will be required to secure the payment of compensation of his or her employees. Each CONTRACTOR to whom a public works contract is awarded shall sign the following certification prior to performing the work of the contract: "I am aware of the provisions of Section 3700 of the Labor Code which requires every employer to be insured against liability for worker's compensation or to undertake self-insurance in accordance with the provisions of that code, and I will comply with such provisions before commencing the performance of the work of this contract."

11. Protests of any bid(s) received must be in writing, must specify all grounds for the protest, and must be filed within ten working days after the opening of bids.

CONTRACTOR

Docusign Envelope ID: 17CE9CA1-680B-446D-A24A-6403D2AC0C25

Mesa Energy System, Inc
Company

IRS No.: 33-0112640

2 Cromwell
Street Address

License Classification(s): B,C4,C7,C10,C20,C36,C38,C46

Irvine, CA 92618
City

Phone Number: 805.489.7808

BY:
Signature

Chris McCall (Co-Branch Manager)
Printed Name, Title

Docusign Envelope ID: 17CE9CA1-680B-446D-A24A-6403D2AC0C25

DESIGNATION OF SUBCONTRACTORS

The bidder agrees if this proposal is accepted, that he will contract with the County of Santa Barbara to do all work and furnish all labor, materials, machinery, tools, and apparatus necessary to completely perform said Contracts in the manner and time prescribed by said Contract.

COUNTY OF SANTA BARBARA
Santa Maria Administration Building HVAC Upgrade
511 East Lakeside Parkway
Santa Maria, CA, 93455

Project No. 23018
Bid Due Date: October 14, 2025, 3 P.M.

In compliance with the provisions of Section 4100-4107 of the Public Contract Code of the State of California, and any amendments, thereof, the undersigned bidder has set forth below the name and location of the place of business of each subcontractor who will perform work or labor or render service to the undersigned in or about the construction of the work to be performed. That portion of the work which will be done by each subcontractor for each subcontract in excess of one-half of one percent of the undersigned's total aggregate bid shall be listed.

DIVISION OF WORK	SUBCONTRACTOR	LIC NO.	LOCATION
CRANE	BIG RED CRANE COMPANY	1008895	OJAI

COMPANY: Mesa Energy System, Inc BY: _____
Bidder's Signature

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NOTE: This form may be reproduced and attached behind this page to list more Subcontractors.

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NONCOLLUSION AFFIDAVIT

In accordance with Public Contract Code § 7106, Chris McCall
(Bidder's full name)

being first duly sworn, deposes and says that he or she is Co-Branch Manager
(Bidder's title)

of Mesa Energy System, Inc
(Company's name)

the party making the foregoing Bid, that the Bid is not made in the interest of, or on behalf of, any undisclosed person, partnership, company, association, organization, or corporation; that the Bid is genuine and not collusive or sham; that the Bidder has not directly or indirectly induced or solicited any other bidder to put in a false or sham Bid, and has not directly or indirectly colluded, conspired, connived, or agreed with any Bidder or anyone else to put in a sham Bid, or that anyone shall refrain from bidding; that the Bidder has not in any manner, directly or indirectly, sought by agreement, communication, or conference with anyone to fix the Bid price of the Bidder or any other Bidder, or to fix any overhead, profit, or cost element of the Bid price, or of that of any other Bidder, or to secure any advantage against the public body awarding the contract of anyone interested in the proposed Contract; that all statements contained in the Bid are true; and further, that the Bidder has not, directly or indirectly, submitted his or her bid price or any breakdown thereof, or the contents thereof, or divulged information or data relative thereto, 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.

SIGNATURE BLOCK (*Signature Block **must be completed in ink& changes must be** initialed.*)

Bidder's Signature: [signature] **Date:** 10/13/25

Bidder's Name & Title (Print): Chris McCall, Branch Manager

At CITY: Grover Beach STATE: CA

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CERTIFICATE OF COMPLIANCE

This is to certify that all requirements for insurance of subcontractors as specified for this project will be met.

10/14/25
Dated

Signature of Principal

Chris McCall (Co-Branch Manager)
Printed Name, Title of Principal

Mesa Energy System, Inc
Company

2 Cromwell
Address

Irvine, CA 92618
City, State & Zip

Docusign Envelope ID: 17CE9CA1-680B-446D-A24A-6403D2AC0C25

BIDDER'S STATEMENTS

REGARDING INSURANCE COVERAGE:
Bidder hereby certifies that he has reviewed the insurance coverage requirements specified in the Contract Forms. Should he be awarded the contract for the work, Bidder further certifies that he can meet all the Contract Specification requirements for insurance including insurance coverage of his subcontractors.

REGARDING TITLE 13 OF THE CA CODE OF REGULATIONS, BIDDER'S FLEET:
Bidder must provide to the County, prior to executing the Contract, a true and correct copy of each valid Certificate of Reported Compliance, as described in section 2449(n) of Title 13 of the California Code of Regulations, for Bidder's fleet, and for each fleet of each subcontractor listed in Bidder's Bid, of vehicles subject to 13 CCR section 2449 that may be used in performance of the Contract.

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

REGARDING PUBLIC CONTRACT CODE SECTION 10162:
In accordance with Public Contract Code Section 10162, the Bidder shall complete, under penalty of perjury, the following questionnaire:

> Has the bidder, any officer of the bidder, or any employee of the bidder who has a proprietary interest in the bidder ever been disqualified, removed, or otherwise prevented from bidding on, or completing, a federal, state, or local government project because of a violation of law or safety regulation?
>
> Yes ____ No X

(If the answer is yes, explain the circumstances on a separate sheet of paper and attach to proposal)

10/14/25
Date

Signature of Principal

Chris McCall (Co-Branch Manager)
Printed Name, Title of Principal

Mesa Energy System, Inc
Company

2 Cromwell
Address

Irvine, CA 92618
City, State & Zip

Docusign Envelope ID: 17CE9CA1-680B-446D-A24A-6403D2AC0C25

ANTI-FRAUD CERTIFICATION

COUNTY OF SANTA BARBARA
Santa Maria Administration Building HVAC Upgrade
511 East Lakeside Parkway
Santa Maria, CA, 93455

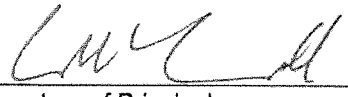
Project No. 23018
Bid Due Date: October 14, 2025, 3 P.M.

In accordance with Public Contract Code Section 10285.1 (Chapter 376, Stats. 1985), the bidder hereby declares under penalty of perjury that the bidder **has __, has not** X, been convicted within the preceding three years of any offenses referred to in that section, including any charge of fraud, bribery, collusion, conspiracy, or any other act in violation of any state or federal antitrust law in connection with the bidding upon award of, or performance of, any public works contract, as defined in Public Contract Code Section 1101, with any public entity, as defined in Public Contract Code Section 1100, including the Regents of the University of California or Trustees of the California State University.

The term "bidder" is understood to include any partner, member, officer, director, responsible managing officer, or responsible managing employee thereof, as referred to in Section 10285.1.

NOTE: The bidder must place a check mark after "has" or "has not" in one of the blank spaces provided.

10/14/25
Date


Signature of Principal

Chris McCall (Co-Branch Manager)
Printed Name, Title of Principal

Mesa Energy System, Inc
Company

2 Cromwell
Address

Irvine, CA 92618
City, State & Zip

Docusign Envelope ID: 17CE9CA1-680B-446D-A24A-6403D2AC0C25

Construction Services Group

Alliant

September 30, 2025

Tatiana Ussery
Mesa Energy Systems
14450 Doolittle Drive
San Leandro, CA 94577

Re:	Obligee:	County of Santa Barbara, State of California
	Project:	COUNTY OF SANTA BARBARA Santa Maria Administration Building HVAC Upgrade 511 East Lakeside Parkway Santa Maria, CA, 93455 Project No.23018
	ECP:	$400,000.00
	Bid Date:	10/14/2025

Dear Tatiana,

Enclosed please find the above captioned bid bond and/or consent of surety executed per your request.

The bid bond and/or consent of surety must be signed by an authorized representative of your company, notarized, and sealed with the corporate seal.

We urge you to double-check all signatures, dates, amounts and job descriptions for accuracy. This will avoid the possibility of having a low bid rejected because of a clerical error. Please verify again that the bid bond form we executed is the form required by the specification. In addition, please verify that anything unusual that has been requested by the obligee is attached.

The bid bond authorization is based upon your original estimate. **If the actual bid price exceeds this estimate by 10% or more, please contact us for additional authority!**

When calculating premium please make sure to include all time surcharges and any warranty periods that may apply.

Please call our office if you should have any questions or need any further assistance.

Good Luck on your Bid.

Sincerely,

Camille Maitland
Camille Maitland
Surety Account Manager

Your bid results are very important, please mail or fax this information back to the address below within 5 days of the bid opening.

Contractors Name	Contract Price
1. _____	$ _____
2. _____	$ _____
3. _____	$ _____

Where did you place _____ and your price $ _____

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BIDDER'S BOND

KNOW ALL MEN BY THESE PRESENTS:

That we, Mesa Energy Systems, Inc. dba McCall & M/M an EMCOR Company as Principal, and Travelers Casualty and Surety Company of America as Surety (hereinafter referred to as Surety), are held firmly bound unto the County of Santa Barbara, State of California (hereinafter called "Owner") in the penal sum of Ten Percent (10%) of the total aggregate amount of the bid of the Principal above named, submitted by said Principal to Owner for the work described below, for the payment of which sum in lawful money of the United States, well and truly to be made, we bind ourselves, our heirs, executors, administrators, and successors, jointly and severally, firmly by these presents. Surety shall be and hereby warrants that it is listed in the Insurance Organizations Authorized by the Insurance Commissioner to Transact Business of Insurance in the State of California, published by the Department of Insurance, State of California or successor publications. In no case shall the liability of the Surety hereunder exceed the sum of Ten Percent of the Amount Bid DOLLARS ($ 10% of Amt. Bid).

The condition of this obligation is such that a bid to the Owner for certain construction specifically described as follows:

COUNTY OF SANTA BARBARA
Santa Maria Administration Building HVAC Upgrade
511 East Lakeside Parkway
Santa Maria, CA, 93455

Project No.23018

For which bids are due on **October 14, 2025,** have been submitted by the Principal to the Owner.

NOW, THEREFORE, if the aforesaid Principal shall not withdraw said bid within the period therein after the opening of the same, or, if no period be specified within sixty (60) days after said opening and shall within the period specified therefore, or, if no period be specified, within eight (8) days after the prescribed forms are presented to him for signature, enter into a written Contract with Owner, in the prescribed form, in accordance with the bid as accepted, and file the two Bonds with Owner, one to guarantee faithful performance and the other to guarantee payment for labor and materials, as required by law, then this obligation shall be null and void; otherwise, it shall remain in full force, virtue and affect.

Said Surety, for value received, hereby stipulates and agrees that no change, extension of time, alteration or addition to the terms of said Contract or to the work to be performed thereunder or the Specifications accompanying the same shall in any manner affects its obligations on this bond, and it does hereby waive notice of any change, extension, alteration, or addition.

It is hereby agreed that any progress payment made after the scheduled completion date will not constitute a waiver of any liquidated damages heretofore agreed upon.

In the event suit is brought upon said Bond by Owner and judgment is recovered, the Surety shall pay all costs incurred by Owner in such suit, including a reasonable attorney's fee to be fixed by the Court.

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Death, Bankruptcy, Receivership, Going Out of Business for any reason, or incompetence of the Principal shall not relieve the Surety of its obligations hereunder.

Mesa Energy Systems, Inc. dba McCall & M/M an EMCOR Company
Name of Principal

Dated 10-2-25

(Seal)
Signature of Principal Brad Cox, SVP of Operations

Travelers Casualty and Surety Company of America
Name of Surety

One Tower Square
Address

Hartford, CT 06183
City, State & Zip

Dated September 30, 2025

(Seal)
Signature of Surety's Attorney-in-fact, Camille Maitland

Surety's Agent for Service of Process (located within the State of California):

Charlene K. Nakamura
Name of Agent

333 S. Hope Street, Suite 3750
Address

Los Angeles, CA 90071
City, State & Zip

213-443-2467
Telephone Number

213-443-2489
FAX Number

NOTE: Signatures of those executing for Surety MUST be properly acknowledged. This form may be reproduced for transmittal to the Surety for execution and attached to the front of the original Bid Bond Form.

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CALIFORNIA ALL-PURPOSE ACKNOWLEDGMENT Civil Code § 1189

A notary public or other officer completing this certificate verifies only the identity of the individual who signed the document to which this certificate is attached, and not the truthfulness, accuracy, or validity of that document.

