



**COUNTY OF IMPERIAL
DEPARTMENT OF PUBLIC WORKS**

155 South 11th Street
El Centro, CA 92243
Phone: (442) 265-1818
Fax: (442) 265-1858

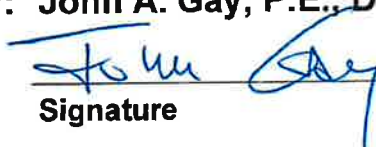
PROJECT MANUAL

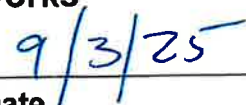
**COUNTY of IMPERIAL PUBLIC HEALTH LAB
OSA AIR CONDITIONER REPLACEMENT PROJECT
LOCATED AT
935 BROADWAY STREET, EL CENTRO, CA 92243**

COUNTY PROJECT NO. SR6983HTH



Approved by: John A. Gay, P.E., Director of Public Works


Signature


Date

**Contact person: Carlos G. Garcia - Building Project Technician
Marcelo Cortes – Senior Const. Program Tech.**

Pre-Bid Non-Mandatory Conference Date: October 21, 2025, at 9:30AM

Bid Opening Date: Friday November 21, 2025, at 2:30PM

SPECIAL NOTICE

Pursuant to the requirements of Senate Bill 854 and California Labor Code section 1725.5, all contractors and subcontractors that wish to engage in public work through a public works contract must first register with the Department of Industrial Relation and pay all applicable fees.

Beginning March 1, 2015, no contractor or subcontractor may be listed on a bid proposal 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)).

Beginning April 1, 2015, 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.

For more information concerning Senate Bill 854 compliance, please visit: <http://www.dir.ca.gov/Public-Works/SB854.html>,

PUBLIC WORKS REFORMS (SB 854) FACT SHEET

Public works reforms (SB 854) were signed into law on June 20, 2014. The reforms made several significant changes to the administration and enforcement of prevailing wage requirements by the Department of Industrial Relations (DIR). Among other things, SB 854 established a public works contractor registration program to replace prior Compliance Monitoring Unit (CMU) and Labor Compliance Program (LCP) requirements for bond-funded and other specified public works projects. The fees collected through the program established by SB 854 are used to fund DIR's public works activities.

Essentials of public works contractor registration program:

- Contractors are subject to a registration and annual renewal fee set at \$400. This fee is non-refundable and applies to all contractors and subcontractors who intend to bid or perform work on public works projects (as defined under the Labor Code).
- Contractors apply and pay the fee online and must meet minimum qualifications to be registered as eligible to bid and work on public works projects:
 - Must have workers' compensation coverage for any employees and only use subcontractors who are registered public works contractors.
 - Must have Contractors State License Board license if applicable to trade.
 - Must not have any delinquent unpaid wage or penalty assessments owed to any employee or enforcement agency.
 - Must not be under federal or state debarment.
 - Must not be in prior violation of this registration requirement once it becomes effective. However, for the first violation in a 12-month period, a contractor may still qualify for registration by paying an additional penalty.
- The registration fee is not related to any project. It is more like a license that enables the registrant to bid on and perform public works.
- DIR provides a searchable database of registered contractors and subcontractors on its website, so that awarding bodies and contractors can comply with the requirement to only use registered contractors and subcontractors.
- Various protections are built in so that
 - A contractor won't be in violation for working on a private job that is later determined to be public work;
 - The inadvertent listing of an unregistered subcontractor on a bid doesn't necessarily invalidate that bid;
 - A contract with an unregistered contractor or subcontractor is subject to cancellation but is not void as to past work;
 - An unregistered contractor or subcontractor can be replaced with one who is registered;
 - A contractor whose registration lapses will have a 90-day grace period within which to pay a late fee and renew.
- Contractors and subcontractors register online. The preferred method of payment is by credit card.
- The requirement to list only registered contractors and subcontractors on bids became effective on March 1, 2015. The requirement to only use registered contractors and subcontractors on public works projects applies to all projects awarded on or after April 1, 2015.

Essentials of Public Works Enforcement Fund:

All contractor registration fees go into the State Public Works Enforcement Fund and are used to fund the following items:

- Administration of contractor registration requirement;
- All DIR costs for administering and enforcing public works laws;
- Labor Commissioner's enforcement of other Labor Code violations on monitored public works projects.

DIR no longer charges awarding bodies for prevailing wage compliance monitoring and enforcement on legacy CMU projects.

Related changes in DIR's administration and enforcement of public works requirements:

- Requirements to use CMU or specified alternative (labor compliance program or project labor agreement) for state bond-funded and other specified projects were eliminated and replaced by requirements that apply to *all* public works projects (as defined under the Labor Code).
- Awarding bodies are required to submit PWC-100 (contract award notice) for all public works projects.
- Contractors and subcontractors on *all* public works projects are required to submit certified payroll records (CPRs) to the Labor Commissioner unless excused from this requirement. -
 - CPRs are furnished to the Labor Commissioner online
 - This requirement phases in as follows:
 - Applied to public works projects that had been under CMU monitoring;
 - Applies to any new projects awarded on or after April 1, 2015;
 - May apply to other projects as determined by Labor Commissioner;
 - Applies to *all* public works projects, (except those listed under Exemptions just below), on and after January 1, 2016.
 - Exemptions: As of April 1, 2015, and even after January 1, 2016, the following projects are exempt from the requirement to have contractors and subcontractors furnish certified payroll records (CPRs) to the Labor Commissioner:

Small Project Exemption

Contractors who work exclusively on small public works projects are not required to register as a public works contractor or file electronic certified payroll reports for those projects. Contractors are still required to maintain certified payroll records on a continuous basis, and provide them to the Labor Commissioner's Office upon request. Additionally, awarding agencies are not required to submit the notice of contract award through DIR's PWC-100 system on projects that fall within the small project exemption. The small project exemption applies for all public works projects that do not exceed:

- \$25,000 for new construction, alteration, installation, demolition or repair
- \$15,000 for maintenance

Any projects monitored and enforced by the following legacy LCPs:

- California Department of Transportation (Caltrans)
- City of Los Angeles
- Los Angeles Unified School District
- County of Sacramento

Projects covered by qualifying project labor agreements, at the Labor Commissioner's discretion.

- Requirements for awarding bodies to adopt and enforce a DIR-approved LCP are now limited to: (1) ongoing public works projects awarded prior to January 1, 2012, that were under a pre-existing LCP requirement (see the four legacy LCPs listed above) and (2) projects funded in whole or in part by Proposition 84.

June 2017

**COUNTY OF IMPERIAL PUBLIC HEALTH LAB
OSA AIR CONDITIONER REPLACEMENT PROJECT
LOCATED AT
935 BROADWAY STREET, EL CENTRO, CA 92243**

COUNTY PROJECT NO. SR6983HTH

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NOTICE TO CONTRACTOR CALLING FOR BIDS

NOTICE IS HEREBY GIVEN that the COUNTY OF IMPERIAL, California, acting by and through its Board of Supervisors (hereinafter referred to as "COUNTY"), will receive up to, but not later than **2:00pm on Friday November 21, 2025**, sealed bids for the award of a contract for the proposed project:

**COUNTY OF IMPERIAL PUBLIC HEALTH LAB
OSA AIR CONDITIONER REPLACEMENT PROJECT
LOCATED AT
935 BROADWAY STREET, EL CENTRO, CA 92243
COUNTY PROJECT NO. SR6983HTH**

The Contractor shall possess a **B – General Building Contractor License** at the time this contract is awarded.

Estimated Cost. The estimated construction cost is **\$286,174.00**.

Bids shall be received in the office of the Clerk of the Board of Supervisors, 940 Main Street, Suite 209, El Centro, California 92243, and shall be opened publicly and read aloud at the above stated time and place.

Each bid package must conform and be responsive to the contract documents, bid sets are available starting on **Wednesday September 24, 2025** at the following <https://www.dir.ca.gov/Public-Works/publicworks.html>. "Projects out to bid" at no charge and at Public Works, 155 South Eleventh Street, El Centro, CA, 92243, Phone (442) 265-1818, Monday through Thursday 8:00 AM - 5:00 PM (PDT) for a hard copy set for a fee. Those desiring to pick up bid sets shall call to reserve a copy of bid documents to ensure the availability.

A one hundred dollar (\$100) non-refundable fee for each hardcopy bid package set of the contract documents is required.

Only those firms who have purchased the bid documents will be mailed any addendums that may be issued for this project prior to the bid opening date.

Each bid shall be accompanied by the bid security referred to in the contract documents and the list of proposed subcontractors in the form of a certified or cashier check or a bid bond for ten percent (10%) of the maximum bid amount being proposed.

In contracts involving expenditure in excess of ten thousand dollars (\$10,000), the successful bidder shall file a payment bond in a penal sum at least equal to the full contract value as awarded. The bond shall be approved by COUNTY and shall be in the form set forth in the contract documents. The successful bidder shall also file a performance bond in a penal sum at least equal to the full contract value as awarded.

A performance and payment bond must be filed for contracts involving expenditure in excess of twenty-five thousand dollars (\$25,000) and may be required for contracts involving smaller expenditures at the option of COUNTY.

A Contractor's and Subcontractor's non-Mandatory Pre-Bid Conference will be held on the following date: **October 21, 2025, at 9:30 AM** at:

**COUNTY OF IMPERIAL PUBLIC HEALTH LAB
OSA AIR CONDITIONER REPLACEMENT PROJECT
LOCATED AT
935 BROADWAY STREET, EL CENTRO, CA 92243
COUNTY PROJECT NO. SR6983HTH**

Contact Person:

Carlos G Garcia, Building Project Technician
Telephone (442)265-1816 / carlosggarcia@co.imperial.ca.us

or

Marcelo Cortes, Senior Const. Prog. Project Technician
Telephone: (442) 265-1861 / marcelocortes@co.imperial.ca.us

Attendance at the Pre-Bid Conference and Facility Walkthrough is **NON-MANDATORY BUT IS STRONGLY RECOMMENDED.**

Before submitting a bid, ALL BIDDERS are required to examine the project site and fully inform themselves as to all existing site conditions and limitations. The bid proposal shall include the cost of all items necessary for the construction of the Project. Bidder shall not receive any additional compensation for costs resulting from conditions that Bidder could have discovered with due diligence prior to submitting a bid.