State of California)
) ss
County of Alameda)

On 10-2-25, before me, Michelle Dunn, Notary Public, personally appeared Brad Cox, who proved to me on the basis of satisfactory evidence to be the person(s) whose name(s) is/are subscribed to the within instrument and acknowledged to me that he/she/they executed the same in his/her/their authorized capacity(ies), and that by his/her/their signature(s) on the instrument the person(s), or the entity upon behalf of which the person(s) acted, executed the instrument.

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

WITNESS my hand and official seal.

MICHELLE DUNN
Notary Public - California
Alameda County
Commission # 2453011
My Comm. Expires Aug 8, 2027

Signature: Michelle Dunn, Notary Public

(Seal)

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TRAVELERS

Travelers Casualty and Surety Company of America
Travelers Casualty and Surety Company
St. Paul Fire and Marine Insurance Company

POWER OF ATTORNEY

Travelers Casualty and Surety Company of America, Travelers Casualty and Surety Company, and St. Paul Fire and Marine Insurance Company are corporations duly organized under the laws of the State of Connecticut (herein collectively called the "Companies"), and the Companies do hereby make, constitute and appoint **Camille Maitland** of **UNIONDALE**, **New York**, their true and lawful Attorney(s)-in-Fact to sign, execute, seal and acknowledge any and all bonds, recognizances, conditional undertakings and other writings obligatory in the nature thereof on behalf of the Companies in their business of guaranteeing the fidelity of persons, guaranteeing the performance of contracts and executing or guaranteeing bonds and undertakings required or permitted in any actions or proceedings allowed by law.

IN WITNESS WHEREOF, the Companies have caused this instrument to be signed, and their corporate seals to be hereto affixed, this **16th** day of **February, 2024**.

SEAL SEAL SEAL

State of Connecticut

By: _____
Bryce Grissom, Senior Vice President

City of Hartford ss.

On this the **16th** day of **February, 2024**, before me personally appeared **Bryce Grissom**, who acknowledged himself to be the Senior Vice President of each of the Companies, and that he, as such, being authorized so to do, executed the foregoing instrument for the purposes therein contained by signing on behalf of said Companies by himself as a duly authorized officer.

IN WITNESS WHEREOF, I hereunto set my hand and official seal.

My Commission expires the **30th** day of **June, 2026**

ANNA P NOWIK NOTARY PUBLIC CONNECTICUT

_____
Anna P. Nowik, Notary Public

This Power of Attorney is granted under and by the authority of the following resolutions adopted by the Boards of Directors of each of the Companies, which resolutions are now in full force and effect, reading as follows:

RESOLVED, that the Chairman, the President, any Vice Chairman, any Executive Vice President, any Senior Vice President, any Vice President, any Second Vice President, the Treasurer, any Assistant Treasurer, the Corporate Secretary or any Assistant Secretary may appoint Attorneys-in-Fact and Agents to act for and on behalf of the Company and may give such appointee such authority as his or her certificate of authority may prescribe to sign with the Company's name and seal with the Company's seal bonds, recognizances, contracts of indemnity, and other writings obligatory in the nature of a bond, recognizance, or conditional undertaking, and any of said officers or the Board of Directors at any time may remove any such appointee and revoke the power given him or her; and it is

FURTHER RESOLVED, that the Chairman, the President, any Vice Chairman, any Executive Vice President, any Senior Vice President or any Vice President may delegate all or any part of the foregoing authority to one or more officers or employees of this Company, provided that each such delegation is in writing and a copy thereof is filed in the office of the Secretary; and it is

FURTHER RESOLVED, that any bond, recognizance, contract of indemnity, or writing obligatory in the nature of a bond, recognizance, or conditional undertaking shall be valid and binding upon the Company when (a) signed by the President, any Vice Chairman, any Executive Vice President, any Senior Vice President or any Vice President, any Second Vice President, the Treasurer, any Assistant Treasurer, the Corporate Secretary or any Assistant Secretary and duly attested and sealed with the Company's seal by a Secretary or Assistant Secretary; or (b) duly executed (under seal, if required) by one or more Attorneys-in-Fact and Agents pursuant to the power prescribed in his or her certificate or their certificates of authority or by one or more Company officers pursuant to a written delegation of authority; and it is

FURTHER RESOLVED, that the signature of each of the following officers: President, any Executive Vice President, any Senior Vice President, any Vice President, any Assistant Vice President, any Secretary, any Assistant Secretary, and the seal of the Company may be affixed by facsimile to any Power of Attorney or to any certificate relating thereto appointing Resident Vice Presidents, Resident Assistant Secretaries or Attorneys-in-Fact for purposes only of executing and attesting bonds and undertakings and other writings obligatory in the nature thereof, and any such Power of Attorney or certificate bearing such facsimile signature or facsimile seal shall be valid and binding upon the Company and any such power so executed and certified by such facsimile signature and facsimile seal shall be valid and binding on the Company in the future with respect to any bond or understanding to which it is attached.

I, **Kevin E. Hughes**, the undersigned, Assistant Secretary of each of the Companies, do hereby certify that the above and foregoing is a true and correct copy of the Power of Attorney executed by said Companies, which remains in full force and effect.

Dated this **30th** day of **September**, **2025**.

SEAL SEAL SEAL

_____
Kevin E. Hughes, Assistant Secretary

To verify the authenticity of this Power of Attorney, please call us at 1-800-421-3880.
Please refer to the above-named Attorney(s)-in-Fact and the details of the bond to which this Power of Attorney is attached.

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ACKNOWLEDGMENT OF SURETY COMPANY

STATE OF NEW YORK }

COUNTY OF NASSAU }

On this SEP 30 2025, before me personally came Camille Maitland to me known, who, being by me duly sworn, did depose and say; that he/she resides in Nassau County, State of New York that he/she is the Attorney-In-Fact of the Travelers Casualty and Surety Company of America the corporation described in which executed the above instrument; that he/she knows the seal of said corporation; that the seal affixed to said instrument is such corporate seal; that is was so affixed by the Board of Directors of said corporation; and that he/she signed his/her name thereto by like order; and the affiant did further depose and say that the Superintendent of Insurance of the State of New York, has pursuant to Section 1111 of the Insurance Law of the State of New York, issued to Travelers Casualty and Surety Company of America (Surety) his/her certificate of qualification evidencing the qualification of said Company and its sufficiency under any law of the State of New York as surety and guarantor, and the propriety of accepting and approving it as such; and that such certificate has not been revoked.

Notary Public

Amy Tarazona
Notary Public-State of New York
No. 01TA0013151
Qualified in Nassau County
Commission Expires 09/06/2027

NY acknowledgement

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TRAVELERS CASUALTY AND SURETY COMPANY OF AMERICA

HARTFORD, CONNECTICUT 06183

FINANCIAL STATEMENT AS OF DECEMBER 31, 2024

CAPITAL STOCK $ 6,480,000

ASSETS		LIABILITIES & SURPLUS	
BONDS	$ 5,367,684,447	LOSSES	$ 1,648,831,742
STOCKS	99,502,344	LOSS ADJUSTMENT EXPENSES	169,492,904
CASH AND INVESTED CASH	69,689,826	REINSURANCE PAYABLE ON PAID LOSSES & LOSS ADJ. EXPENSES	15,148,347
OTHER INVESTED ASSETS	9,969,793	COMMISSIONS	62,360,717
SECURITIES LENDING REINVESTED COLLATERAL ASSETS	30,993,966	OTHER EXPENSES	69,184,511
INVESTMENT INCOME DUE AND ACCRUED	45,630,862	TAXES, LICENSES AND FEES	16,311,579
PREMIUM BALANCES	346,017,428	CURRENT FEDERAL AND FOREIGN INCOME TAXES	7,102,552
REINSURANCE RECOVERABLE	62,034,928	UNEARNED PREMIUMS	1,647,964,685
NET DEFERRED TAX ASSET	78,278,940	ADVANCE PREMIUM	3,970,618
UNDISTRIBUTED PAYMENTS	15,607,795	POLICYHOLDER DIVIDENDS	26,972,587
GUARANTY FUNDS RECEIVABLE OR ON DEPOSIT	2,148,727	CEDED REINSURANCE NET PREMIUMS PAYABLE	57,879,540
OTHER ASSETS	1,100,106	AMOUNTS WITHHELD / RETAINED BY COMPANY FOR OTHERS	17,071,685
		REMITTANCES AND ITEMS NOT ALLOCATED	10,456,481
		PROVISION FOR REINSURANCE	8,746,887
		PAYABLE TO PARENTS, SUBSIDIARIES AND AFFILIATES	79,937,444
		PAYABLE FOR SECURITIES LENDING	30,993,966
		ESCHEAT LIABILITY	595,014
		OTHER ACCRUED EXPENSES AND LIABILITIES	4,726
		TOTAL LIABILITIES	$ 3,873,025,985
		CAPITAL STOCK	$ 6,480,000
		PAID IN SURPLUS	433,803,760
		OTHER SURPLUS	1,815,349,416
		TOTAL SURPLUS TO POLICYHOLDERS	$ 2,255,633,176
TOTAL ASSETS	$ 6,128,659,161	TOTAL LIABILITIES & SURPLUS	$ 6,128,659,161

STATE OF CONNECTICUT)

COUNTY OF HARTFORD) SS.

CITY OF HARTFORD)

SEAL

MICHAEL J. DOODY, BEING DULY SWORN, SAYS THAT HE IS VICE PRESIDENT – FINANCE, OF TRAVELERS CASUALTY AND SURETY COMPANY OF AMERICA, AND THAT TO THE BEST OF HIS KNOWLEDGE AND BELIEF, THE FOREGOING IS A TRUE AND CORRECT STATEMENT OF THE FINANCIAL CONDITION OF SAID COMPANY AS OF THE 31ST DAY OF DECEMBER, 2024.

Michael J Doody

VICE PRESIDENT – FINANCE

NOTARY PUBLIC

SUBSCRIBED AND SWORN TO BEFORE ME THIS
15TH DAY OF MARCH, 2025

SUSAN M. WEISSLEDER
Notary Public
My Commission Expires November 30, 2027

SUSAN M. WEISSLEDER NOTARY PUBLIC CONNECTICUT

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one COUNTY one FUTURE

CERTIFICATE OF INSURANCE TRANSMITTAL FORM

FOR THE FOLLOWING DESCRIBED PROJECT:

County of Santa Barbara
Santa Maria Administration Building HVAC Upgrade
511 East Lakeside Parkway
Santa Maria, CA, 93455
Project No.23018

CONTRACTOR:

Mesa Energy Systems
Name

2 Cromwell
Address

Irvine Ca 92618
City, State & Zip Code

The successful bidder shall furnish satisfactory proof of the maintenance of adequate Worker's Compensation Insurance, and the maintenance of Comprehensive General and Automobile Liability Insurance in the amount of not less than $1,000,000 per occurrence and $2,000,000 in the aggregate. The County of Santa Barbara (COUNTY), its officers, employees, and agents shall be named as additional insured on all certificates. A copy of the endorsement evidencing that the County has been added to the policy must be attached to the certificate of insurance. Said policy or policies shall provide that the COUNTY shall be given thirty (30) days written notice prior to cancellation or expiration of the policy or reduction in coverage. Refer to section 5.18 of the General Conditions.

In addition to the above, the following information must appear on the certificates:

County of Santa Barbara
Santa Maria Administration Building HVAC Upgrade
511 East Lakeside Parkway
Santa Maria, CA, 93455
Project No. 23018

This form must be attached to all insurance forms sent to the County of Santa Barbara, General Services Department:

Kimberly Eckert
Authorized Insurance Company Representative's Signature

Docusign Envelope ID: 17CE9CA1-680B-446D-A24A-6403D2AC0C25

CERTIFICATE OF LIABILITY INSURANCE

DATE (MM/DD/YYYY): 10/27/2025

THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AFFIRMATIVELY OR NEGATIVELY AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW. THIS CERTIFICATE OF INSURANCE DOES NOT CONSTITUTE A CONTRACT BETWEEN THE ISSUING INSURER(S), AUTHORIZED REPRESENTATIVE OR PRODUCER, AND THE CERTIFICATE HOLDER.

IMPORTANT: If the certificate holder is an ADDITIONAL INSURED, the policy(ies) must have ADDITIONAL INSURED provisions or be endorsed. If SUBROGATION IS WAIVED, subject to the terms and conditions of the policy, certain policies may require an endorsement. A statement on this certificate does not confer rights to the certificate holder in lieu of such endorsement(s).