Any potential bidder whom has been deemed ineligible to perform work on public works projects pursuant to Labor Code Sections 1777.1 or 1777.7 shall be prohibited from bidding on, being awarded a contract for, or performing work as a subcontractor on this project, or any other public works project within the state of California.

COUNTY reserves the right to reject any or all bids or to waive any irregularities or informalities in any bids or in the bidding.

All information required by the bid forms must be completely and accurately provided. Numbers shall be stated in both words and figures where so indicated in the bid forms; conflicts between a number stated in words and in figures are governed by the words. Partially completed Bid Proposals, including bid forms with items left blank, or Bid Proposals submitted on other than the bid forms included herein are non-responsive and will be rejected. Bid Proposals not conforming to these instructions for bidders and the Notice to Contractors Calling for Bids may be deemed nonresponsive and rejected.

Pursuant to Section 20103.8 of the Public Contract Code: A local agency may require a bid for a public works contract to include prices for items that may be added to, or deducted from, the scope of work in the contract for which the bid is being submitted. Whenever additive or deductive items are included in a bid, the bid solicitation shall specify which one of the following methods will be used to determine the lowest bid. In the absence of a specification, only the method provided by subdivision (a) will be used:

- (a) The lowest bid shall be the lowest bid price on the base contract without consideration of the prices on the additive or deductive items.

A responsible bidder who submitted the lowest bid as determined by this section shall be

awarded the contract, if it is awarded. This section does not preclude the local agency from adding to or deducting from the contract any of the additive or deductive items after the lowest responsible bidder has been determined.

ENGINEER'S OPINION OF PROBABLE QUANTITY BASE BID

AL = Allowance
LF = Linear Foot

CF = Cubic Feet
LS = Lump Sump

CY = Cubic Yard
SF = Square Feet

EA = Each
TON = (2,000 lbs.)

LB = Pounds

ITEM No.	ITEM DESCRIPTION	UNIT	EST. QTY.
	SUPERSTRUCTURE		
1.	ROOF SHEATHING	LF	300
2.	STRUCTURAL BLOCKING	LS	1
3.	PLYWOOD DECK FOR NEW UNIT	SF	110
	B30 ROOFING		
4.	ROOF PATCH	SF	300
5.	FLASHING AND ROOF SPECIALTIES	LS	1
	INTERIOR CONSTRUCTION		
6.	DRYWALL REPAIR AT T-STAT INSTALL	LS	1
7.	WALL FINISHES – MISC PAINTING	LS	1
8.	CEILING FINISHES - CEILING	SF	200
	PLUMBING		
	TRADE DEMOLITION		
9.	DISCONNECT AND REMOVE EXISTING COLD WATER MAKE-UP PIPING. CAP	LF	5
10.	REMOVE CONDENSATE DRAIN	LF	20
	NEW WORK		
11.	¾" COPPER	LF	4
12.	POINT OF CONNECTION	EA	1
13.	ROOF HYDRANT	EA	1
14.	CONDENSATE DRAIN	LF	20
	MISC PLUMBING		
15.	SEISMIC, HAULING, DOCUMENTATION	LS	1
16.	SITE SUPERVISION, MOB/DEMOB, GENERAL CONDITIONS, GENERAL REQUIREMENTS, DOCUMENTATION	LS	1
	HVAC		
	HVAC DEMOLITION		
17.	DISCONNECT & REMOVE AC UNIT, EVAP COOLER AND ROOF PLATFORMS	EA	1
18.	REMOVE ROOF DUCTWORK	LF	20
19.	REMOVE CAV UNIT	LS	1
20.	REMOVE T-STAT	LS	1
21.	REMOVE INTERIOR HVAC SPECIALTIES, OTHER EQUIPMENT	LS	1

	EQUIPMENT		
22.	AC-8 (15-TON)	LS	1
	DRY SIDE DISTRIBUTION		
23.	INTERIOR GA SHEETMETAL DUCTWORK	LF	6
24.	INTERIOR POC	EA	2
25.	INSULATION	LS	1
26.	INSULATED ROOF DUCTWORK	LF	20
27.	ROOFTOP POC	LS	1
28.	VALVES, ACCESSORIES & SPECIALTIES	LS	1
	CONTROL		
29.	T-SAT	EA	1
	MISCELLANEOUS HVAC REQUIREMENTS		
30.	TEST AND BALANCE TAB	LS	1
31.	CRANE	LS	1
32.	SEISMIC, HAULING, CLEANING	LS	1
33.	SUBCONTRACTOR DOCUMENTATION, COMMISSION ASSISTANCE, SUPERVISION, GENERAL CONDITIONS, INSURANCE, BONDS, PROFIT	LS	1
	FIRE PROTECTION		
34.	MISCELLANEOUS	LS	1
	ELECTRICAL		
	ELECTRICAL DEMOLITION		
35.	DISCONNECT AHU UNIT	LS	1
	EQUIPMENT POWER		
36.	CONDUITS AND WIRE	LF	100
37.	DISCONNECT SWITCH IN NEMA 3R ENCLOSURE FOR AC-8	EA	1
38.	HVAC CONTROLLER	EA	1
	MISCELLANEOUS ELECTRICAL		
39.	RECONNECT LIGHTING	LS	1
40.	ELECTRICAL OH&P	LS	1
	DEMOLITION		
	ARCHITECTURAL / STRUCTURAL DEMOLITION		
41.	REMOVE ROOFING AND SHEATHING	SF	300
42.	REMOVE CEILING	SF	200
43.	MISCELLANEOUS DEMOLOTION	LS	1
	TIME AND MATERIAL ALLOCATION		
44.	TIME AND MATERIAL ALLOCATION	LS	1

Nothing in this section shall preclude the prequalification of subcontractors.

COUNTY hereby affirms and notifies all bidders that it will affirmatively ensure that in any contract entered into pursuant to this advertisement, disadvantaged business enterprises will be afforded full opportunity to submit bids in response to this invitation and will not be discriminated on the grounds of race, sex, color, or national origin in consideration for an award.

Pursuant to section 1773 of the Labor Code, the general prevailing rate of wages in the County in which the work is to be done has been determined by the Director of the California Department of Industrial Relations and are on file and available from the Clerk of the Board of Supervisors located at the County Administration Center, 940 Main Street, El Centro, CA 92243.

The Director of Industrial Relations has determined the general prevailing rate of per diem wages in the locality in which this work is to be performed for each craft or type of worker needed to execute the contract which will be awarded to the successful bidder.

Use the following internet access URL:
[Director's General Prevailing Wage Determinations \(ca.gov\)](#)

It shall be mandatory upon the Contractor to whom the contract is awarded, and upon any subcontractor under it, to pay not less than the said specified rates to all workers employed by them in the execution of the contract. No bidder may withdraw their bid for a period of ninety (90) days after the date set for the opening of bids.

Bidders are advised that they may elect to substitute securities for any retention of funds by the County to ensure performance under the Contract. At the request and expense of Bidder, securities equivalent to the amount retained shall be deposited with the County, or with a state or federally chartered bank in this state as the escrow agent, who shall then return the securities to Bidder once the Project has been completed.

Alternatively, the Bidder may request, and the County shall make payment of retentions earned directly to the escrow agent at the expense of the Bidder. The Bidder, at its sole cost and expense, may direct the investment of the payments into securities, and the Bidder shall receive the interest earned on the investments. Once the Project has been completed, the Bidder shall receive from the escrow agent all securities, interest and payments received by the escrow agent from the County.

Securities eligible for investment include those listed in Cal Gov Code § 16430, bank or savings and loan certificates of deposit, interest-bearing demand deposit accounts, standby letters of credit, or any other security mutually agreed to by the County and the Bidder. The Bidder shall be the beneficial owner of any securities substituted for retained funds and shall receive any interest thereon.

Substitution of securities shall be conducted through an Escrow Agreement substantially similar to that found in Cal Pub Contract Code § 22300(f).

PLEASE NOTE: Substitution of securities is prohibited where funding for the Project, in whole or in part, will be provided by the Farmers Home Administration of the United States Department of Agriculture pursuant to the Consolidated Farm and Rural Development Act (7 U.S.C. Sec 1921 et seq.) or where otherwise disallowed by federal law.

Cynthia Medina
Clerk of the Board of Supervisors

Date

Approved for Construction

John A Gay, P. E.
Director of Public Works

Date

VICINITY MAP



IMPERIAL COUNTY
PUBLIC WORKS
DEPARTMENT
EL CENTRO, CA

**County of Imperial Public Health Lab
OSA Air Conditioner Replacement Project
935 Broadway, El Centro CA 92243**

County Project No. SR6983HTH

LOCATION MAP



IMPERIAL COUNTY
PUBLIC WORKS
DEPARTMENT
EL CENTRO, CA

**County of Imperial Public Health Lab
OSA Air Conditioner Replacement Project
935 Broadway, El Centro CA 92243**

County Project No. SR6983HTH

INFORMATION FOR BIDDERS

1. Preparation of Bid Form. COUNTY invites bids on the form attached to be submitted at such time and place as is stated in the form *Notice to Contractors Calling for Bids*. All blanks in the bid form must be appropriately completed, and all prices must be stated in both words and figures. All bids must be submitted in sealed envelopes bearing on the outside the name of the bidder, the bidder's address, and the name of the project for which the bid is submitted. It is the sole responsibility of the bidder to see that the bid is received by COUNTY prior to the date and time specified for opening bids. Any bid received after the scheduled closing time for receipt of bids will be returned to the bidder unopened.
2. Bid Security. Each bid shall be accompanied by a certified or cashier's check payable to COUNTY or a satisfactory bid bond in favor of COUNTY executed by the bidder as principal and a satisfactory surety company as surety, in an amount not less than ten percent (10%) of the maximum amount of the bid. The check or bid bond shall be given as guarantee that the bidder shall execute the contract if it be awarded to it in conformity with the contract documents and shall provide the surety bond or bonds as specified therein within ten (10) days after notification of the award of the contract to the bidder.
3. Signature. The bid must be signed in the name of the bidder and must bear the signature in longhand of the person or persons duly authorized to sign the bid.
4. Modifications. Changes in or additions to the bid form, recapitulations of the work bid upon, alternative proposals, or any other modification of the bid form which is not specifically called for in the contract documents may result in COUNTY's rejection of the bid as not being responsive to the invitation to bid. No oral or telephonic modification may be considered.