PRODUCER ***MARSH USA LLC 1166 AVENUE OF THE AMERICAS NEW YORK, NY 10036 Phone: 866-966-4864 Emcor.Certrequest@marsh.com / Fax: 203-229-6787 CN102796740-EMC-SER-25-26 23018	CONTACT NAME: PHONE (A/C, No, Ext): FAX (A/C, No): E-MAIL ADDRESS: NewYork.Certs@marsh.com
INSURED MESA ENERGY SYSTEMS, INC. DBA EMCOR SERVICES MESA ENERGY 2 CROMWELL IRVINE, CA 92618-2011	INSURER(S) AFFORDING COVERAGE / NAIC # INSURER A : Continental Casualty Company 20443 INSURER B : American Casualty Company of Reading, PA 20427 INSURER C : Transportation Insurance Co 20494 INSURER D : Continental Insurance Company 35289 INSURER E : INSURER F :

COVERAGES **CERTIFICATE NUMBER:** NYC-012435443-01 **REVISION NUMBER:** 2

THIS IS TO CERTIFY THAT THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED. NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS.

INSR LTR	TYPE OF INSURANCE	ADDL INSD	SUBR WVD	POLICY NUMBER	POLICY EFF (MM/DD/YYYY)	POLICY EXP (MM/DD/YYYY)	LIMITS		
A	X COMMERCIAL GENERAL LIABILITY CLAIMS-MADE [X] OCCUR GEN'L AGGREGATE LIMIT APPLIES PER: POLICY [X] PRO-JECT [ ] LOC OTHER:			GL 8033391088	10/01/2025	10/01/2026	EACH OCCURRENCE DAMAGE TO RENTED PREMISES (Ea occurrence) MED EXP (Any one person) PERSONAL & ADV INJURY GENERAL AGGREGATE PRODUCTS - COMP/OP AGG	$ $ $ $ $ $	12,000,000 1,000,000 25,000 12,000,000 14,000,000 14,000,000
A	AUTOMOBILE LIABILITY X ANY AUTO OWNED AUTOS ONLY X HIRED AUTOS ONLY SCHEDULED AUTOS X NON-OWNED AUTOS ONLY			BUA 8033391091	10/01/2025	10/01/2026	COMBINED SINGLE LIMIT (Ea accident) BODILY INJURY (Per person) BODILY INJURY (Per accident) PROPERTY DAMAGE (Per accident) Auto Physical Damage	$ $ $ $ $	12,000,000 Included
	UMBRELLA LIAB [ ] OCCUR EXCESS LIAB [ ] CLAIMS-MADE DED RETENTION $						EACH OCCURRENCE AGGREGATE	$ $	
B D C	WORKERS COMPENSATION AND EMPLOYERS' LIABILITY ANY PROPRIETOR/PARTNER/EXECUTIVE OFFICER/MEMBER EXCLUDED? Y/N [N] N/A (Mandatory in NH) If yes, describe under DESCRIPTION OF OPERATIONS below			WC 8 33425613 (AOS) WC 8 33451421 (CA) WC 8 33452858 (AZ, OR, WI)	10/01/2025 10/01/2025 10/01/2025	10/01/2026 10/01/2026 10/01/2026	X PER STATUTE [ ] OTH-ER E.L. EACH ACCIDENT E.L. DISEASE - EA EMPLOYEE E.L. DISEASE - POLICY LIMIT	$ $ $	1,000,000 1,000,000 1,000,000

DESCRIPTION OF OPERATIONS / LOCATIONS / VEHICLES (ACORD 101, Additional Remarks Schedule, may be attached if more space is required)

RE: SANTA MARIA ADMINISTRATION BUILDING HVAC UPGRADE 511 EAST LAKESIDE PARKWAY SANTA MARIA, CA, 93455 COUNTY PROJECT NO. 23018

ADDITIONAL INSURED UNDER ALL POLICIES (EXCEPT WORKERS COMPENSATION & EMPLOYERS LIABILITY) WHERE REQUIRED BY CONTRACT: COUNTY, ITS OFFICERS, OFFICIALS, EMPLOYEES, AGENTS AND VOLUNTEERS.
WHERE REQUIRED BY CONTRACT, COVERAGE PROVIDED TO THE ADDITIONAL INSUREDS IS PRIMARY & NON-CONTRIBUTORY.
WAIVER OF SUBROGATION AS REQUIRED BY CONTRACT AND WHERE NOT PROHIBITED BY LAW.

CERTIFICATE HOLDER

COUNTY OF SANTA BARBARA
260 N SAN ANTONIO ROAD
SANTA BARBARA, CA 93110

CANCELLATION

SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, NOTICE WILL BE DELIVERED IN ACCORDANCE WITH THE POLICY PROVISIONS.

AUTHORIZED REPRESENTATIVE
of Marsh USA LLC

Marsh USA LLC

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AGENCY CUSTOMER ID: CN102796740

LOC #: New York

ADDITIONAL REMARKS SCHEDULE

AGENCY ***MARSH USA LLC	NAMED INSURED MESA ENERGY SYSTEMS, INC. DBA EMCOR SERVICES MESA ENERGY 2 CROMWELL IRVINE, CA 92618-2011
POLICY NUMBER	
CARRIER / NAIC CODE	EFFECTIVE DATE:

ADDITIONAL REMARKS

THIS ADDITIONAL REMARKS FORM IS A SCHEDULE TO ACORD FORM,

FORM NUMBER: 25 FORM TITLE: Certificate of Liability Insurance

AUTO PHYSICAL DAMAGE COMP / COLL DEDUCTIBLE $500

FOR WORKER'S COMPENSATION, AUTO LIABILITY, GENERAL LIABILITY AND UMBRELLA LIABILITY:
IN THE EVENT OF CANCELLATION OR MATERIAL CHANGE THAT REDUCES OR RESTRICTS THE INSURANCE AFFORDED BY THIS COVERAGE PART (OTHER THAN THE REDUCTION OF AGGREGATE LIMITS THROUGH PAYMENT OF CLAIMS AS APPLICABLE), INSURER AGREES TO MAIL PRIOR WRITTEN NOTICE OF CANCELLATION OR MATERIAL CHANGE TO: CERTIFICATE HOLDER
SCHEDULE
1. NUMBER OF DAYS ADVANCE NOTICE: FOR ANY STATUTORILY PERMITTED REASON OTHER THAN NON-PAYMENT OF PREMIUM, THE NUMBER OF DAYS REQUIRED FOR NOTICE OF CANCELLATION AS PROVIDED IN PARAGRAPH 2 OF EITHER THE CANCELLATION COMMON POLICY CONDITIONS OR AS AMENDED BY THE APPLICABLE STATE CANCELLATION ENDORSEMENT IS INCREASED TO THE LESSER OF 60 DAYS OR THE NUMBER OF DAYS REQUIRED IN A WRITTEN CONTRACT.
FOR NON-PAYMENT OF PREMIUM, THE GREATER OF (1) THE NUMBER OF DAYS REQUIRED BY STATE LAW OR (2) THE NUMBER OF DAYS REQUIRED BY WRITTEN CONTRACT.
2. NAME:
NOTICE WILL BE MAILED TO: CERTIFICATE HOLDER

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EMCOR GROUP, INC. - Blanket Additional Insured - Owners, Lessees or Contractors - with Products-Completed Operations Coverage

This endorsement modifies insurance provided under the following:

COMMERCIAL GENERAL LIABILITY COVERAGE PART

I. **WHO IS AN INSURED** is amended to include as an insured any person or organization whom you are to add as an additional insured on this Coverage Part, but only with respect to liability for **"bodily injury"**, **"property damage"** or **"personal and advertising injury"** caused in whole or in part by your acts or omissions, or the acts or omissions of those acting on your behalf:

A. In the performance of your ongoing operations; and

B. In the performance of **"your work"**, with respect to **"bodily injury"** or **"property damage"** included in the **"products-completed operations hazard"**, but only if you are required to provide the additional insured such coverage.

II. If a **"written contract"** requires additional insured coverage under the 07-04 edition of CG2010 or CG2037, then Paragraph **I.** above is deleted in its entirety and replaced by the following:

WHO IS AN INSURED is amended to include as an insured any person or organization whom you are required by **"written contract"** to add as an additional insured on this Coverage Part, but only with respect to liability for **"bodily injury"**, **"property damage"** or **"personal and advertising injury"** caused in whole or in part by your acts or omissions, or the acts or omissions of those acting on your behalf:

A. In the performance of your ongoing operations subject to such **"written contract"**; or

B. In the performance of **"your work"** subject to such **"written contract"**, but only with respect to **"bodily injury"** or **"property damage"** included in the **"products-completed operations hazard"**, and only if the **"written contract"** requires you to provide the additional insured such coverage.

III. But if a **"written contract"** requires:

A. Additional insured coverage under the 11-85 edition, 10-93 edition, or 10-01 edition of CG 20 10, or under the 10-01 edition of CG 20 37; or

B. **Additional insured coverage with "arising out of" language;**

then Paragraph **I.** above is deleted in its entirety and replaced by the following:

WHO IS AN INSURED is amended to include as an insured any person or organization whom you are required by **"written contract"** to add as an additional insured on this Coverage Part, but only with respect to liability for **"bodily injury"**, **"property damage"** or **"personal and advertising injury"** arising out of **"your work"** that is subject to such **"written contract"**.

IV. But if the **"written contract"** requires additional insured coverage to the greatest extent permissible by law and Paragraphs **II.** and **III.** above do not apply, then Paragraph **I.** above is deleted in its entirety and replaced by the following:

WHO IS AN INSURED is amended to include as an insured any person or organization whom you are required by **"written contract"** to add as an additional insured on this Coverage Part, but only with respect to liability for **"bodily injury"**, **"property damage"** or **"personal and advertising injury"** arising out of **"your work"** that is subject to such **"written contract"**.

V. The insurance granted by this endorsement to the additional insured does not apply to **"bodily injury"**, **"property damage"**, or **"personal and advertising injury"** arising out of:

A. The rendering of, or the failure to render, any professional architectural, engineering, or surveying services, by the additional insured or those acting on their behalf (other than you, to the extent any professional liability exclusion attached to this policy does not apply to your operations), including:

1. The preparing, approving, or failing to prepare or approve maps, shop drawings, opinions, reports, surveys, field orders, change orders or drawings and specifications; and

2. Supervisory, inspection, architectural or engineering activities; or

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B. Any premises or work for which the additional insured is specifically listed as an additional insured on another endorsement attached to this Coverage Part.

VI. Under **COMMERCIAL GENERAL LIABILITY CONDITIONS**, the Condition entitled **Other Insurance** is amended to add the following, which supersedes any provision to the contrary in this Condition or elsewhere in this Coverage Part:

Primary and Noncontributory Insurance

With respect to other insurance available to the additional insured under which the additional insured is a named insured, this insurance is primary to and will not seek contribution from such other insurance, provided that a **"written contract"** requires the insurance provided by this policy to be:

A. Primary and non-contributing with other insurance available to the additional insured; or

B. Primary and to not seek contribution from any other insurance available to the additional insured.

But except as specified above, this insurance will be excess of all other insurance available to the additional insured.

VII. Additional Insured Limit Provisions

If coverage provided to the additional insured is required by a **"written contract"**, the most we will pay on behalf of the additional insured is the amount of insurance:

A. Required by the **"written contract"**; or

B. Available under the applicable Limits of Insurance of this Coverage Part;

whichever is less. This endorsement shall not increase the applicable Limits of Insurance.

C. However, when you agree in a **"written contract"** to make a person or organization an additional insured, and to carry particular limits of liability insurance, and

1. The minimum limit of insurance the **"written contract"** requires you to carry is lower than the Limit of Insurance otherwise provided by this Coverage Part; and

2. The **"written contract"** does not require a limit of liability for insurance that applies excess of this Coverage Part;

Then provisions in this Coverage Part's additional endorsements that cap the limits available to such additional insureds to no more than the amount specified by the written contract continue to apply.

In all other instances, however, such provisions that cap the limits available to additional insureds to no more than the amount specified by the **"written contract"** in all additional insured endorsements attached to this policy do not apply, and are hereby rendered null and void.

In no event, however, will the Limits of Insurance available under this Coverage Part to an additional insured be higher than the limits available to you.

VIII. Solely with respect to the insurance granted by this endorsement, the section entitled **DEFINITIONS** is amended to add the following definition:

"Written contract" means a written contract or written agreement that requires you to make a person or organization an additional insured on this Coverage Part, provided the contract or agreement:

A. Was executed prior to:

1. The **"bodily injury"** or **"property damage"**; or

2. The offense that caused the **"personal and advertising injury"**;

for which the additional insured seeks coverage; and

B. Is still in effect at the time of the **"bodily injury"** or **"property damage"**, **"occurrence"** or **"personal and advertising injury"** offense.

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CNA	EMCOR GROUP, INC. - Blanket Additional Insured - Owners, Lessees or Contractors - with Products-Completed Operations Coverage

All other terms and conditions of the Policy remain unchanged.

This endorsement, which forms a part of and is for attachment to the Policy issued by the designated Insurers, takes effect on the effective date of said Policy at the hour stated in said Policy, unless another effective date is shown below, and expires concurrently with said Policy.