Any proposed modifications of a bidder's bid must be in writing and received by COUNTY prior to the date and time specified for opening bids.
5. Erasures. The bid submitted must not contain any erasures, interlineations, or other corrections unless each such correction is suitably authenticated by affixing in the margin immediately opposite the correction and the surname, or surnames of the person or persons signing the bid.
6. Examination of Site and Contract Documents. Each bidder shall visit the site of the proposed work and fully acquaint itself with the conditions relating to the construction and labor so that it may fully understand the facilities, difficulties and restrictions attending the execution of the work under the contract. Bidders shall thoroughly examine and be familiar with the drawings and specifications. The failure or omission of any bidder to receive or examine any Contract Documents (which include this IFB, the General Conditions, and the Sample Agreement, the General Notes, and the Construction Drawings), form, instrument, addendum or other document, or to visit the site and acquaint itself with conditions there existing, shall in no way relieve any bidder from obligations with respect to its bid or to the contract. The submission of a bid shall be taken as *prima facie* evidence of compliance with

this section.

7. Withdrawal of Bids. Any bidder may withdraw its bid either personally, by written request, or by telegraphic request confirmed in the manner specified above at any time prior to the scheduled closing time for receipt of bids.
8. Relief from Mistake in Bid. The attention of bidders is called to Public Contracts Code sections 5100 to 5104, particularly the requirements of section 5103 which requires that grounds for relief from a mistaken bid require written notice to the public entity within five (5) working days after the opening of the bids of mistake and such notice shall detail how the mistake occurred. Please note that a bidder shall not be relieved of its bid unless the elements of Public Contract Code section 5103 are met and the written consent of COUNTY is obtained and/or by order of a court of competent jurisdiction.
9. Agreements and Bonds. The agreement form which the successful bidder, as Contractor, will be required to execute, and the forms and amounts of the surety bonds which it will be required to furnish at the time of execution of the agreements, are included in the contract documents and should be carefully examined by the bidder. The required number of executed copies of the *Agreement*, the *Performance Bond*, and the *Payment Bond* for County Projects is as specified in the *Special Conditions*.
10. Interpretation of Plans and Documents. If any person contemplating submitting a bid for the proposed contract is in doubt as to the true meaning of any part of the drawings, specifications or other contract documents, or finds discrepancies in or omissions from the drawings and specifications, he or she shall submit to COUNTY a written request for an interpretation or correction thereof no less than ten (10) days prior to the bid opening. The person submitting the request will be responsible for its prompt delivery. Any interpretations or correction of the contract documents will be made only by addendum duly issued, and a copy of such addendum will be mailed or delivered to each person receiving a set of the contract documents. No oral interpretation of any provision in the contract documents will be made to any bidder. The interpretation of Plans and documents upon bid award shall be addressed in accordance with Article 2 of the "General Conditions."
11. Bidders Interested in More Than One Bid. No person, firm, or corporation shall be allowed to make, or file, or be interested in more than one bid for the same work unless alternate bids are specifically called for. A person, firm, or corporation that has submitted a sub-proposal to a bidder, or that has quoted prices of materials to a bidder, is not thereby disqualified from submitting a sub-proposal or quoting prices to other bidders or make a prime proposal.
12. Award of Contract. COUNTY reserves the right to reject any or all bids, or to waive any irregularities or informalities in any bids or in the bidding. The award of the contract, if made by COUNTY, will be to the lowest responsible bidder therefore. Award of the contract may be on **December 2025** (tentative), and an Agreement shall be presented to the successful bidder at that time. Successful bidder shall then have ten (10) days to execute the Agreement and provide all payment and

performance bonds required for this project. Please note that a posted tabulation may be a preliminary tabulation which has not been reviewed for responsiveness and responsibility. It is possible that the lowest bidder will not be awarded the contract because of non-responsiveness or non-responsibility.

13. Alternates. If alternate bids are called for, the contract may be awarded at the election of the governing board to the lowest responsible bidder on the base bid, or on the base bid and any alternate or combination of alternates.
14. Bidder Contact Information. The bidder shall submit complete name, address and phone listings, (including fax), and contact person at bidder's company, provide a complete list of all personnel, subcontractors, and other agencies that will be assigned to this project and the responsibility that each will have.
15. Listing Subcontractors. Each bidder shall submit with its sealed bid a list of the proposed subcontractors on this project as required by the Subletting and Subcontracting Fair Practices Act (Pub. Cont. Code, § 4100, et seq.). Forms for this purpose are furnished with the contract documents.
16. Workers Compensation and Prevailing Wage Compliance.
 - 16.1. Workers Compensation. In accordance with the provisions of Labor Code section 3700 *et. seq.* Contractor shall secure the payment of compensation to its employees. Contractor shall sign and file with COUNTY the following certificates prior to performing the work under this contract: "I am aware of the provisions of section 3700 of Labor Code which require every employer to be insured against liability for workers compensation or to undertake self-insurance in accordance with the provisions of that code, and I will comply with such provisions before commencing the performance of the work of this contract." The form of such certificate is included as a part of the contract documents.
 - 16.2. Prevailing Wage Compliance. Contractor and its subcontractors shall pay all workers employed on the Project the rates determined by the Director of the California Department of Industrial Relations (DIR) or when applicable, the Davis-Bacon Federal wage rates as supplemented by the Department of Labor regulations. See Article 17 of the General Conditions.
 - 16.3. For those Projects subject to Department of Industrial Relations (DIR) Monitoring and Enforcement, be advised that the Contractor is responsible for submitting certified payroll records directly to the State Compliance Monitoring Unit (CMU). CMU is a new component within the State Division of Labor Standards Enforcement (DLSE) that was created to monitor and enforce prevailing wage requirements on public works projects that receive state bond funding and on other projects that are legally required to use the CMU. The CMU began operations on January 1, 2012, following the recent adoption of AB 436 and approval of revisions to program regulations. By actively monitoring compliance on an ongoing basis while work is being performed, the CMU will play a special role in ensuring that public works construction workers are promptly paid the proper prevailing wage rates and

in helping maintain a level playing field for contractors who comply with the law.

Effective Date and Applicability: The laws and regulations that govern the new program are effective January 1, 2012. Only projects for which the public works contract is awarded on or after January 1, 2012 are subject to the CMU requirements. For further information concerning compliance monitoring please visit the website located at: <https://www.dir.ca.gov/Public-Works/publicworks.html>.

17. Substitution of Security. Contractors may substitute securities in place of retained funds withheld by COUNTY in accordance with the provisions of Cal. Pub. Contract Code Section 22300.
18. Contractor's Pre-Bid Conference.
 - 18.1. A Pre-Bid Conference will be held on the following date: **October 21, 2025 at 9:30am**

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OSA AIR CONDITIONER REPLACEMENT PROJECT
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Contact Person:
Carlos G Garcia, Building Project Technician
Telephone (442)265-1816 / carlosggarcia@co.imperial.ca.us
or
Marcelo Cortes, Senior Construction Programs Project Technician
Telephone: (442) 265-1861 / marcelocortes@co.imperial.ca.us

- 18.2. Attendance at the Pre-Bid Conference and Walkthrough is **NON-MANDATORY BUT STRONGLY RECOMENDED.**
- 18.3. Before submitting a bid, ALL BIDDERS are required to examine the project site and fully inform themselves as to all existing site conditions and limitations. The bid proposal shall include the cost of all items necessary for the construction of the Project. Bidder shall not receive any additional compensation for costs resulting from conditions that Bidder could have discovered with due diligence prior to submitting a bid.
- 18.4. In accordance with Paragraph 10 of the Information for Bidders, any questions to be presented at the Pre-Bid Conference must be in writing and received by COUNTY from General Contractor or subcontractor submitting a Bid on or before **October 27, 2025, at 4:00pm** in the Public Works office located at 155 South Eleventh Street, El Centro, California, 92243.

19. Calendar of Events.

EVENT	DATE
1. Bid packages available	<u>September 24, 2025</u>
2. <u>NON-MANDATORY</u> Pre-Bid Conference and Facility Walkthrough	<u>October 21, 2025, at 9:30am</u>
3. Return of Written Plans, Document Questions, and Substitution Requests. <u>Please be advised that Substitution Requests submitted after the due date may render this bid unresponsive.</u>	<u>October 27, 2025, at 4:00pm</u>
4. Bid package, inclusive of completed bid forms, and bid bond required to be submitted hereunder must be received by COUNTY on or before at: Clerk of the Board 940 Main Street, Suite 209 El Centro, CA 92243 Phone: (760) 482- 4220	<u>November 21, 2025, at 2:00pm</u>
5. Bid Opening in Board Chambers	<u>November 21, 2025, at 2:30pm</u>
6. Board of Supervisors review and consideration of award on approximately	<u>Dec. 2025 (tentative)</u>
7. Execution of Contract	<u>Jan. 2026 (tentative)</u>
8. Commencement of construction on or before	<u>Jan. 2026 (tentative)</u>
9. Completion of construction on	<u>Feb. 2026 (Tentative)</u>

BID FORM

TO: Acting by and through its Board of Supervisors, hereinafter called COUNTY.

1. Pursuant to and in compliance with your *IFB, Notice to Contractors Calling for Bids* and the other documents relating thereto, the undersigned bidder, having familiarized itself with the terms of the contract, the local conditions affecting the performance of the contract, and the cost of the work at the place where the work is to be done, and with the drawings and specifications and other contract documents, hereby proposes and agrees to perform, within the time stipulated by the contract, including all of its component parts and everything required to be performed, and to provide and furnish any and all of the labor, materials, tools, expendable equipment and all utility and transportation services necessary to perform the contract and complete it in a workmanlike manner, all of the work required in connection with the

**COUNTY OF IMPERIAL PUBLIC HEALTH LAB
OSA AIR CONDITIONER REPLACEMENT PROJECT
LOCATED AT
935 BROADWAY, EL CENTRO, CA 92243
COUNTY PROJECT NO. SR6983HTH**

All in strict conformity with the drawings and specifications and other contract documents, including addenda nos., _____, _____, _____, and _____, on file at the office of Public Works Facilities Management, for the total sum of _____ Dollars (\$ _____), hereinafter called the *Base Bid Price*.

Warning - If an addendum or addenda have been issued by the Department and not noted above as being received by the bidder, this proposal may be rejected.

COUNTY reserves the right to make award or any combination of base bid process plus deductive bid items as COUNTY determines to be in its best interest.

**ENGINEER'S OPINION OF PROBABLE QUANTITY
BASE BID**

AL = Allowance
LF = Linear Foot

CF = Cubic Feet
LS = Lump Sump

CY = Cubic Yard
SF = Square Feet

EA = Each
TON = (2,000 lbs.)

LB = Pounds

ITEM No.	ITEM DESCRIPTION	UNIT	EST. QTY.	UNIT PRICE	TOTAL
	SUPERSTRUCTURE				
1.	ROOF SHEATHING	LF	300		
2.	STRUCTURAL BLOCKING	LS	1		
3.	PLYWOOD DECK FOR NEW UNIT	SF	110		
	ROOFING				
4.	ROOF PATCH	SF	300		
5.	FLASHING AND ROOF SPECIALTIES	LS	1		
	INTERIOR CONSTRUCTION				

6.	DRYWALL REPAIR AT T-STAT INSTALL	LS	1		
7.	WALL FINISHES – MISC PAINTING	LS	1		
8.	CEILING FINISHES - CEILING	SF	200		
	PLUMBING				
	TRADE DEMOLITION				
9.	DISCONNECT AND REMOVE EXISTING COLD WATER MAKE-UP PIPING. CAP	LF	5		
10.	REMOVE CONDENSATE DRAIN	LF	20		
	NEW WORK				
11.	¾" COPPER	LF	4		
12.	POINT OF CONNECTION	EA	1		
13.	ROOF HYDRANT	EA	1		
14.	CONDENSATE DRAIN	LF	20		
	MISC PLUMBING				
15.	SEISMIC, HAULING, DOCUMENTATION	LS	1		
16.	SITE SUPERVISION, MOB/DEMOB, GENERAL CONDITIONS, GENERAL REQUIREMENTS, DOCUMENTATION	LS	1		
	HVAC				
	HVAC DEMOLITION				
17.	DISCONNECT & REMOVE AC UNIT, EVAP COOLER AND ROOF PLATFORMS	EA	1		
18.	REMOVE ROOF DUCTWORK	LF	20		
19.	REMOVE CAV UNIT	LS	1		
20.	REMOVE T-STAT	LS	1		
21.	REMOVE INTERIOR HVAC SPECIALTIES, OTHER EQUIPMENT	LS	1		
	EQUIPMENT				
22.	AC-8 (15-TON)	LS	1		
	DRY SIDE DISTRIBUTION				
23.	INTERIOR GA SHEETMETAL DUCTWORK	LF	6		
24.	INTERIOR POC	EA	2		
25.	INSULATION	LS	1		
26.	INSULATED ROOF DUCTWORK	LF	20		
27.	ROOFTOP POC	LS	1		
28.	VALVES, ACCESSORIES & SPECIALTIES	LS	1		
	CONTROL				
29.	T-SAT	EA	1		
	MISCELLANEOUS HVAC REQUIREMENTS				
30.	TEST AND BALANCE TAB	LS	1		
31.	CRANE	LS	1		
32.	SEISMIC, HAULING, CLEANING	LS	1		

33.	SUBCONTRACTOR DOCUMENTATION, COMMISSION ASSISTANCE, SUPERVISION, GENERAL CONDITIONS, INSURANCE, BONDS, PROFIT	LS	1		
	FIRE PROTECTION				
34.	MISCELLANEOUS	LS	1		
	ELECTRICAL				
	ELECTRICAL DEMOLITION				
35.	DISCONNECT AHU UNIT	LS	1		
	EQUIPMENT POWER				
36.	CONDUITS AND WIRE	LF	100		
37.	DISCONNECT SWITCH IN NEMA 3R ENCLOSURE FOR AC-8	EA	1		
38.	HVAC CONTROLLER	EA	1		
	MISCELLANEOUS ELECTRICAL				
39.	RECONNECT LIGHTING	LS	1		
40.	ELECTRICAL OH&P	LS	1		
	DEMOLITION				
	ARCHITECTURAL / STRUCTURAL DEMOLITION				
41.	REMOVE ROOFING AND SHEATHING	SF	300		
42.	REMOVE CEILING	SF	200		
43.	MISCELLANEOUS DEMOLOTION	LS	1		
	Time and Material Allocation				
44.	Time and Material Allocation	LS	1	28,617.00	28,617.00

TOTAL BASE BID: \$ _____

Note: The amount entered as the "Total Base Bid" should be identical to the Base Bid amount entered in Section 1 of the Bid Proposal form.

Warning - If an addendum or addenda have been issued by the Department and not noted above as being received by the bidder, this proposal may be rejected.

COUNTY reserves the right to make award or any combination of base bid process plus deductive bid items as COUNTY determines to be in its best interest.

2. It is understood that COUNTY reserves the right to reject this bid and that this bid shall remain open and not be withdrawn for the period specified in the Notice to Contractors Calling for Bids.

3. The required bid security is hereto attached.

4. The required list of proposed subcontractors is attached hereto.

5. It is understood and agreed that if written notice of the acceptance of this bid is emailed, mailed or delivered to the undersigned after the opening of the bid, and within the time this bid is required to remain open, or at any time thereafter before this bid is

withdrawn, the undersigned will execute and deliver to COUNTY a contract in the form attached hereto in accordance with the bid as accepted, and that it will also furnish and deliver to COUNTY the Performance Bond and Payment Bond for the Public Works as specified, all within ten (10) days after receipt of notification of award, and that the work under the contract shall be commenced by the undersigned bidder, if awarded the Contractor, on the date to be stated in COUNTY's Notice to Contractors to Proceed, and shall be completed by the Contractor in the time specified in the contract documents.

6. Notice of acceptance or requests for additional information should be addressed to the undersigned at the address identified in Paragraph 8 below.

7. Print/type the names of all persons interested in the foregoing proposal as principals in the space provided below:

(IMPORTANT NOTICE: If bidder or other interested person is a corporation, state legal name of corporation, also names of the president, secretary, treasurer, and manager thereof; if a co-partnership, state true name of firm, also names of all individual co-partners composing firm; if bidder or other interested person is an individual, state first and last names in full.)

8. Licensed in accordance with act providing for the registration of Contractors:

Company Name: _____

Company Address: _____

Contact Name: _____

Contact Email #: _____

Phone #: _____

License #: _____ Expiration Date: _____

Classification (s): _____

DIR Registration #: _____ Expiration Date: _____

Gross Annual Receipts for the Firm: _____

Years in Business: _____

Age of Firm: _____

9. The undersigned certifies that he/she is now licensed in the appropriate trade in accordance with the provisions of the Contractor's License Law of the State of California, and the number of said license is _____ and that said license expires _____, 20____.

10. By my signature on this proposal I certify, under penalty or perjury under the laws of

the State of California, that the foregoing questionnaire and statements of Public Contract Code sections 10162, 10232 and 10285.1 are true and correct and that the bidder has complied with the requirements of section 8103 of the Fair Employment and Housing Commission Regulations (Chapter 5, Title 2 of the California Administrative Code). By my signature on this proposal I further certify, under penalty or perjury under the laws of the State of California and the United States of America, that the retention required by Title 23 United States Code, section 112 and Public Contract Code section 7106; and the Title 49 Code of Federal Regulations, Part 29 Debarment and Suspension Certification are true and correct.

	_____	Proper Name of Bidder
Date: _____	By: _____	
		(Signature of bidder)

		(Print/type signator's name)

		(Print/type title)

NOTE: If bidder is a corporation, the legal name of the corporation shall be set forth above, together with the signatures of authorized officers or agents, and the document shall bear the corporate seal; if bidder is a partnership, the true name of the firm shall be set forth above, together with the signature of the partner or partners authorized to sign contracts on behalf of the partnership; and if bidder is an individual, his/her signature shall be placed above.

Business Address:	_____
Place of Residence:	_____

Telephone:	_____
Fax Number:	_____

**NON-COLLUSION AFFIDAVIT TO BE EXECUTED
BY BIDDER AND SUBMITTED WITH BID**

State of California

County of Imperial

_____[name of individual], being first duly sworn,
deposes and says that he or she is _____[title of individual] of
_____[name of business] the party making the
foregoing bid that the bid is not made in the interest of, or on behalf of, any undisclosed
person, partnership, company, association, organization, or corporation; that the bid is
genuine and not collusive or sham; that the bidder has not directly or indirectly induced or
solicited any other bidder to put in a false or sham bid, and has not directly or indirectly
colluded, conspired, connived, or agreed with any bidder or anyone else to put in a sham
bid, or that anyone shall refrain from bidding; that the bidder has not in any manner, directly
or indirectly, sought by agreement, communication, or conference with anyone to fix the bid
price of the bidder or any other bidder, or to fix any overhead, profit, or cost element of the
bid price, or of that of any other bidder, or to secure any advantage against the public body
awarding the contract of anyone interested in the proposed contract; that all statements
contained in the bid are true; and, further, that the bidder has not, directly or indirectly,
submitted his or her bid price or any breakdown thereof, or the contents thereof, or divulged
information or data relative thereto, or paid, and will not pay, any fee to any corporation,
partnership, company association, bid depository, or to any member or agent thereof to
effectuate a collusive or sham bid.