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POLICY NUMBER: GL 8033391088
NAMED INSURED: EMCOR Group, Inc.
POLICY TERM: 10-01-2025 to 10-01-2026

COMMERCIAL GENERAL LIABILITY
CG 24 53 12 19

THIS ENDORSEMENT CHANGES THE POLICY. PLEASE READ IT CAREFULLY.

WAIVER OF TRANSFER OF RIGHTS OF RECOVERY AGAINST OTHERS TO US (WAIVER OF SUBROGATION) – AUTOMATIC

This endorsement modifies insurance provided under the following:

COMMERCIAL GENERAL LIABILITY COVERAGE PART
ELECTRONIC DATA LIABILITY COVERAGE PART
LIQUOR LIABILITY COVERAGE PART
POLLUTION LIABILITY COVERAGE PART DESIGNATED SITES
POLLUTION LIABILITY LIMITED COVERAGE PART DESIGNATED SITES
PRODUCTS/COMPLETED OPERATIONS LIABILITY COVERAGE PART
RAILROAD PROTECTIVE LIABILITY COVERAGE PART
UNDERGROUND STORAGE TANK POLICY DESIGNATED TANKS

The following is added to Paragraph **8. Transfer Of Rights Of Recovery Against Others To Us** of **Section IV – Conditions:**

We waive any right of recovery against any person or organization, because of any payment we make under this Coverage Part, to whom the insured has waived its right of recovery in a written contract or agreement. Such waiver by us applies only to the extent that the insured has waived its right of recovery against such person or organization prior to loss.

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WAIVER OF TRANSFER OF RIGHTS OF RECOVERY AGAINST OTHERS TO US (WAIVER OF SUBROGATION)

THIS ENDORSEMENT CHANGES THE POLICY. PLEASE READ IT CAREFULLY.

This endorsement modifies insurance provided under the following:

AUTO DEALERS COVERAGE FORM

BUSINESS AUTO COVERAGE FORM

MOTOR CARRIER COVERAGE FORM

With respect to coverage provided by this endorsement, the provisions of the Coverage Form apply unless modified by the endorsement.

This endorsement changes the policy effective on the inception date of the policy unless another date is indicated below.

Named Insured: Emcor Group, Inc.
Endorsement Effective Date: 10/01/2025

SCHEDULE
Name(s) Of Person(s) Or Organization(s):
ANY PERSON OR ORGANIZATION ON WHOSE BEHALF YOU ARE REQUIRED TO OBTAIN THIS WAIVER OF OUR RIGHT TO RECOVER FROM UNDER A CONTRACT OR AGREEMENT.
Information required to complete this Schedule, if not shown above, will be shown in the Declarations.

The **Transfer Of Rights Of Recovery Against Others To Us** condition does not apply to the person(s) or organization(s) shown in the Schedule, but only to the extent that subrogation is waived prior to the "**accident**" or the "**loss**" under a contract with that person or organization.

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POLICY NUMBER: BUA 8033391091

COMMERCIAL AUTO
CA 20 48 10 13

THIS ENDORSEMENT CHANGES THE POLICY. PLEASE READ IT CAREFULLY.

DESIGNATED INSURED FOR COVERED AUTOS LIABILITY COVERAGE

This endorsement modifies insurance provided under the following:

AUTO DEALERS COVERAGE FORM
BUSINESS AUTO COVERAGE FORM
MOTOR CARRIER COVERAGE FORM

With respect to coverage provided by this endorsement, the provisions of the Coverage Form apply unless modified by this endorsement.

This endorsement identifies person(s) or organization(s) who are "insureds" for Covered Autos Liability Coverage under the Who Is An Insured provision of the Coverage Form. This endorsement does not alter coverage provided in the Coverage Form.

This endorsement changes the policy effective on the inception date of the policy unless another date is indicated below.

Named Insured: EMCOR Group, Inc.

Endorsement Effective Date: 10/01/2025

SCHEDULE

Name Of Person(s) Or Organization(s):

ANY PERSON OR ORGANIZATION FOR WHOM YOU ARE OBLIGATED TO PROVIDE BUSINESS AUTO LIABILITY INSURANCE COVEAGE AS AN ADDITIONAL INSURED BY CONTRACT OR AGREEMENT.

Information required to complete this Schedule, if not shown above, will be shown in the Declarations.

Each person or organization shown in the Schedule is an "insured" for Covered Autos Liability Coverage, but only to the extent that person or organization qualifies as an "insured" under the Who Is An Insured provision contained in Paragraph **A.1.** of Section II – Covered Autos Liability Coverage in the Business Auto and Motor Carrier Coverage Forms and Paragraph **D.2.** of Section I – Covered Autos Coverages of the Auto Dealers Coverage Form.

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CNA

Workers Compensation And Employers Liability Insurance
Policy Endorsement

WAIVER OF OUR RIGHT TO RECOVER FROM OTHERS ENDORSEMENT

We have the right to recover our payments from anyone liable for an injury covered by this policy. We will not enforce our right against the person or organization named in the Schedule. This agreement applies only to the extent that you perform work under a written contract that requires you to obtain this agreement from us.

This agreement shall not operate directly or indirectly to benefit anyone not named in the Schedule.

Any person or organization for which the employer has agreed by written contract, executed prior to loss, may execute a waiver of subrogation. However, for purposes of work performed by the employer in Missouri, this waiver of subrogation does not apply to any construction group of classifications as designated by the waiver of right to recover from others (subrogation) rule in our manual.

Schedule

Any Person or Organization on whose behalf you are required to obtain this waiver of our right to recover from under a written contract or agreement.

The premium charge for the endorsement is reflected in the Schedule of Operations.

All other terms and conditions of the policy remain unchanged.

This endorsement, which forms a part of and is for attachment to the policy issued by the designated insurers, takes effect on the Policy Effective Date of said policy at the hour stated in said policy, unless another effective date (the Endorsement Effective Date) is shown below, and expires concurrently with said policy unless another expiration date is shown below.

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CNA

Workers Compensation And Employers Liability Insurance
Policy Endorsement

BLANKET WAIVER OF OUR RIGHT TO RECOVER FROM OTHERS

This endorsement changes the policy to which it is attached.

It is agreed that **Part One - Workers' Compensation Insurance G. Recovery From Others** and **Part Two - Employers' Liability Insurance H. Recovery From Others** are amended by adding the following:

We will not enforce our right to recover against persons or organizations. (This agreement applies only to the extent that you perform work under a written contract that requires you to obtain this agreement from us.)

PREMIUM CHARGE - Refer to the Schedule of Operations

The charge will be an amount to which you and we agree that is a percentage of the total standard premium for California exposure. The amount is 2%.

All other terms and conditions of the policy remain unchanged.

This endorsement, which forms a part of and is for attachment to the policy issued by the designated insurers, takes effect on the Policy Effective Date of said policy at the hour stated in said policy, unless another effective date (the Endorsement Effective Date) is shown below, and expires concurrently with said policy unless another expiration date is shown below.

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Primary and Noncontributory - Other Insurance Condition Endorsement

This endorsement modifies insurance provided under the following:

COMMERCIAL GENERAL LIABILITY COVERAGE PART
PRODUCTS/COMPLETED OPERATIONS LIABILITY COVERAGE PART

It is understood and agreed that the condition entitled **Other Insurance** is amended to add the following:

Primary And Noncontributory Insurance

Notwithstanding anything to the contrary, this insurance is primary to and will not seek contribution from any other insurance available to an additional insured under this policy provided that:

a. the additional insured is a named insured under such other insurance; and

b. the **Named Insured** has agreed in writing in a contract or agreement that this insurance would be primary and would not seek contribution from any other insurance available to the additional insured.

All other terms and conditions of the Policy remain unchanged.

This endorsement, which forms a part of and is for attachment to the Policy issued by the designated Insurers, takes effect on the effective date of said Policy at the hour stated in said Policy, unless another effective date is shown below, and expires concurrently with said Policy.

Policy No: GL 8033391088
Endorsement No:
Effective Date: 10/01/2025

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CNA71527XX
(Ed. 10/12)

ADDITIONAL INSURED – PRIMARY AND NON-CONTRIBUTORY

It is understood and agreed that this endorsement amends the **BUSINESS AUTO COVERAGE FORM** as follows:

SCHEDULE

Name of Additional Insured Persons Or Organizations
ANY PERSON OR ORGANIZATION FOR WHOM YOU ARE OBLIGATED TO PROVIDE BUSINESS AUTO LIABILITY INSURANCE COVERAGE AS AN ADDITIONAL INSURED BY WRITTEN CONTRACT OR WRITTEN AGREEMENT AND THAT WRITTEN CONTRACT OR WRITTEN AGREEMENT REQUIRES THAT THE INSURANCE AFFORDED TO THE ADDITIONAL INSURED APPLY ON A PRIMARY AND NON-CONTRIBUTORY BASIS.

1. In conformance with paragraph **A.1.c. of Who Is An Insured** of Section II – LIABILITY COVERAGE, the person or organization scheduled above is an insured under this policy.
2. The insurance afforded to the additional insured under this policy will apply on a primary and non-contributory basis if you have committed it to be so in a written contract or written agreement executed prior to the date of the "accident" for which the additional insured seeks coverage under this policy.

All other terms and conditions of the Policy remain unchanged.

Policy No: **BUA 8033391091**
Endorsement No:
Effective Date: 10/01/2025

Insured Name: EMCOR Group, Inc.

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one COUNTY one FUTURE

CERTIFICATE OF INSURANCE TRANSMITTAL FORM

FOR THE FOLLOWING DESCRIBED PROJECT:

County of Santa Barbara
Santa Maria Administration Building HVAC Upgrade
511 East Lakeside Parkway
Santa Maria, CA, 93455
Project No.23018

CONTRACTOR:

Mesa Energy Systems
Name

2 Cromwell
Address

Irvine Ca 92618
City, State & Zip Code

The successful bidder shall furnish satisfactory proof of the maintenance of adequate Worker's Compensation Insurance, and the maintenance of Comprehensive General and Automobile Liability Insurance in the amount of not less than $1,000,000 per occurrence and $2,000,000 in the aggregate. The County of Santa Barbara (COUNTY), its officers, employees, and agents shall be named as additional insured on all certificates. A copy of the endorsement evidencing that the County has been added to the policy must be attached to the certificate of insurance. Said policy or policies shall provide that the COUNTY shall be given thirty (30) days written notice prior to cancellation or expiration of the policy or reduction in coverage. Refer to section 5.18 of the General Conditions.

In addition to the above, the following information must appear on the certificates:

County of Santa Barbara
Santa Maria Administration Building HVAC Upgrade
511 East Lakeside Parkway
Santa Maria, CA, 93455
Project No. 23018

This form must be attached to all insurance forms sent to the County of Santa Barbara, General Services Department:

Kimberly Ekert
Authorized Insurance Company Representative's Signature

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Bond No. 108366659 / K42151658

PERFORMANCE BOND

KNOW ALL MEN BY THESE PRESENTS:

That the County of Santa Barbara of the State of California (hereinafter referred to as the County) and Mesa Energy Systems, Inc. (hereinafter referred to as Principal) have by written agreement dated October 14, 2025, entered into a contract identified as:

Project Title: County of Santa Barbara

Santa Maria Administration Building HVAC Upgrade
511 East Lakeside Parkway
Santa Maria, CA, 93455

Project No. 23018
(Hereinafter referred to as the Contract) and

That, pursuant to law and to said Contract, and before entering upon the performance of said Contract, the Principal is required under the terms and conditions of said Contract to furnish a bond for the faithful performance of said Contract.

NOW, THEREFORE, said Principal and _____

Travelers Casualty and Surety Company of America & Federal Insurance Company

as corporate surety (hereinafter referred to as Surety), are held firmly bound unto the County in the amount of $*_____, for the payment of which Principal and Surety bind themselves, their heirs, executors, administrators, successors and assigns both jointly and severally. Surety shall be and hereby warrants that it is listed in the Insurance Organizations Authorized by the Insurance Commissioner to Transact Business of Insurance in the State of California, published by the Department of Insurance, State of California or successor publications.

* Four Hundred Twenty Two Thousand Eight Hundred Eighty Eight and 00/100 Dollars ($422,888.00)

THE CONDITION OF THIS OBLIGATION IS SUCH that if the Principal, his heirs, executors, administrators, successors, or assigns, shall perform all of the covenants, conditions and agreements in said Contract and any alteration thereof made as herein provided, in his or their part, to be kept and performed at the time, and in the manner therein specified, and shall indemnify and save harmless County, its officers, agents, and employees, as therein stipulated, then this obligation shall become null and void; otherwise it shall be and remain in full force, virtue and effect.

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

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In the event suit is brought upon this Bond by County and judgment is recovered, Surety shall pay all costs incurred by the County in such suit, including a reasonable attorney's fee to be fixed by the court.

Death, illness, disability or disqualification of the Principal shall not relieve Surety of its obligations hereunder.

Mesa Energy Systems, Inc.
Principal

By: _____

DATED: _____

Travelers Casualty and Surety Company of America &
Federal Insurance Company
Surety

Signature of Attorney-in-fact, Amy Ortega

November 5, 2025

One Tower Square (TR), 202B Hall's Mill Road (FE)
Address

Hartford, CT 06183 (TR), Whitehouse Station, NJ 08889 (FE)
City, State & Zip Code

Surety's Agent for Service of Process (located within the State of California):

Charlene K. Nakamura
Name of Agent

Alliant Insurance Services, Inc.
333 S. Hope Street, Suite 3750
Address

Los Angeles, CA 90071
City, State & Zip Code

213-443-2467
Telephone Number

N/A
FAX Number

NOTE: Signature of those executing for Surety must be properly acknowledged.

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CALIFORNIA ALL-PURPOSE ACKNOWLEDGMENT

Civil Code § 1189

A notary public or other officer completing this certificate verifies only the identity of the individual who signed the document to which this certificate is attached, and not the truthfulness, accuracy of validity of that document.

State of California)
) ss
County of _____)

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

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

WITNESS my hand and official seal.

Signature:_____

(Seal)

_____, Notary Public
(Print Name)

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TRAVELERS

Travelers Casualty and Surety Company of America
Travelers Casualty and Surety Company
St. Paul Fire and Marine Insurance Company

POWER OF ATTORNEY

Travelers Casualty and Surety Company of America, Travelers Casualty and Surety Company, and St. Paul Fire and Marine Insurance Company are corporations duly organized under the laws of the State of Connecticut (herein collectively called the "Companies"), and the Companies do hereby make, constitute and appoint **Amy Ortega** of **UNIONDALE**, **New York**, their true and lawful Attorney(s)-in-Fact to sign, execute, seal and acknowledge any and all bonds, recognizances, conditional undertakings and other writings obligatory in the nature thereof on behalf of the Companies in their business of guaranteeing the fidelity of persons, guaranteeing the performance of contracts and executing or guaranteeing bonds and undertakings required or permitted in any actions or proceedings allowed by law.

IN WITNESS WHEREOF, the Companies have caused this instrument to be signed, and their corporate seals to be hereto affixed, this **16th** day of **February, 2024**.

SEAL SEAL SEAL

State of Connecticut

By: _____
Bryce Grissom, Senior Vice President

City of Hartford ss.

On this the **16th** day of **February, 2024**, before me personally appeared **Bryce Grissom**, who acknowledged himself to be the Senior Vice President of each of the Companies, and that he, as such, being authorized so to do, executed the foregoing instrument for the purposes therein contained by signing on behalf of said Companies by himself as a duly authorized officer.

IN WITNESS WHEREOF, I hereunto set my hand and official seal.

My Commission expires the **30th** day of **June, 2026**

ANNA P NOWIK NOTARY PUBLIC CONNECTICUT

_____
Anna P. Nowik, Notary Public

This Power of Attorney is granted under and by the authority of the following resolutions adopted by the Boards of Directors of each of the Companies, which resolutions are now in full force and effect, reading as follows:

RESOLVED, that the Chairman, the President, any Vice Chairman, any Executive Vice President, any Senior Vice President, any Vice President, any Second Vice President, the Treasurer, any Assistant Treasurer, the Corporate Secretary or any Assistant Secretary may appoint Attorneys-in-Fact and Agents to act for and on behalf of the Company and may give such appointee such authority as his or her certificate of authority may prescribe to sign with the Company's name and seal with the Company's seal bonds, recognizances, contracts of indemnity, and other writings obligatory in the nature of a bond, recognizance, or conditional undertaking, and any of said officers or the Board of Directors at any time may remove any such appointee and revoke the power given him or her; and it is

FURTHER RESOLVED, that the Chairman, the President, any Vice Chairman, any Executive Vice President, any Senior Vice President or any Vice President may delegate all or any part of the foregoing authority to one or more officers or employees of this Company, provided that each such delegation is in writing and a copy thereof is filed in the office of the Secretary, and it is

FURTHER RESOLVED, that any bond, recognizance, contract of indemnity, or writing obligatory in the nature of a bond, recognizance, or conditional undertaking shall be valid and binding upon the Company when (a) signed by the President, any Vice Chairman, any Executive Vice President, any Senior Vice President or any Vice President, any Second Vice President, the Treasurer, any Assistant Treasurer, the Corporate Secretary or any Assistant Secretary and duly attested and sealed with the Company's seal by a Secretary or Assistant Secretary; or (b) duly executed (under seal, if required) by one or more Attorneys-in-Fact and Agents pursuant to the power prescribed in his or her certificate or their certificates of authority or by one or more Company officers pursuant to a written delegation of authority; and it is

FURTHER RESOLVED, that the signature of each of the following officers: President, any Executive Vice President, any Senior Vice President, any Vice President, any Assistant Vice President, any Secretary, any Assistant Secretary, and the seal of the Company may be affixed by facsimile to any Power of Attorney or to any certificate relating thereto appointing Resident Vice Presidents, Resident Assistant Secretaries or Attorneys-in-Fact for purposes only of executing and attesting bonds and undertakings and other writings obligatory in the nature thereof, and any such Power of Attorney or certificate bearing such facsimile signature or facsimile seal shall be valid and binding upon the Company and any such power so executed and certified by such facsimile signature and facsimile seal shall be valid and binding on the Company in the future with respect to any bond or understanding to which it is attached.

I, **Kevin E. Hughes**, the undersigned, Assistant Secretary of each of the Companies, do hereby certify that the above and foregoing is a true and correct copy of the Power of Attorney executed by said Companies, which remains in full force and effect.

Dated this **5th** day of **November**, **2025**

SEAL SEAL SEAL

_____
Kevin E. Hughes, Assistant Secretary

To verify the authenticity of this Power of Attorney, please call us at 1-800-421-3880.
Please refer to the above-named Attorney(s)-in-Fact and the details of the bond to which this Power of Attorney is attached.

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ACKNOWLEDGEMENT OF SURETY COMPANY OF AMERICA

STATE OF NEW YORK

COUNTY OF NASSAU

On this NOV. 5, 2025 before me personally came Amy Ortega to me known, who, being by me duly sworn, did depose and say; that he/she resides in Passaic County, State of New Jersey, that he/she is the Attorney-In-Fact of the Travelers Casualty and Surety Company of America the corporation described in which executed the above instrument; that he/she knows the seal of said corporation; that the seal affixed to said instrument is such corporate seal; that is was so affixed by the Board of Directors of said corporation; and that he/she signed his/her name thereto by like order; and the affiant did further depose and say that the Superintendent of Insurance of the State of New York, has, pursuant to Section 1111 of the Insurance Law of the State of New York, issued to Travelers Casualty and Surety Company of America (Surety) his/her certificate of qualification evidencing the qualification of said Company and its sufficiency under any law of the State of New York as surety and guarantor, and the propriety of accepting and approving it as such; and that such Certificate has not been revoked.

Notary Public

JANICE A LASPINA
Notary Public, State of New York
No. 01LA6399639
Qualified in Nassau County
Commission Expires 10/28/2027

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TRAVELERS CASUALTY AND SURETY COMPANY OF AMERICA

HARTFORD, CONNECTICUT 06183

FINANCIAL STATEMENT AS OF DECEMBER 31, 2024

CAPITAL STOCK $ 6,460,000

ASSETS		LIABILITIES & SURPLUS	
BONDS	$ 5,367,684,447	LOSSES	$ 1,648,831,742
STOCKS	99,502,344	LOSS ADJUSTMENT EXPENSES	169,492,904
CASH AND INVESTED CASH	69,689,826	REINSURANCE PAYABLE ON PAID LOSSES & LOSS ADJ. EXPENSES	15,148,347
OTHER INVESTED ASSETS	9,969,793	COMMISSIONS	62,360,717
SECURITIES LENDING REINVESTED COLLATERAL ASSETS	30,993,966	OTHER EXPENSES	69,184,511
INVESTMENT INCOME DUE AND ACCRUED	45,630,862	TAXES, LICENSES AND FEES	16,311,579
PREMIUM BALANCES	346,017,426	CURRENT FEDERAL AND FOREIGN INCOME TAXES	7,102,552
REINSURANCE RECOVERABLE	62,034,928	UNEARNED PREMIUMS	1,647,964,685
NET DEFERRED TAX ASSET	78,278,940	ADVANCE PREMIUM	3,970,618
UNDISTRIBUTED PAYMENTS	15,607,795	POLICYHOLDER DIVIDENDS	26,972,587
GUARANTY FUNDS RECEIVABLE OR ON DEPOSIT	2,148,727	CEDED REINSURANCE NET PREMIUMS PAYABLE	57,879,540
OTHER ASSETS	1,100,106	AMOUNTS WITHHELD / RETAINED BY COMPANY FOR OTHERS	17,071,685
		REMITTANCES AND ITEMS NOT ALLOCATED	10,456,481
		PROVISION FOR REINSURANCE	8,746,687
		PAYABLE TO PARENTS, SUBSIDIARIES AND AFFILIATES	79,937,444
		PAYABLE FOR SECURITIES LENDING	30,993,966
		ESCHEAT LIABILITY	595,014
		OTHER ACCRUED EXPENSES AND LIABILITIES	4,726
		TOTAL LIABILITIES	$ 3,873,025,985
		CAPITAL STOCK	$ 6,460,000
		PAID IN SURPLUS	433,603,760
		OTHER SURPLUS	1,815,349,416
		TOTAL SURPLUS TO POLICYHOLDERS	$ 2,255,633,176
TOTAL ASSETS	$ 6,128,659,161	TOTAL LIABILITIES & SURPLUS	$ 6,128,659,161

STATE OF CONNECTICUT)

COUNTY OF HARTFORD) SS.

CITY OF HARTFORD)

SEAL

MICHAEL J. DOODY, BEING DULY SWORN, SAYS THAT HE IS VICE PRESIDENT – FINANCE, OF TRAVELERS CASUALTY AND SURETY COMPANY OF AMERICA, AND THAT TO THE BEST OF HIS KNOWLEDGE AND BELIEF, THE FOREGOING IS A TRUE AND CORRECT STATEMENT OF THE FINANCIAL CONDITION OF SAID COMPANY AS OF THE 31ST DAY OF DECEMBER, 2024.

Michael J Doody

VICE PRESIDENT – FINANCE

NOTARY PUBLIC

SUBSCRIBED AND SWORN TO BEFORE ME THIS
15TH DAY OF MARCH, 2025

SUSAN M. WEISSLEDER
Notary Public
My Commission Expires November 30 2027

SUSAN M. WEISSLEDER NOTARY PUBLIC CONNECTICUT

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CHUBB

Power of Attorney

Federal Insurance Company | Vigilant Insurance Company | Pacific Indemnity Company
Westchester Fire Insurance Company | ACE American Insurance Company

Know All by These Presents, that **FEDERAL INSURANCE COMPANY,** an Indiana corporation, **VIGILANT INSURANCE COMPANY,** a New York corporation, **PACIFIC INDEMNITY COMPANY,** a Delaware corporation, **WESTCHESTER FIRE INSURANCE COMPANY** and **ACE AMERICAN INSURANCE COMPANY** corporations of the Commonwealth of Pennsylvania, do each hereby constitute and appoint Katherine Acosta, Thomas Bean, George O. Brewster, Desiree Cardlin, Colette R. Chisholm, Dana Granice, Susan Lupski, Gerard S. Macholz, Camille Maitland, Amy Ortega, Robert T. Pearson, Karolynne Ramirez, Nelly Renchiwich, Vincent A. Walsh and Michelle Wannamaker of Uniondale, New York ----------

each as their true and lawful Attorney-in-Fact to execute under such designation in their names and to affix their corporate seals to and deliver for and on their behalf as surety thereon or otherwise, bonds and undertakings and other writings obligatory in the nature thereof (other than bail bonds) given or executed in the course of business, and any instruments amending or altering the same, and consents to the modification or alteration of any instrument referred to in said bonds or obligations.

In Witness Whereof, said **FEDERAL INSURANCE COMPANY, VIGILANT INSURANCE COMPANY, PACIFIC INDEMNITY COMPANY, WESTCHESTER FIRE INSURANCE COMPANY** and **ACE AMERICAN INSURANCE COMPANY** have each executed and attested these presents and affixed their corporate seals on this 17th day of **September, 2025.**

Rupert HD Swindells, Assistant Secretary

Stephen M Haney, Vice President

STATE OF NEW JERSEY
County of Hunterdon ss.