Signature

DESIGNATION OF SUBCONTRACTORS

In compliance with the Subletting and Subcontracting Fair Practices Act (Ch. 4 (commencing at section 4100), Div. 2, part 1 of the Cal. Pub. Cont. Code) and any amendments thereof, each bidder shall set forth below:

(a) (1) The name, the location of the place of business, the California contractor license number, and public works contractor registration number issued pursuant to Section 1725.5 of the Labor Code of each subcontractor who will perform work or labor or render service to the prime 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 prime contractor, specially fabricates and installs a portion of the work or improvement according to detailed drawings contained in the plans and specifications, in an amount in excess of one-half of 1 percent of the prime contractor's total bid or, in the case of bids or offers for the construction of streets or highways, including bridges, in excess of one-half of 1 percent of the prime contractor's total bid or ten thousand dollars (\$10,000), whichever is greater.

(b) the portion of the work which will be done by each subcontractor under this act. The prime Contractor shall list only one subcontractor for each such portion as is defined by the prime Contractor in this bid.

If a prime contractor fails to specify a subcontractor or if a prime contractor specifies more than one subcontractor for the same portion of work to be performed under the contract in excess of one-half of 1 percent of the prime contractor's total bid, the prime contractor agrees that he or she is fully qualified to perform that portion himself or herself, and that the prime contractor shall perform that portion itself.

No prime Contractor whose bid is accepted shall (a) substitute any subcontractor, (b) permit any subcontractor to be voluntarily assigned or transferred or allow it to be performed by anyone other than the original subcontractor listed in the original bid, or (c) sublet or subcontract any portion of the work in excess of one-half of one percent (1/2%) of 1 percent of the prime Contractor's total bid as to which his original bid did not designate a subcontractor, except as authorized in *Subletting and Subcontracting Fair Practices Act*.

Subletting or subcontracting of any portion of the work in excess of one-half of one percent (1/2%) of 1 percent of the prime Contractor's total bid as to which no subcontractor was designated in the original bid shall only be permitted in cases of public emergency or necessity, and then only after a finding reduced to writing as a public record of the authority awarding this contract setting forth the facts constituting the emergency or necessity.

If all work is to be done without subcontractors, write "None" in the following space:

SUBCONTRACTOR LIST					
For each Subcontractor that will perform a portion of the Work in an amount in excess of one-half of 1% of the Bidder's total contract Price, the bidder must list a description of the Work, the name of the Subcontractor, its California contractor license number, the location of its place of business, its DIR registration number, and the portion of the Work that the Subcontractor is performing based on a percentage of the Base Bid price.					
TYPE OF WORK SUBCONTRACTOR WILL DO	NAME UNDER WHICH SUBCONTRACTOR	CALIFORNIA CONTRACTOR LICENSE NO.	ADDRESS	DIR REG. NO.	PERCENT OF WORK

SUPPLIERS

NAME OF SUPPLIER	ADDRESS & TELEPHONE No.	TYPE OF MATERIAL

(Proper Name of Bidder)

By: _____

(Signature of bidder)

(Print/type Signator's name)

(Print/type title)

PUBLIC CONTRACT CODE SECTION 10162 QUESTIONNAIRE

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 a safety regulation?

Yes _____ No _____

If the answer is yes, explain the circumstances in the following space.

PUBLIC CONTRACT SECTION 10232 STATEMENT

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.

TITLE 23, UNITED STATES CODE, SECTION 112 NON-COLLUSION AFFIDAVIT

In accordance with Title 23, United States Code, section 112, the bidder hereby states under penalty of perjury, that he has not, either directly or indirectly, entered into any agreement, participated in any collusion, or otherwise taken any action in restraint of free competitive bidding in connection with this contract.

Note: The above Statement questionnaire, and Non-Collusion Affidavit are part of the Proposal. Signing this Proposal on the signature portion thereof shall also constitute Signature of this Statement, Questionnaire, and Non-Collusion Affidavit.

Bidders are cautioned that making a false certification may subject the certifier to criminal prosecution.

PUBLIC CONTRACT CODE SECTION 10285.1 STATEMENT

In accordance with Public Contract Code section 10285.1 (Chapter 376, Stat. 1985), the bidder hereby declares under penalty of perjury under the laws of the State of California that the bidder has _____, has not _____ been convicted within the preceding three (3) 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 the 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 ABOVE.

THE ABOVE STATEMENT IS PART OF THE PROPOSAL. SIGNING THIS PROPOSAL ON THE SIGNATURE PORTION THEREOF SHALL ALSO CONSTITUTE SIGNATURE OF THIS STATEMENT.

BIDDERS ARE CAUTIONED THAT MAKING A FALSE CERTIFICATION MAY SUBJECT THE CERTIFIER TO CRIMINAL PROSECUTION.

(Proper Name of Bidder)

By: _____
(Signature of bidder)

(Print/type Signator’s name)

(Print/type title)

CONTRACTOR'S CERTIFICATE REGARDING WORKERS COMPENSATION

Labor Code section 3700 in relevant part provides:

"Every employer except the State shall secure the payment of compensation in one or more of the following ways:

- (a) By being insured against liability to pay compensation in one or more insurers duly authorized to write compensation insurance in this State.
- (b) By securing from the Director of Industrial Relations a *Certificate of Consent to Self-Insure*, either as an individual employer, or as one employer in a group of employers, which may be given upon furnishing proof satisfactory to the Director of Industrial Relations of ability to be self-insured and to pay any compensation that may become due to his or her employees."

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

(Proper Name of Bidder)

By: _____
(Signature of bidder)

(Print/type Signator's name)

(Print/type title)

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

BID BOND

KNOW ALL MEN BY THESE PRESENTS, that we _____ as Principal, and _____ as Surety, are held and firmly bound unto the _____ County, hereinafter called COUNTY, in the penal sum of TEN PERCENT (10%) OF THE TOTAL AMOUNT OF THE BID of the Principal submitted to COUNTY 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, successors and assigns, jointly and severally, firmly by these presents.

THE CONDITION OF THIS OBLIGATION IS SUCH that whereas the Principal has submitted the accompanying bid dated _____, 20____, for

**COUNTY OF IMPERIAL PUBLIC HEALTH LAB
OSA AIR CONDITIONER REPLACEMENT PROJECT
LOCATED AT
935 BROADWAY, EL CENTRO, CA 92243
COUNTY PROJECT NO. SR6983HTH**

NOW, THEREFORE, if the Principal shall not withdraw said bid within the period specified therein after the opening of the same, or, if no period be specified, within ninety (90) days after said opening, and if the Principal is awarded the contract, and shall within the period specified therefore, or, if no period be specified, within five (5) days after the prescribed forms are presented to it for signature, enter into the written contract with COUNTY in accordance with the bid as accepted and give bond with good and sufficient surety or sureties, as may be required, for the faithful performance and proper fulfillment of such contract and for the payment for labor and materials used for the performance of the contract, or in the event of the withdrawal of said bid within the period specified or the failure to enter into such contract and give such bonds within the time specified, if the Principal shall pay COUNTY the difference between the amount specified in said bid and the amount for which COUNTY may procure the required work and/or supplies, if the latter amount be in excess of the former; together with all costs incurred by COUNTY in again calling for bids, then the above obligation shall be void and of no effect, otherwise to remain in full force and virtue.

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

In the event suit is brought upon this bond by COUNTY and judgment is recovered, Surety shall pay all costs incurred by COUNTY in such suit, including reasonable attorneys' fees to be fixed by the Court.

IN WITNESS WHEREOF, the above-bound parties have executed this instrument under their several seals this _____ day of _____, 20____, the name and corporate seal of each corporate party being hereto affixed, and these presents

duly signed by its undersigned representative, pursuant to authority of its governing body.

(Corporate Seal)

(Proper Name of Principal)

By: _____
(Signature)

(Print/type Signator's name)

(Print/type title)

(Corporate Seal)

(Proper Name of Surety)

By: _____
(Signature)

(Print/type Signator's name)

(Print/type title)

(Attached Attorney-In-Fact Certificate)

PERFORMANCE BOND

Whereas, The Board of Supervisors of the County of Imperial, State of California, and _____, (hereinafter designated as "principal") have entered into an agreement whereby principal agrees to install and complete certain designated public improvements, which said agreement, dated _____, 20____, and identified as project **COUNTY OF IMPERIAL PUBLIC HEALTH LAB - OSA AIR CONDITIONER REPLACEMENT PROJECT, LOCATED AT 935 BROADWAY, EL CENTRO, CA 92243 COUNTY PROJECT NO. SR6983HTH**, is hereby referred to and made a part hereof; and

Whereas, said principal is required under the terms of said agreement to furnish a bond for the faithful performance of said agreement.

Now, therefore, we, the principal and _____ (hereinafter designated as "surety"), are held and firmly bound unto the County of Imperial (hereinafter designated as "County") in the penal sum of _____ dollars (\$_____) lawful money of the United States, for the payment of which sum well and truly to be made, we bind ourselves, our heirs, successors, executors and administrators, jointly and severally, firmly by these presents.

The condition of this obligation is such that if the above-bounded principal, his or its heirs, executors, administrators, successors or assigns, shall in all things stand to and abide by, and well and truly keep and perform the covenants, conditions and provisions in the said agreement and any alteration thereof made as therein provided, on his or their part, to be kept and performed at the time and in the manner therein specified, and in all respects according to their true intent and meaning, 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 and effect.