On this 17th day of **September, 2025** before me, a Notary Public of New Jersey, personally came Rupert HD Swindells and Stephen M. Haney, to me known to be Assistant Secretary and Vice President, respectively, of FEDERAL INSURANCE COMPANY, VIGILANT INSURANCE COMPANY, PACIFIC INDEMNITY COMPANY, WESTCHESTER FIRE INSURANCE COMPANY and ACE AMERICAN INSURANCE COMPANY, the companies which executed the foregoing Power of Attorney, and the said Rupert HD Swindells and Stephen M. Haney, being by me duly sworn, severally and each for himself did depose and say that they are Assistant Secretary and Vice President, respectively, of FEDERAL INSURANCE COMPANY, VIGILANT INSURANCE COMPANY, PACIFIC INDEMNITY COMPANY, WESTCHESTER FIRE INSURANCE COMPANY and ACE AMERICAN INSURANCE COMPANY and know the corporate seals thereof, that the seals affixed to the foregoing Power of Attorney are such corporate seals and were thereto affixed by authority of said Companies; and that their signatures as such officers were duly affixed and subscribed by like authority.

Notarial Seal

Stacy J Loftin
NOTARY PUBLIC OF NEW JERSEY
No. 50175208
COMMISSION EXPIRES OCT 15, 2026

Notary Public

CERTIFICATION

Resolutions adopted by the Boards of Directors of FEDERAL INSURANCE COMPANY, VIGILANT INSURANCE COMPANY, and PACIFIC INDEMNITY COMPANY on August 30, 2016; WESTCHESTER FIRE INSURANCE COMPANY on December 11, 2006; and ACE AMERICAN INSURANCE COMPANY on March 20, 2009:

"RESOLVED, that the following authorizations relate to the execution, for and on behalf of the Company, of bonds, undertakings, recognizances, contracts and other written commitments of the Company entered into in the ordinary course of business (each a "Written Commitment"):

(1) Each of the Chairman, the President and the Vice Presidents of the Company is hereby authorized to execute any Written Commitment for and on behalf of the Company, under the seal of the Company or otherwise.

(2) Each duly appointed attorney-in-fact of the Company is hereby authorized to execute any Written Commitment for and on behalf of the Company, under the seal of the Company or otherwise, to the extent that such action is authorized by the grant of powers provided for in such person's written appointment as such attorney-in-fact.

(3) Each of the Chairman, the President and the Vice Presidents of the Company is hereby authorized, for and on behalf of the Company, to appoint in writing any person the attorney-in-fact of the Company with full power and authority to execute, for and on behalf of the Company, under the seal of the Company or otherwise, such Written Commitments of the Company as may be specified in such written appointment, which specification may be by general type or class of Written Commitments or by specification of one or more particular Written Commitments.

(4) Each of the Chairman, the President and the Vice Presidents of the Company is hereby authorized, for and on behalf of the Company, to delegate in writing to any other officer of the Company the authority to execute, for and on behalf of the Company, under the Company's seal or otherwise, such Written Commitments of the Company as are specified in such written delegation, which specification may be by general type or class of Written Commitments or by specification of one or more particular Written Commitments.

(5) The signature of any officer or other person executing any Written Commitment or appointment or delegation pursuant to this Resolution, and the seal of the Company, may be affixed by facsimile on such Written Commitment or written appointment or delegation.

FURTHER RESOLVED, that the foregoing Resolution shall not be deemed to be an exclusive statement of the powers and authority of officers, employees and other persons to act for and on behalf of the Company, and such Resolution shall not limit or otherwise affect the exercise of any such power or authority otherwise validly granted or vested."

I, Rupert HD Swindells, Assistant Secretary of FEDERAL INSURANCE COMPANY, VIGILANT INSURANCE COMPANY, PACIFIC INDEMNITY COMPANY, WESTCHESTER FIRE INSURANCE COMPANY and ACE AMERICAN INSURANCE COMPANY (the "Companies") do hereby certify that

(i) the foregoing Resolutions adopted by the Board of Directors of the Companies are true, correct and in full force and effect,
(ii) the foregoing Power of Attorney is true, correct and in full force and effect.

Given under my hand and seals of said Companies at Whitehouse Station, NJ, this 5th day of November, 2025.

Rupert HD Swindells, Assistant Secretary

IN THE EVENT YOU WISH TO VERIFY THE AUTHENTICITY OF THIS BOND OR NOTIFY US OF ANY OTHER MATTER, PLEASE CONTACT US AT:
Telephone (908) 903- 3493 Fax (908) 903- 3656 e-mail: surety@chubb.com

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ACKNOWLEDGEMENT OF SURETY COMPANY

STATE OF NEW YORK

COUNTY OF NASSAU

On this NOV. 5, 2025 before me personally came Amy Ortega to me known, who, being by me duly sworn, did depose and say; that he/she resides in Passaic County, State of New Jersey, that he/she is the Attorney-In-Fact of the Federal Insurance Company the corporation described in which executed the above instrument; that he/she knows the seal of said corporation; that the seal affixed to said instrument is such corporate seal; that is was so affixed by the Board of Directors of said corporation; and that he/she signed his/her name thereto by like order; and the affiant did further depose and say that the Superintendent of Insurance of the State of New York, has, pursuant to Section 1111 of the Insurance Law of the State of New York, issued to Federal Insurance Company (Surety) his/her certificate of qualification evidencing the qualification of said Company and its sufficiency under any law of the State of New York as surety and guarantor, and the propriety of accepting and approving it as such; and that such Certificate has not been revoked.

Notary Public

JANICE A LASPINA
Notary Public, State of New York
No. 01LA6399639
Qualified in Nassau County
Commission Expires 10/28/2027

Docusign Envelope ID: 17CE9CA1-680B-446D-A24A-6403D2AC0C25

FEDERAL INSURANCE COMPANY

STATEMENT OF ASSETS, LIABILITIES AND SURPLUS TO POLICYHOLDERS

Statutory Basis

December 31, 2024

(in thousands)

ASSETS		*LIABILITIES AND SURPLUS TO POLICYHOLDERS*	
Cash, Cash Equivalents, and ST Investments	$ (355,746)	Outstanding Losses and Loss Expenses	$ 10,612,093
United States Government, State and Municipal Bonds	3,847,216	Reinsurance Payable on Losses and Expenses	1,730,804
Other Bonds	9,063,626	Unearned Premiums	3,117,655
Stocks	361,584	Ceded Reinsurance Premiums Payable	417,703
Other Invested Assets	1,562,503	Other Liabilities	583,379
TOTAL INVESTMENTS	14,479,183	TOTAL LIABILITIES	16,461,634
Investments in Affiliates:		Capital Stock	20,980
Great Northern Ins. Co.	444,946	Paid-In Surplus	2,711,474
Vigilant Ins. Co.	392,348	Unassigned Funds	2,245,956
Chubb National Ins. Co.	204,099		
Chubb Indemnity Ins. Co.	185,760	SURPLUS TO POLICYHOLDERS	4,978,410
Chubb Ins. Co. of New Jersey	41,523		
Chubb Lloyds Ins. Co. of Texas	6,140		
Other Affiliates	71,980		
Premiums Receivable	2,574,791		
Other Assets	3,039,474		
TOTAL ADMITTED ASSETS	$ 21,440,244	TOTAL LIABILITIES AND SURPLUS	$ 21,440,244

Investments are valued in accordance with requirements of the National Association of Insurance Commissioners. At December 31, 2024, investments with a carrying value of $569,829,993 were deposited with government authorities as required by law

STATE OF PENNSYLVANIA

COUNTY OF PHILADELPHIA

John Taylor, being duly sworn, says that he is Senior Vice President of Federal Insurance Company and that to the best of his knowledge and belief the foregoing is a true and correct statement of the said Company's financial condition as of the 31 st day of December, 2024.

Sworn before me this March 20 2025

Senior Vice President

Notary Public

August 8, 2027
My commission expires

Commonwealth of Pennsylvania - Notary Seal
Diane Wright, Notary Public
Philadelphia County
My commission expires August 8, 2027
Commission number 1235745
Member, Pennsylvania Association of Notaries

FEDERAL INSURANCE COMPANY · INDIANA ·

Docusign Envelope ID: 17CE9CA1-680B-446D-A24A-6403D2AC0C25

Bond No. 108366659 / K42151658

PAYMENT BOND

KNOW ALL MEN BY THESE PRESENTS:

That the County of Santa Barbara of the State of California (hereinafter referred to as the County) and Mesa Energy Systems, Inc. (hereinafter referred to as Principal) have by written agreement dated October 14, 2025, entered into a contract identified as:

Project Title: County of Santa Barbara

Santa Maria Administration Building HVAC Upgrade
511 East Lakeside Parkway
Santa Maria, CA, 93455

Project No. 23018

(Hereinafter referred to as the Contract) and

That, pursuant to law and to said Contract, and before entering upon the performance of said Contract, the principal is required to file with the County a good and sufficient bond to secure the payment of labor and materials claims.

NOW, THEREFORE, said Principal and

Travelers Casualty and Surety Company of America & Federal Insurance Company

as corporate surety (hereinafter referred to as Surety), are held firmly bound unto the County in the amount of $*, for the payment of which Principal and Surety bind themselves, their heirs, executors, administrators, successors and assigns both jointly and severally. Surety shall be and hereby warrants that it is listed in the Insurance Organizations Authorized by the Insurance Commissioner to Transact Business of Insurance in the State of California, published by the Department of Insurance, State of California or successor publications.

* Four Hundred Twenty Two Thousand Eight Hundred Eighty Eight and 00/100 Dollars ($422,888.00)

THE CONDITION OF THIS OBLIGATION IS SUCH that if said principal, his or its subcontractors, heirs, executors, administrators, successors, or assigns, shall fail to pay any of the persons named or referred to in Section 9100 of the California Civil Code, or amounts due under Unemployment Insurance Code with respect to work or labor performed by any such claimant, or for any amounts required to be deducted, withheld and paid over to the Employment Development Department from the wages of employees of the Contractor and his subcontractors pursuant to Section 13020 of the Unemployment Insurance Code with respect to such work and labor as required by the California Civil Code, or this bond, then said Surety will pay for the same, in an amount not to exceed the amount hereinafter set forth.

This bond shall insure to the benefit of any and all persons, entities, companies and corporations named or referred to in Section 9100 of the California Civil Code, so as to give a right of action to them or their assign in any suit brought upon this bond.

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

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In the event suit is brought upon this Bond by County and judgment is recovered, Surety shall pay all costs incurred by the County in such suit, including a reasonable attorney's fee to be fixed by the court.

Death, illness, disability or disqualification of the Principal shall not relieve Surety of its obligations hereunder.

Mesa Energy Systems, Inc.
Principal

By: _____

DATED: _____

Travelers Casualty and Surety Company of America &
Federal Insurance Company
Surety

Signature of Attorney-in-fact, Amy Ortega

November 5, 2025

One Tower Square (TR), 202B Hall's Mill Road (FE)
Address

Hartford, CT 06183 (TR), Whitehouse Station, NJ 08889 (FE)
City, State & Zip Code

Surety's Agent for Service of Process (located within the State of California):

Charlene K. Nakamura
Name of Agent

Alliant Insurance Services, Inc.
333 S. Hope Street, Suite 3750
Address

Los Angeles, CA 90071
City, State & Zip Code

213-443-2467
Telephone Number

N/A
FAX Number

NOTE: Signature of those executing for Surety must be properly acknowledged.

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CALIFORNIA ALL-PURPOSE ACKNOWLEDGMENT Civil Code § 1189

A notary public or other officer completing this certificate verifies only the identity of the individual who signed the document to which this certificate is attached, and not the truthfulness, accuracy of validity of that document.

State of California)
) ss
County of _____)

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

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

WITNESS my hand and official seal.

Signature:_____

(Seal)

_____, Notary Public
(Print Name)

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TRAVELERS

Travelers Casualty and Surety Company of America
Travelers Casualty and Surety Company
St. Paul Fire and Marine Insurance Company

POWER OF ATTORNEY

Travelers Casualty and Surety Company of America, Travelers Casualty and Surety Company, and St. Paul Fire and Marine Insurance Company are corporations duly organized under the laws of the State of Connecticut (herein collectively called the "Companies"), and the Companies do hereby make, constitute and appoint **Amy Ortega** of **UNIONDALE** , **New York** , their true and lawful Attorney(s)-in-Fact to sign, execute, seal and acknowledge any and all bonds, recognizances, conditional undertakings and other writings obligatory in the nature thereof on behalf of the Companies in their business of guaranteeing the fidelity of persons, guaranteeing the performance of contracts and executing or guaranteeing bonds and undertakings required or permitted in any actions or proceedings allowed by law.

IN WITNESS WHEREOF, the Companies have caused this instrument to be signed, and their corporate seals to be hereto affixed, this **16th** day of **February, 2024**.

SEAL SEAL SEAL

State of Connecticut

By: _____
Bryce Grissom, Senior Vice President

City of Hartford ss.

On this the **16th** day of **February, 2024**, before me personally appeared **Bryce Grissom**, who acknowledged himself to be the Senior Vice President of each of the Companies, and that he, as such, being authorized so to do, executed the foregoing instrument for the purposes therein contained by signing on behalf of said Companies by himself as a duly authorized officer.

IN WITNESS WHEREOF, I hereunto set my hand and official seal.

My Commission expires the **30th** day of **June, 2026**

ANNA P NOWIK NOTARY PUBLIC CONNECTICUT

_____
Anna P. Nowik, Notary Public

This Power of Attorney is granted under and by the authority of the following resolutions adopted by the Boards of Directors of each of the Companies, which resolutions are now in full force and effect, reading as follows:

RESOLVED, that the Chairman, the President, any Vice Chairman, any Executive Vice President, any Senior Vice President, any Vice President, any Second Vice President, the Treasurer, any Assistant Treasurer, the Corporate Secretary or any Assistant Secretary may appoint Attorneys-in-Fact and Agents to act for and on behalf of the Company and may give such appointee such authority as his or her certificate of authority may prescribe to sign with the Company's name and seal with the Company's seal bonds, recognizances, contracts of indemnity, and other writings obligatory in the nature of a bond, recognizance, or conditional undertaking, and any of said officers or the Board of Directors at any time may remove any such appointee and revoke the power given him or her; and it is

FURTHER RESOLVED, that the Chairman, the President, any Vice Chairman, any Executive Vice President, any Senior Vice President or any Vice President may delegate all or any part of the foregoing authority to one or more officers or employees of this Company, provided that each such delegation is in writing and a copy thereof is filed in the office of the Secretary; and it is

FURTHER RESOLVED, that any bond, recognizance, contract of indemnity, or writing obligatory in the nature of a bond, recognizance, or conditional undertaking shall be valid and binding upon the Company when (a) signed by the President, any Vice Chairman, any Executive Vice President, any Senior Vice President or any Vice President, any Second Vice President, the Treasurer, any Assistant Treasurer, the Corporate Secretary or any Assistant Secretary and duly attested and sealed with the Company's seal by a Secretary or Assistant Secretary; or (b) duly executed (under seal, if required) by one or more Attorneys-in-Fact and Agents pursuant to the power prescribed in his or her certificate or their certificates of authority or by one or more Company officers pursuant to a written delegation of authority; and it is

FURTHER RESOLVED, that the signature of each of the following officers: President, any Executive Vice President, any Senior Vice President, any Vice President, any Assistant Vice President, any Secretary, any Assistant Secretary, and the seal of the Company may be affixed by facsimile to any Power of Attorney or to any certificate relating thereto appointing Resident Vice Presidents, Resident Assistant Secretaries or Attorneys-in-Fact for purposes only of executing and attesting bonds and undertakings and other writings obligatory in the nature thereof, and any such Power of Attorney or certificate bearing such facsimile signature or facsimile seal shall be valid and binding upon the Company and any such power so executed and certified by such facsimile signature and facsimile seal shall be valid and binding on the Company in the future with respect to any bond or understanding to which it is attached.

I, **Kevin E. Hughes**, the undersigned, Assistant Secretary of each of the Companies, do hereby certify that the above and foregoing is a true and correct copy of the Power of Attorney executed by said Companies, which remains in full force and effect.

Dated this **5th** day of **November** , **2025**

SEAL SEAL SEAL

_____
Kevin E. Hughes, Assistant Secretary

To verify the authenticity of this Power of Attorney, please call us at 1-800-421-3880.
Please refer to the above-named Attorney(s)-in-Fact and the details of the bond to which this Power of Attorney is attached.

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ACKNOWLEDGEMENT OF SURETY COMPANY OF AMERICA

STATE OF NEW YORK

COUNTY OF NASSAU

On this Nov. 5, 2025 before me personally came Amy Ortega to me known, who, being by me duly sworn, did depose and say; that he/she resides in Passaic County, State of New Jersey, that he/she is the Attorney-In-Fact of the Travelers Casualty and Surety Company of America the corporation described in which executed the above instrument; that he/she knows the seal of said corporation; that the seal affixed to said instrument is such corporate seal; that is was so affixed by the Board of Directors of said corporation; and that he/she signed his/her name thereto by like order; and the affiant did further depose and say that the Superintendent of Insurance of the State of New York, has, pursuant to Section 1111 of the Insurance Law of the State of New York, issued to Travelers Casualty and Surety Company of America (Surety) his/her certificate of qualification evidencing the qualification of said Company and its sufficiency under any law of the State of New York as surety and guarantor, and the propriety of accepting and approving it as such; and that such Certificate has not been revoked.

Notary Public

JANICE A LASPINA
Notary Public, State of New York
No. 01LA6399639
Qualified in Nassau County
Commission Expires 10/28/2027

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TRAVELERS CASUALTY AND SURETY COMPANY OF AMERICA

HARTFORD, CONNECTICUT 06183

FINANCIAL STATEMENT AS OF DECEMBER 31, 2024

CAPITAL STOCK $ 6,480,000

ASSETS		LIABILITIES & SURPLUS	
BONDS	$ 5,367,684,447	LOSSES	$ 1,648,831,742
STOCKS	99,502,344	LOSS ADJUSTMENT EXPENSES	159,492,904
CASH AND INVESTED CASH	69,689,826	REINSURANCE PAYABLE ON PAID LOSSES & LOSS ADJ. EXPENSES	15,148,347
OTHER INVESTED ASSETS	9,969,793	COMMISSIONS	62,360,717
SECURITIES LENDING REINVESTED COLLATERAL ASSETS	30,993,966	OTHER EXPENSES	69,184,511
INVESTMENT INCOME DUE AND ACCRUED	45,630,862	TAXES, LICENSES AND FEES	16,311,579
PREMIUM BALANCES	346,017,428	CURRENT FEDERAL AND FOREIGN INCOME TAXES	7,102,502
REINSURANCE RECOVERABLE	62,034,928	UNEARNED PREMIUMS	1,647,964,685
NET DEFERRED TAX ASSET	78,278,940	ADVANCE PREMIUM	3,970,618
UNDISTRIBUTED PAYMENTS	15,607,795	POLICYHOLDER DIVIDENDS	26,972,587
GUARANTY FUNDS RECEIVABLE OR ON DEPOSIT	2,148,727	CEDED REINSURANCE NET PREMIUMS PAYABLE	57,879,540
OTHER ASSETS	1,100,106	AMOUNTS WITHHELD / RETAINED BY COMPANY FOR OTHERS	17,071,685
		REMITTANCES AND ITEMS NOT ALLOCATED	10,456,481
		PROVISION FOR REINSURANCE	8,746,887
		PAYABLE TO PARENTS, SUBSIDIARIES AND AFFILIATES	79,937,444
		PAYABLE FOR SECURITIES LENDING	30,993,966
		ESCHEAT LIABILITY	595,014
		OTHER ACCRUED EXPENSES AND LIABILITIES	4,726
		TOTAL LIABILITIES	$ 3,873,025,985
		CAPITAL STOCK	$ 6,480,000
		PAID IN SURPLUS	433,603,760
		OTHER SURPLUS	1,815,349,416
		TOTAL SURPLUS TO POLICYHOLDERS	$ 2,255,633,176
TOTAL ASSETS	$ 6,128,659,161	TOTAL LIABILITIES & SURPLUS	$ 6,128,659,161

STATE OF CONNECTICUT)

COUNTY OF HARTFORD) SS.

CITY OF HARTFORD)

SEAL

MICHAEL J. DOODY, BEING DULY SWORN, SAYS THAT HE IS VICE PRESIDENT – FINANCE, OF TRAVELERS CASUALTY AND SURETY COMPANY OF AMERICA, AND THAT TO THE BEST OF HIS KNOWLEDGE AND BELIEF, THE FOREGOING IS A TRUE AND CORRECT STATEMENT OF THE FINANCIAL CONDITION OF SAID COMPANY AS OF THE 31ST DAY OF DECEMBER, 2024.

Michael J Doody

VICE PRESIDENT – FINANCE

NOTARY PUBLIC

SUBSCRIBED AND SWORN TO BEFORE ME THIS
15TH DAY OF MARCH, 2025

SUSAN M. WEISSLEDER
Notary Public
My Commission Expires November 30, 2027

SUSAN M. WEISSLEDER NOTARY PUBLIC CONNECTICUT

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CHUBB

Power of Attorney

Federal Insurance Company | Vigilant Insurance Company | Pacific Indemnity Company
Westchester Fire Insurance Company | ACE American Insurance Company

Know All by These Presents, that FEDERAL INSURANCE COMPANY, an Indiana corporation, **VIGILANT INSURANCE COMPANY,** a New York corporation, **PACIFIC INDEMNITY COMPANY,** a Delaware corporation, **WESTCHESTER FIRE INSURANCE COMPANY** and **ACE AMERICAN INSURANCE COMPANY** corporations of the Commonwealth of Pennsylvania, do each hereby constitute and appoint Katherine Acosta, Thomas Bean, George O. Brewster, Desiree Cardlin, Colette R. Chisholm, Dana Granice, Susan Lupski, Gerard S. Macholz, Camille Maitland, Amy Ortega, Robert T. Pearson, Karolynne Ramirez, Nelly Renchiwich, Vincent A. Walsh and Michelle Wannamaker of Uniondale, New York

each as their true and lawful Attorney-in-Fact to execute under such designation in their names and to affix their corporate seals to and deliver for and on their behalf as surety thereon or otherwise, bonds and undertakings and other writings obligatory in the nature thereof (other than bail bonds) given or executed in the course of business, and any instruments amending or altering the same, and consents to the modification or alteration of any instrument referred to in said bonds or obligations.

In Witness Whereof, said **FEDERAL INSURANCE COMPANY, VIGILANT INSURANCE COMPANY, PACIFIC INDEMNITY COMPANY, WESTCHESTER FIRE INSURANCE COMPANY** and **ACE AMERICAN INSURANCE COMPANY** have each executed and attested these presents and affixed their corporate seals on this **17th** day of **September, 2025.**

Rupert HD Swindells, Assistant Secretary

Stephen M. Haney, Vice President

STATE OF NEW JERSEY
County of Hunterdon ss.

On this **17th** day of **September, 2025** before me, a Notary Public of New Jersey, personally came Rupert HD Swindells and Stephen M. Haney, to me known to be Assistant Secretary and Vice President, respectively, of FEDERAL INSURANCE COMPANY, VIGILANT INSURANCE COMPANY, PACIFIC INDEMNITY COMPANY, WESTCHESTER FIRE INSURANCE COMPANY and ACE AMERICAN INSURANCE COMPANY, the companies which executed the foregoing Power of Attorney, and the said Rupert HD Swindells and Stephen M. Haney, being by me duly sworn, severally and each for himself did depose and say that they are Assistant Secretary and Vice President, respectively, of FEDERAL INSURANCE COMPANY, VIGILANT INSURANCE COMPANY, PACIFIC INDEMNITY COMPANY, WESTCHESTER FIRE INSURANCE COMPANY and ACE AMERICAN INSURANCE COMPANY and know the corporate seals thereof, that the seals affixed to the foregoing Power of Attorney are such corporate seals and were thereto affixed by authority of said Companies; and that their signatures as such officers were duly affixed and subscribed by like authority.

Notarial Seal

Stacy J Loftin
NOTARY PUBLIC OF NEW JERSEY
No. 50175208
COMMISSION EXPIRES OCT 15, 2026

Notary Public

CERTIFICATION

Resolutions adopted by the Boards of Directors of FEDERAL INSURANCE COMPANY, VIGILANT INSURANCE COMPANY, and PACIFIC INDEMNITY COMPANY on August 30, 2016; WESTCHESTER FIRE INSURANCE COMPANY on December 11, 2006; and ACE AMERICAN INSURANCE COMPANY on March 20, 2009:

"RESOLVED, that the following authorizations relate to the execution, for and on behalf of the Company, of bonds, undertakings, recognizances, contracts and other written commitments of the Company entered into in the ordinary course of business (each a "Written Commitment"):

(1) Each of the Chairman, the President and the Vice Presidents of the Company is hereby authorized to execute any Written Commitment for and on behalf of the Company, under the seal of the Company or otherwise.

(2) Each duly appointed attorney-in-fact of the Company is hereby authorized to execute any Written Commitment for and on behalf of the Company, under the seal of the Company or otherwise, to the extent that such action is authorized by the grant of powers provided for in such person's written appointment as such attorney-in-fact.