As a part of the obligation secured hereby and in addition to the face amount specified therefore, there shall be included costs and reasonable expenses and fees, including reasonable attorneys' fees, incurred by County in successfully enforcing such obligation, all to be taxed as costs and included in any judgment rendered.

The surety hereby stipulates and agrees that no change, extension of time, alteration or addition to the terms of the agreement 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 agreement or to the work or to the specifications.

In witness whereof, this instrument has been duly executed by the principal and surety above named, on _____, 20_____.

Principal

By: _____

Surety

By: _____

[Attach Required Acknowledgment]

Attorney-In-Fact

PAYMENT BOND

Whereas, The Board of Supervisors of the County of Imperial, State of California, and _____ hereinafter designated as "the principal") have entered into an agreement whereby the principal agrees to install and complete certain designated public improvements, which agreement, dated _____, 20____, and identified as project **COUNTY OF IMPERIAL PUBLIC HEALTH LAB - OSA AIR CONDITIONER REPLACEMENT PROJECT, LOCATED AT 935 BROADWAY, EL CENTRO, CA 92243 COUNTY PROJECT NO. SR6983HTH**, is hereby referred to and made a part hereof; and

Whereas, Under the terms of the agreement, the principal is required before entering upon the performance of the work, to file a good and sufficient payment bond with the County of Imperial to secure the claims to which reference is made in Title 3 (commencing with section 9000) of Part 6 of Division 4 of the Civil Code.

Now, therefore, the principal and the undersigned as corporate surety, are held firmly bound unto the County of Imperial and all contractors, subcontractors, laborers, material suppliers, and other persons employed in the performance of the agreement and referred to in Title 3 (commencing with section 9000) of Part 6 of Division 4 of the Civil Code in the sum of _____ dollars (\$_____), for materials furnished or labor thereon of any kind, or for amounts due under the Unemployment Insurance Act with respect to this work or labor, that the surety will pay the same in an amount not exceeding the amount hereinabove set forth, and also in case suit is brought upon this bond, will pay, in addition to the face amount thereof, costs and reasonable expenses and fees, including reasonable attorneys' fees, incurred by the County of Imperial in successfully enforcing this obligation, to be awarded and fixed by the court, and to be taxed as costs and to be included in the judgment therein rendered.

It is hereby expressly stipulated and agreed that this bond shall inure to the benefit of any and all persons, companies, and corporations entitled to file claims under Title 3 (commencing with section 9000) of Part 6 of Division 4 of the Civil Code, so as to give a right of action to them or their assigns in any suit brought upon this bond.

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

The surety hereby stipulates and agrees that no change, extension of time, alteration, or addition to the terms of the agreement or the specifications accompanying the same shall in any manner affect its obligations on this bond, and it does hereby waive notice of any such change, extension, alteration, or addition.

In witness whereof, this instrument has been duly executed by the principal and surety above named, on _____, 20_____.

Principal

By: _____

Surety

By: _____

[Attach Required Acknowledgment]

Attorney-In-Fact

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GENERAL CONDITIONS

Article 1. DEFINITIONS

- (a) COUNTY and Contractor are those mentioned as such in the Agreement. They are treated throughout the Agreement as if they are of singular number and neuter gender.
- (b) Subcontractor, as used herein, includes those having direct contract with Contractor and one who furnishes material work to a special design according to plans and specifications of this work, but does not include one who merely furnishes material not so worked.
- (c) Surety is the person, firm, or corporation that executes as surety the *Contractor's Performance Bond* and *Payment Bond for the Public Works*.
- (d) Provide shall include "provide complete in place," that is, "furnish and install."
- (e) As Shown, As Indicated, As Detailed, refer to drawings accompanying these specifications.
- (f) Work of the Contractor or subcontractor includes labor or materials, or both.

Article 2. DRAWINGS AND SPECIFICATIONS

Contract Documents are complementary, and what is called for by one shall be as binding as if called for by all. The intention of documents is to include all labor and materials, equipment, and transportation necessary for the proper execution of work. Materials or work described in words which so apply have a well-known technical or trade meaning, and shall be deemed to refer to such recognized standards.

Interpretations. Figured dimensions on drawings shall govern, but work not dimensioned shall be as directed. Work not particularly shown or specified shall be the same as similar parts that are shown or specified. Large-scale details shall take precedence over smaller scaled drawings as to shape and details of construction. Specifications shall govern as to materials, workmanship, and installation procedures. Drawings and specifications are intended to be fully cooperative and to agree. However, if Contractor observes that drawings and specifications are in conflict, it shall promptly notify the Architect in writing, and any necessary changes shall be adjusted as provided in the contract for changes in work.

Misunderstanding of drawings and specifications shall be clarified by the Architect, whose decision shall be final.

Standards, Rules, and Regulations referred to are recognized printed standards, and shall be considered as one and a part of these specifications within limits specified.

Article 3. COPIES FURNISHED

Contractor will be furnished, free of charge, copies of drawings and specifications as set forth in *Special Conditions*. Additional copies may be obtained at cost of reproduction.

Article 4. OWNERSHIP OF DRAWINGS

All drawings, specifications, and copies thereof furnished by COUNTY are its property. They are not to be used on other work, and, with exception of signed contract sets, are to be returned to COUNTY on request at completion of work.

Article 5. DETAIL DRAWINGS AND INSTRUCTIONS

- (a) In case of ambiguity, conflict, or lack of information, Architect/Engineer shall furnish with reasonable promptness additional instructions, by means of drawings or otherwise, necessary for proper execution of work. All such drawings and instructions shall be consistent with contract documents, true developments thereof, and reasonably inferable therefrom.
- (b) Work shall be executed in conformity therewith, and Contractor shall do no work without proper drawings and instructions.

Article 6. TIME FOR COMPLETION AND DAMAGES FOR DELAY

The Parties recognize that time is of the essence of the Agreement and that COUNTY will suffer financial loss if the Work is not completed by the date set forth in paragraph 19.9 of the Information to Bidders section of this Agreement. The Parties also recognize the delays, expense and difficulties involved with proving in a legal proceeding the actual loss suffered by COUNTY if the Work is not completed on time. Accordingly, instead of requiring any such proof, the Parties agree that as damages for delay (but not as a penalty), Contractor shall pay COUNTY the sum of **two thousand seven hundred and 00/100 dollars (\$2,700.00)** for each calendar day the Work remains uncompleted after the time specified in this article or any written extension, whichever is later. Contractor agrees that the damages are not manifestly unreasonable under the circumstances and agree that such sum is not intended as a penalty against Contractor.

Article 7. PROGRESS SCHEDULE

Immediately after being awarded contract, Contractor shall prepare an estimated progress schedule (using the Critical Path Method (CPM) through a software program selected by COUNTY but at Contractor's sole expense) and submit the schedule for COUNTY's approval. Schedule shall indicate graphically the beginning and completion dates of all phases of construction. An updated progress schedule shall be submitted to COUNTY on a monthly basis.

Article 8. CONTRACT SECURITY

Unless otherwise specified, Contractor shall furnish a surety bond in an amount equal to one hundred percent (100%) of the contract price as security for faithful performance of this Agreement and shall furnish a separate bond in an amount equal to one hundred percent (100%) of the contract price as security for payment of persons performing labor and furnishing materials in connection with this Agreement. Aforesaid bonds shall be in form set forth in these contract documents. Upon request of Contractor, COUNTY will consider and accept multiple sureties on such bonds. COUNTY may reject at its discretion any bond issued by a surety that to COUNTY's satisfaction does not have a sufficient bond rating or history as a surety in the State of California to assure adequate security to COUNTY for the default of Contractor.

Article 9. ASSIGNMENT

Contractor shall not assign this Agreement or any part thereof without prior written consent of COUNTY. As used here, an assignment shall include any assignment, hypothecation, transfer, sale, or other exchange of interests herein, directly or indirectly, by operation of law or otherwise, without the prior written consent of COUNTY. Any attempt to do so without the COUNTY's consent will be null and void, and any assignee, hypothecate, or transferee acquires no right or interest by reason of such attempted assignment, hypothecation, sale, or transfer. The sale, assignment, transfer, or other disposition of any of the issued and outstanding capital stock of Contractor or of any general partner or joint venturer or syndicate member of Contractor, if a partnership or joint venture or syndicate exists, which results in changing the control of Contractor, will be construed as an assignment of this Agreement. Control means 50% or more of the voting power of the corporation, partnership, joint venture or syndicate.

Any assignment of money due to or to become due under this Agreement shall be subject to a prior lien for services rendered or material supplied for performance of work called for under said contract in favor of all persons, firms, or corporations rendering such services or supplying such materials to the extent that claims are filed pursuant to the Civil Code, the Code of Civil Procedure, Public Contract Code and/or the Government Code.

Article 10. PROHIBITED INTERESTS

Contractor shall immediately notify COUNTY if Contractor becomes aware of any COUNTY official or employee who appears to have any financial interest prohibited by this section.

Contractor shall not cause or allow any COUNTY official or employee to have a prohibited financial interest in the project, as defined below:

No official of COUNTY who is authorized on behalf of COUNTY to negotiate, make, accept or approve, or to take part in negotiating, making, accepting or approving, any architectural, engineering, inspection, construction, or material supply contract or any subcontract in connection with construction or project shall become directly or indirectly interested financially in this Agreement or in any part thereof. No officer, employee, architect, attorney, engineer, or inspector of or for COUNTY who is authorized on behalf of COUNTY to exercise any executive, supervisory, or other similar functions in connection with construction of project shall become directly or indirectly interested financially in this Agreement or in any part thereof.

Article 11. SEPARATE CONTRACTS

COUNTY reserves the right to let other contracts in connection with this work. Contractor shall afford other Contractors reasonable opportunity for introduction and storage of their materials and execution of their work and shall properly connect and coordinates its work with theirs.

If any part of Contractor's work depends for proper execution or results upon work of any other Contractor, the Contractor shall inspect and promptly report to Architect/Engineer any defects in such work that render it unsuitable for such proper execution and results. Contractor's failure so to inspect and report shall constitute its acceptance of other Contractor's work as fit and proper for reception of Contractor's work, except as to defects

which may develop in other Contractor's work after execution of Contractor's work.

To ensure proper execution of its subsequent work, Contractor shall measure and inspect work already in place, and shall at once report to Architect any discrepancy between executed work and contract documents.

Contractor shall ascertain to its own satisfaction the scope of the project and nature of any other contracts that have been or may be awarded by COUNTY in prosecution of the project to the end that Contractor may perform its contract in the light of such other contracts, if any. Nothing contained herein shall be interpreted as granting to Contractor exclusive occupancy at site of project. Contractor shall not cause any unnecessary hindrance or delay to any other Contractor working on project. If simultaneous execution of any contract for the project is likely to cause interference with performance of some other contract or contracts, COUNTY shall decide which Contractor shall cease work temporarily and which Contractor shall continue or whether work can be coordinated so that Contractors may proceed simultaneously. COUNTY shall not be responsible for any damages suffered or extra costs incurred by Contractor resulting directly or indirectly from award or performance or attempted performance of any other contract or contracts on project, or caused by any decision or omission of COUNTY respecting the order of precedence in performance of contracts.

Article 12. SUBCONTRACTING

- (a) Contractor agrees to bind every subcontractor by terms of the contract as far as such terms are applicable to subcontractor's work. If Contractor shall subcontract any part of this Agreement, Contractor shall be as fully responsible to COUNTY for acts and omissions of Contractor's subcontractor and of persons either directly or indirectly employed by Contractor's subcontractor as it is for acts and omissions of persons directly employed by itself. Nothing contained in the contract documents shall create any contractual relation between any subcontractor and COUNTY.
- (b) COUNTY's consent to or approval of any subcontractor under this Agreement shall not in any way relieve Contractor of its obligations under this Agreement, and no such consent or approval shall be deemed to waive any provision of this Agreement.
- (c) Substitution or addition of subcontractors shall be permitted only as authorized by California Public Contract Code sections 4100, et seq.
- (d) Contractor represents and warrants that it and its subcontractors are not ineligible to work for COUNTY due to violations of Labor Code sections 1777.1 and 1777.7.

Article 13. DEFAULTS & REMEDIES

- (a) Default. In the event that (i) Contractor files a petition requesting relief under any bankruptcy act, or is adjudged as bankrupt, or makes a general assignment for the benefit of creditors or has a receiver appointed on account of its insolvency, or (ii) Contractor refuses or is unable, for whatever reason, to supply enough properly skilled workers or proper materials to complete the Project, or (iii) Contractor fails to follow the directions of COUNTY, or (iv) Contractor fails to make prompt payment to its subcontractors and suppliers for materials or labor supplied or permits any lien to be

imposed upon all or any portion of the Project, or (v) Contractor disregards any laws or orders of any public or private authority having jurisdiction over the Work or the Project, or (vi) Contractor fails to perform in accordance with any of the terms of this Agreement or breaches any provision of this Agreement, COUNTY may give notice of such failure or breach to Contractor, identifying the failure or breach of this Agreement. Should any such failure or breach continue for twenty-four (24) hours after delivery of notice without a good faith effort on the part of Contractor to commence all necessary corrective action, or should such a breach continue despite Contractor's efforts for forty-eight (48) hours, then at that time such failure shall be deemed a default by Contractor under this Agreement and COUNTY shall have all rights and remedies available at law or in equity, including the right to terminate this Agreement. Without limiting its rights and remedies, COUNTY may then proceed as follows:

- (1) Without terminating this Agreement or the obligations of Contractor hereunder as to all of the Work required to be performed or furnished by Contractor pursuant to this Agreement, COUNTY may require Contractor, at Contractor's expense, to cure such default(s) as may exist in the performance of Contractor's obligations hereunder within forty-eight (48) hours after such default(s) has/have occurred including but not limited to repairing, replacing, and correcting material or Work determined by COUNTY to be defective or not complying with the requirements of this Agreement. Should Contractor fail to timely repair, replace, and/or correct non-complying or defective materials and workmanship or otherwise cure its default(s) hereunder, and in the case of emergencies in which case COUNTY may act immediately if Contractor is not available or is not responding, and without further notice, COUNTY may make required repairs, replacements and other corrections or otherwise remedy the default by Contractor pursuant to Paragraph (2) below.
- (2) Without terminating this Agreement or the obligations of Contractor hereunder as to all of the Work required to be performed or furnished by Contractor pursuant to this Agreement, COUNTY may engage another contractor to perform such portion of Contractor's Work required pursuant to this Agreement or furnish any materials or other items required hereunder as COUNTY in its sole discretion may deem necessary to avoid delay in the progress of the Work, and in connection therewith, COUNTY may perform such Work or any portion thereof itself or have the same performed by others and COUNTY may procure all necessary materials, equipment or other items required for the continued progress of such Work. The costs incurred by COUNTY as a result of performing any such portion of the Work or of engaging another Contractor to do so shall be deducted from the compensation payable pursuant to this Agreement and if COUNTY's costs exceed or may reasonably be anticipated to exceed the balance of the compensation due to Contractor for such work, such excess, or anticipated excess, shall be immediately due and owing from Contractor to COUNTY and may be withheld from any funds due to Contractor pursuant to this Agreement or any other agreement.
- (3) COUNTY may terminate Contractor's right to perform upon written notice and COUNTY shall then have the option of completing the Work or any portion

thereof by exercise of its interest under the performance bond issued in favor by Contractor, or having such Work in whole or in part be completed by others for Contractor's account. A calculation shall take place at the conclusion of the Project wherein to the degree the sum of COUNTY's costs and any amounts paid to complete the Project exceed the compensation payable pursuant to this Agreement, then any such excess shall be immediately due and owing from Contractor to COUNTY.

- (b) Damages. Contractor shall be liable for all damages suffered by COUNTY by reason of Contractor's default in any provision of this Agreement and the exercise of COUNTY of its option to terminate this Agreement shall not release Contractor of such liability. Contractor shall have no right to receive any further payment after a default has occurred until such time as the Work to be performed by Contractor pursuant hereto has been completed and accepted by COUNTY and damages suffered by COUNTY, if any, ascertained. Damages shall include by way of illustration, but not of exclusion, COUNTY's costs of completing the Work which exceeds the compensation payable pursuant to this Agreement, other general, liquidated, special or consequential damages, attorney fees, and costs.
- (c) Actions After Default. Should COUNTY exercise any of its options, remedies, or rights granted pursuant to the terms of this Agreement in the event of a default by Contractor, COUNTY at its sole election may, but shall not be obligated to, use any materials, supplies, tools or equipment on the work site which belong to CONTRACTOR to complete the Work required to be completed by Contractor, whether such work is completed by COUNTY or by others, and Contractor agrees that it shall not remove such materials, supplies, tools and equipment from the work site unless directed in writing by COUNTY to do so.
- (d) Limit on Force Majeure Damages. Contractor shall not be responsible for repairing or restoring damage to work caused by an act of God in excess of five (5) percent of the contracted amount, provided that the work damaged is built in accordance with accepted and applicable building standards and the plans and specifications of COUNTY. In the event of such damage, COUNTY may, at its option, elect to terminate this Agreement. For purposes of this Agreement, an "act of God" shall be defined as an earthquake in excess of 3.5 on the Richter scale and a tidal wave.
- (e) No Limitation of Rights. The options and rights granted to COUNTY herein shall not be deemed as limitations upon the other rights and remedies of COUNTY in the event of a failure of performance or breach by Contractor, and COUNTY shall be entitled to exercise the rights and remedies hereinabove specified and all other rights and remedies which may be provided in this Agreement or by law or in equity, either cumulatively or consecutively, and in such order as COUNTY in its sole discretion shall determine.
- (f) Resolution of Claims. COUNTY and Contractor agree to follow and comply with the mediation, arbitration, claim, civil action procedure and trial de novo provisions set forth in California Public Contracts Code §§ 9204 and 20104 – 20104.6.

Article 14. WARRANTIES

- (a) One-Year Warranty. Contractor agrees to provide a one-year warranty for all of its work and component parts and guarantees that all work shall be performed in a professional and workman-like manner and be free from defects. Contractor guarantees to timely correct all work performed by it under this Agreement which COUNTY determines to be defective in design, material, and/or workmanship within a period of one (1) year from the date of the completion of the Work. The warranties set forth in this Agreement shall be in addition to, and not in lieu of, all other statutory and case law warranties and obligations of Contractor. Contractor expressly agrees that all warranties made by Contractor, all obligations under this Agreement and all remedies for breach of such warranties shall survive this Agreement in the event it is terminated or expires for any reason prior to the running of the full warranty periods listed above.
- (b) Materials. All materials furnished by Contractor shall be new, manufactured during the current year, of first quality, and carrying full manufacturer's warranty. Contractor shall be responsible for any expiration of manufacturer or other warranties of material or equipment being supplied for this Agreement. Contractor guarantees that all warranties of material and equipment shall become effective when the project is accepted by COUNTY's Board of Supervisors, not at time of installation by Contractor.
- (c) Manufacturers' Warranty Information. Contractor agrees to promptly provide such information and maintenance recommendations to COUNTY at the inception of Contractor's work to the extent such information is reasonably available. In the event of failure of Contractor to comply with above-mentioned conditions within one (1) week after being notified in writing, COUNTY is hereby authorized to proceed to have defects repaired and made good at expense of Contractor, who hereby agrees to pay costs and charges therefore immediately on demand.