(3) Each of the Chairman, the President and the Vice Presidents of the Company is hereby authorized, for and on behalf of the Company, to appoint in writing any person the attorney-in-fact of the Company with full power and authority to execute, for and on behalf of the Company, under the seal of the Company or otherwise, such Written Commitments of the Company as may be specified in such written appointment, which specification may be by general type or class of Written Commitments or by specification of one or more particular Written Commitments.

(4) Each of the Chairman, the President and the Vice Presidents of the Company is hereby authorized, for and on behalf of the Company, to delegate in writing to any other officer of the Company the authority to execute, for and on behalf of the Company, under the Company's seal or otherwise, such Written Commitments of the Company as are specified in such written delegation, which specification may be by general type or class of Written Commitments or by specification of one or more particular Written Commitments.

(5) The signature of any officer or other person executing any Written Commitment or appointment or delegation pursuant to this Resolution, and the seal of the Company, may be affixed by facsimile on such Written Commitment or written appointment or delegation.

FURTHER RESOLVED, that the foregoing Resolution shall not be deemed to be an exclusive statement of the powers and authority of officers, employees and other persons to act for and on behalf of the Company, and such Resolution shall not limit or otherwise affect the exercise of any such power or authority otherwise validly granted or vested."

I, Rupert HD Swindells, Assistant Secretary of FEDERAL INSURANCE COMPANY, VIGILANT INSURANCE COMPANY, PACIFIC INDEMNITY COMPANY, WESTCHESTER FIRE INSURANCE COMPANY and ACE AMERICAN INSURANCE COMPANY (the "Companies") do hereby certify that

(i) the foregoing Resolutions adopted by the Board of Directors of the Companies are true, correct and in full force and effect,
(ii) the foregoing Power of Attorney is true, correct and in full force and effect.

Given under my hand and seals of said Companies at Whitehouse Station, NJ, this 5th day of November, 2025.

Rupert HD Swindells, Assistant Secretary

IN THE EVENT YOU WISH TO VERIFY THE AUTHENTICITY OF THIS BOND OR NOTIFY US OF ANY OTHER MATTER, PLEASE CONTACT US AT:
Telephone (908) 903-3493 Fax (908) 903-3656 e-mail: surety@chubb.com

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ACKNOWLEDGEMENT OF SURETY COMPANY

STATE OF NEW YORK

COUNTY OF NASSAU

On this NOV. 5, 2025 before me personally came Amy Ortega to me known, who, being by me duly sworn, did depose and say; that he/she resides in Passaic County, State of New Jersey, that he/she is the Attorney-In-Fact of the Federal Insurance Company the corporation described in which executed the above instrument; that he/she knows the seal of said corporation; that the seal affixed to said instrument is such corporate seal; that is was so affixed by the Board of Directors of said corporation; and that he/she signed his/her name thereto by like order; and the affiant did further depose and say that the Superintendent of Insurance of the State of New York, has, pursuant to Section 1111 of the Insurance Law of the State of New York, issued to Federal Insurance Company (Surety) his/her certificate of qualification evidencing the qualification of said Company and its sufficiency under any law of the State of New York as surety and guarantor, and the propriety of accepting and approving it as such; and that such Certificate has not been revoked.

Notary Public

JANICE A LASPINA
Notary Public, State of New York
No. 01LA6399639
Qualified in Nassau County
Commission Expires 10/28/2027

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FEDERAL INSURANCE COMPANY

STATEMENT OF ASSETS, LIABILITIES AND SURPLUS TO POLICYHOLDERS

Statutory Basis

December 31, 2024

(in thousands)

ASSETS		*LIABILITIES AND SURPLUS TO POLICYHOLDERS*	
Cash, Cash Equivalents, and ST Investments	$ (355,746)	Outstanding Losses and Loss Expenses	$10,612,093
United States Government, State and Municipal Bonds	3,847,216	Reinsurance Payable on Losses and Expenses	1,730,804
Other Bonds	9,063,626	Unearned Premiums	3,117,855
Stocks	361,584	Ceded Reinsurance Premiums Payable	417,703
Other Invested Assets	1,562,503	Other Liabilities	563,379
TOTAL INVESTMENTS	14,479,183	TOTAL LIABILITIES	16,461,834
Investments in Affiliates,			
Great Northern Ins. Co.	444,946	Capital Stock	20,980
Vigilant Ins. Co.	392,348	Paid-In Surplus	2,711,474
Chubb National Ins. Co.	204,099	Unassigned Funds	2,245,956
Chubb Indemnity Ins. Co.	185,760	SURPLUS TO POLICYHOLDERS	4,978,410
Chubb Ins. Co. of New Jersey	41,523		
Chubb Lloyds Ins. Co. of Texas	6,140		
Other Affiliates	71,980		
Premiums Receivable	2,574,791		
Other Assets	3,039,474		
TOTAL ADMITTED ASSETS	$ 21,440,244	TOTAL LIABILITIES AND SURPLUS	$21,440,244

Investments are valued in accordance with requirements of the National Association of Insurance Commissioners. At December 31, 2024, investments with a carrying value of $569,829,993 were deposited with government authorities as required by law.

STATE OF PENNSYLVANIA

COUNTY OF PHILADELPHIA

John Taylor, being duly sworn, says that he is Senior Vice President of Federal Insurance Company and that to the best of his knowledge and belief the foregoing is a true and correct statement of the said Company's financial condition as of the 31 st day of December, 2024.

Sworn before me this March 20 2025

Senior Vice President

Notary Public

August 8, 2027
My commission expires

Commonwealth . . Pennsylvania - Notary Seal
Diane W ight, Notary Public
Philadelphia County
My commission expires August 8, 2027
Commission number 1235745
Member, Pennsylvania Association of Notaries

FEDERAL INSURANCE COMPANY · INDIANA ·

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EXHIBIT C

INDEMNIFICATION AND INSURANCE REQUIREMENTS

Docusign Envelope ID: 17CE9CA1-680B-446D-A24A-6403D2AC0C25

EXHIBIT C

Indemnification and Insurance Requirements (For Construction Contracts)

INDEMNIFICATION

CONTRACTOR agrees to indemnify, defend (with counsel reasonably approved by COUNTY) and hold harmless COUNTY and its officers, officials, employees, agents and volunteers from and against any and all claims, actions, losses, damages, judgments and/or liabilities arising out of this Agreement from any cause whatsoever, including the acts, errors or omissions of any person or entity and for any costs or expenses (including but not limited to attorneys' fees) incurred by COUNTY on account of any claim except where such indemnification is caused by the active negligence, sole negligence, or willful misconduct of the COUNTY.

NOTIFICATION OF ACCIDENTS AND SURVIVAL OF INDEMNIFICATION PROVISIONS

CONTRACTOR shall notify COUNTY immediately in the event of any accident or injury arising out of or in connection with this Agreement. The indemnification provisions in this Agreement shall survive any expiration or termination of this Agreement.

INSURANCE

CONTRACTOR shall procure and maintain for the duration of this Agreement insurance against claims for injuries to persons or damages to property which may arise from or in connection with the performance of the work hereunder and the results of that work by the CONTRACTOR, its agents, representatives, employees or subcontractors.

A. Minimum Scope and Limit of Insurance
Coverage shall be at least as broad as:

1. **Commercial General Liability (CGL):** Insurance Services Office (ISO) Form CG 00 01 covering CGL on an "occurrence" basis, including products-completed operations, personal & advertising injury, with limits no less than $2,000,000 per occurrence and $4,000,000 in the aggregate.
2. **Automobile Liability**: Insurance Services Office Form CA 0001 covering Code 1 (any auto), with limits no less than $2,000,000 per accident for bodily injury and property damage.
3. **Workers' Compensation**: Insurance as required by the State of California, with Statutory Limits, and Employer's Liability Insurance with limit of no less than $1,000,000 per accident for bodily injury or disease.
4. **Contractor's Pollution Legal Liability and/or Asbestos Legal Liability:** (if project involves environmental hazards) with limits no less than $1,000,000 per occurrence or claim, and $2,000,000 policy aggregate.

If the CONTRACTOR maintains higher limits than the minimums shown above, the COUNTY requires and shall be entitled to coverage for the higher limits maintained by the CONTRACTOR. Any available insurance proceeds in excess of the specified minimum limits of insurance and coverage shall be available to the COUNTY.

B. Other Insurance Provisions
The insurance policies are to contain, or be endorsed to contain, the following provisions:

1. **Additional Insured** – COUNTY, its officers, officials, employees, agents and volunteers are to be covered as additional insureds on the CGL policy with respect to liability arising out of work or operations performed by or on behalf of the CONTRACTOR including materials, parts, or equipment furnished in connection with such work or operations. General liability coverage can be provided in the form of an endorsement to the CONTRACTOR'S insurance at least as broad as ISO Form CG 20 10 11 85 or **both** CG 20 10, CG 20 26, CG 20 33, or CG 20 38; **and** CG 20 37 forms if later revisions used).
2. **Primary Coverage** – For any claims related to this Agreement, the CONTRACTOR'S insurance coverage shall be primary insurance coverage at least as broad as ISO CG 20 01 04 13 as respects the COUNTY, its officers, officials, employees, agents and volunteers. Any insurance or self-insurance maintained by the COUNTY, its officers, officials, employees, agents or volunteers shall be excess of the CONTRACTOR'S insurance and shall not contribute with it.
3. **Notice of Cancellation** – Each insurance policy required above shall provide that coverage shall not be canceled, except with notice to the COUNTY.
4. **Waiver of Subrogation Rights – CONTRACTOR hereby agrees to waive rights of subrogation which any insurer of CONTRACTOR may acquire** from CONTRACTOR by virtue of the payment of any loss. CONTRACTOR agrees to obtain any endorsement that may be necessary to effect this waiver of subrogation. **The Workers' Compensation policy shall be endorsed with a waiver of subrogation** in favor of the COUNTY for all work performed by the CONTRACTOR, its employees, agents and subcontractors. This provision applies regardless of whether or not the COUNTY has received a waiver of subrogation endorsement from the insurer.
5. **Deductibles and Self-Insured Retention** – Any deductibles or self-insured retentions must be declared to and approved by the COUNTY. At the option of the COUNTY, either: the CONTRACTOR shall cause the insurer shall reduce or eliminate such deductibles or self-insured retentions as respects the COUNTY, its officers, officials, employees, agents and volunteers; or the CONTRACTOR shall provide a financial guarantee satisfactory to the COUNTY guaranteeing payment of losses and related investigations, claim administration, and defense expenses.
6. **Acceptability of Insurers** – Unless otherwise approved by Risk Management, insurance shall be written by insurers authorized to do business in the State of California and with a minimum A.M. Best's Insurance Guide rating of "A- VII".
7. **Verification of Coverage** – CONTRACTOR shall furnish the COUNTY with proof of insurance, original certificates and amendatory endorsements as required by this Agreement. The proof of insurance, certificates and endorsements are to be received and approved by the COUNTY before work commences. However, failure to obtain the required documents prior to the work beginning shall not waive the CONTRACTOR'S obligation to provide them. The CONTRACTOR shall furnish evidence of renewal of coverage throughout the term of the Agreement. The COUNTY reserves the right to require complete, certified copies of all required

insurance policies, including endorsements required by these specifications, at any time.

8. **Failure to Procure Coverage** – In the event that any policy of insurance required under this Agreement does not comply with the requirements, is not procured, or is canceled and not replaced, COUNTY has the right but not the obligation or duty to terminate the Agreement. Maintenance of required insurance coverage is a material element of the Agreement and failure to maintain or renew such coverage or to provide evidence of renewal may be treated by COUNTY as a material breach of contract.
9. **Subcontractors** – CONTRACTOR shall require and verify that all subcontractors maintain insurance meeting all the requirements stated herein, and CONTRACTOR shall ensure that COUNTY is an additional insured on insurance required from subcontractors. For CGL coverage subcontractors shall provide coverage with a format least as broad as CG 20 38 04 13.
10. **Claims Made Policies** – If any of the required policies provide coverage on a claims-made basis:
    i. The Retroactive Date must be shown and must be before the date of the contract or the beginning of contract work.
    ii. Insurance must be maintained and evidence of insurance must be provided for at least five (5) years after completion of contract work.
    iii. If coverage is canceled or non-renewed, and not replaced with another claims-made policy form with a Retroactive Date prior to the contract effective date, the CONTRACTOR must purchase "extended reporting" coverage for a minimum of five (5) years after completion of contract work.
11. **Special Risks or Circumstances** – COUNTY reserves the right to modify these requirements, including limits, based on the nature of the risk, prior experience, insurer, coverage, or other circumstances.

Any change requiring additional types of insurance coverage or higher coverage limits must be made by amendment to this Agreement. CONTRACTOR agrees to execute any such amendment within thirty (30) days of receipt.

Any failure, actual or alleged, on the part of COUNTY to monitor or enforce compliance with any of the insurance and indemnification requirements will not be deemed as a waiver of any rights on the part of COUNTY.