Article 15. NOTICES AND REPORTS

- (a) All notices and reports under this Agreement shall be in writing and must be given by personal delivery or by mailing by certified mail, or overnight mail, addressed as follows:

COUNTY

Imperial County Department of Public Works
Attention: Director
155 South Eleventh Street
El Centro, CA 92243
Email: johngay@co.imperial.ca.us

With Copies to:
Imperial County Executive Office
Attention: County Executive Officer
940 West Main Street, Suite 208
El Centro, CA 92243
Email: kathleenlang@co.imperial.ca.us

and:

CONTRACTOR

Business Name:

Address:

Imperial County Department of Human
Resources and Risk Management
Attention: Director
940 West Main Street, Suite 101
El Centro, CA 92243
Email: BrendaOlivas@co.imperial.ca.us

Email:

In addition to delivery as described above, delivery shall be provided by email, deemed received when acknowledged, to the addressees above.

- (b) Notices and reports under this Agreement may be given by personal delivery or by mailing by certified mail at such other address as either Party may designate in a notice to the other Party given in such manner. Any notice given by mail shall be considered given when deposited in the United States Mail, postage prepaid, addressed as provided herein.

In addition to delivery as described above, delivery shall be provided by email, deemed received when acknowledged, to the addressees above.

Article 16. WORKERS

- (a) Contractor shall at all times enforce strict discipline and good order among its employees, and shall not employ on work any unfit person or anyone not skilled in work assigned to that person. Contractor shall at all times enforce rules and standards regarding Sensitive Information as defined below. Contractor shall not permit workers to touch or otherwise touch, read, review, copy, or access any sensitive or confidential information. Contractor shall be responsible for any worker violating sensitive information standards.
- (b) Any person in the employ of the Contractor whom COUNTY may deem incompetent or unfit shall be dismissed from work, and shall not again be employed on it except with written consent of COUNTY.
- (c) Contractor shall provide COUNTY with a list of all current employees. Contractor shall notify COUNTY of all new employees one week prior to their start date.
- (d) All Contractor's employees shall be required to comply with the work rules established for the project site; and shall be identified while on the premises by picture identification card furnished at his/her expense, indicating their name or number; and by shirt, blouse or smock indicating the company name or logo in print large enough to be easily read. Contractor's employees shall have effective communication skills to perform such tasks and communicate with the COUNTY and its representatives.
- (e) It shall be the responsibility of Contractor to ensure Contractor employees do not access Sensitive Information. COUNTY shall have the right to perform a background check and clearance requirements of all Contractor employees that the COUNTY determines may require access to any area that contains or may provide access to Sensitive Information. Notwithstanding anything in this Agreement to the contrary, the

Contractor and its employees must comply with background check and clearance requirements of the California Department of Justice (DOJ) and the California Department of Motor Vehicles (DMV) relating to any Contractor employee who has physical access to any area which is either connected to, or contains records from, the DOJ criminal computer database, including without limitation, the California Law Enforcement Telecommunications System and the Criminal Offender Record Information, or the DMV computer database (collectively, "the Databases"). If requested by the COUNTY, the Contractor must provide to the COUNTY suitable documentation evidencing the Contractor's compliance with the policies, practices, and procedures of the DOJ and the DMV regarding background check and clearance requirements relating to access to the Databases.

- (f) For purposes of this Article, "Sensitive Information" shall include but not be limited to any personal information or any personal health information ("PHI") of any COUNTY resident, employee, customer, patient or official; any trade secret or proprietary information belonging to the COUNTY or any COUNTY contractor; any information protected by any privilege belonging to the COUNTY, including but not limited to the attorney-client privilege; and any information otherwise labeled as sensitive or confidential.

Article 17. PREVAILING WAGE AND PAYROLL RECORDS

- (a) Contractor and its subcontractors shall pay all workers employed on the Project the higher of either the rates determined by the Director of the California Department of Industrial Relations ("DIR") or, when applicable, the Davis-Bacon Federal wage rates as supplemented by the Department of Labor regulations. The Davis-Bacon Federal wage rates are attached hereto. Copies of the State prevailing rate of per diem wages are on file with the Department of Industrial Relations, Division of Apprenticeship Standards, 445 Golden Gate Avenue, San Francisco, California, and at COUNTY's Department of Public Works, and are available to Contractor and any other interested party upon request. Contractor shall post the prevailing rate of per diem wages at the Project site.
- (b) Contractor is responsible for compliance with the provisions herein.
- (c) Contractor agrees to comply with sections 1775 and 1776 of the California Labor Code relating to the payment of prevailing wage and the maintenance of certified payroll records and to make the certified payroll records available for inspection at all reasonable hours at Contractor's principal office. The responsibility for compliance with these provisions is fixed with Contractor. Contractor understands and agrees that it shall, as a penalty to COUNTY, forfeit specific monetary fines for each worker paid less than the prevailing wage rates as determined by the Labor Commissioner for the work or craft in which the worker is employed for any Work done pursuant to this Agreement.
- (d) For those Public Works Projects that are subject to the (DIR), Division of Labor Standards Enforcement (DLSE) compliance monitoring and enforcement it is the Contractor's responsibility to submit certified payroll records directly to the DLSE's Compliance Monitoring Unit (CMU). Contractor has reviewed and agrees to comply with any applicable provisions for those Projects subject to DIR Monitoring and

Enforcement of prevailing wages. COUNTY hereby notifies Contractor that Contractor is responsible for complying with the requirements of Senate Bill 854 (SB854) regarding certified payroll record reporting. Further information concerning the requirements of SB854 is available on the DIR website located at: <http://www.dir.ca.gov/Public-Works/PublicWorksEnforcement.html>. More information concerning state compliance can be found at <https://www.dir.ca.gov/Public-Works/publicworks.html>.

(e) Mandatory Registration (Requirements pursuant to SB 854):

- (1) Contractor and its subcontractors shall register with the DIR and pay all applicable fees as set forth in Labor Code section 1725.5.
- (2) Contractor and its subcontractors acknowledge that they shall not be listed on any bid proposal for a public works project (submitted on or after March 1, 2015) unless registered with the DIR pursuant to Labor Code section 1725.5. The requirements of this section shall apply unless one of the limited exceptions provided under Labor Code Section 1771.1(a) applies.
- (3) Contractor and its subcontractors acknowledge that they shall not be awarded any contract for public work on a public works project (awarded on or after April 1, 2015) unless registered with the DIR pursuant to Labor Code section 1725.5.
- (4) The Project described herein is subject to compliance monitoring and enforcement with the DIR.
- (5) For further information concerning compliance with SB 854, please visit: <http://www.dir.ca.gov/Public-Works/SB854.html>.

(f) Notwithstanding paragraph (c), Contractor is not liable for any penalties pursuant to paragraph (c) when a subcontractor on the Project fails to pay its workers the general prevailing rate of per diem wages unless:

- (1) Contractor had knowledge of that failure of the subcontractor to pay the specified prevailing rate of wages to those workers; or
- (2) Contractor fails to comply with all of the following requirements:
 - (A) The contract executed between Contractor and the subcontractor for the performance of Work on the Project shall include a copy of the provisions of California Labor Code sections 1771, 1775, 1776, 1777.5, 1813 and 1815; and
 - (B) Contractor shall monitor the payment of the specified general prevailing rate of per diem wages by the subcontractor to the employees, by periodic review of the certified payroll records of the subcontractor; and
 - (C) Upon becoming aware of the failure of the subcontractor to pay his or her workers the specified prevailing rate of wages, Contractor shall diligently

take corrective action to halt or rectify the failure, including, but not limited to, retaining sufficient funds due the subcontractor for work performed on the public works project; and

- (D) Prior to making final payment to the subcontractor for Work performed on the Project, Contractor shall obtain an affidavit signed under penalty of perjury from the subcontractor that the subcontractor has paid the specified general prevailing rate of per diem wages to his or her employees on the Project and any amounts due pursuant to California Labor Code Section 1813.
- (E) Cognizance of Violations by County. Contractor understands and agrees that COUNTY shall take cognizance of violations of Chapter 1 of Part 7 of Division 2 of the California Labor Code committed in the course of the execution of this Agreement, and shall promptly report any suspected violations to the Labor Commissioner. If COUNTY determines as a result of its own investigation that there has been a violation of Chapter 1 of Part 7 of Division 2 of the California Labor Code and withholds payment to Contractor, the procedures in California Labor Code §1771.6 shall be followed. Contractor may bring an action in a court of competent jurisdiction to recover from COUNTY the difference between the wages actually paid to an employee and the wages that were required to be paid to an employee pursuant to Chapter 1 of Part 7 of Division 2 of the California Labor Code, any penalties required to be paid pursuant to Chapter 1 of Part 7 of Division 2 of the California Labor Code, and costs and attorney's fees related to the action, if either of the following is true:
 - 1. COUNTY previously affirmatively represented to Contractor in writing, in the call for bids, or otherwise, that the Work was not a "public work," as defined in Chapter 1 of Part 7 of Division 2 of the California Labor Code; or
 - 2. COUNTY received actual written notice from the Department of Industrial Relations that the Work is a "public work," as defined in Chapter 1 of Part 7 of Division 2 of the California Labor Code, and failed to disclose that information to Contractor before the bid opening or award.

Article 18. APPRENTICES

- (a) Contractor agrees to comply with sections 1777.5, 1777.6 and 1777.7 of the California Labor Code relating to the employment of apprentices and to provide COUNTY with copies of any contract award information and verified statements of the journeyman and apprentice hours performed pursuant to this Agreement as required by section 1777.5(e). The responsibility for compliance with these provisions is fixed with Contractor for all apprenticeable occupations, where journeymen in the craft are employed on the public work, in a ratio of not less than one (1) apprentice for each five (5) journeymen (unless an exemption is granted in accordance with section 1777.5) and Contractor and its subcontractors shall not discriminate among otherwise qualified employees as indentured apprentices on any public work solely on the ground of race,

religious creed, color, national origin, ancestry, sex, or age, except as provided in California Labor Code section 3077. Only apprentices, as defined in California Labor Code section 3077, who are in training under apprenticeship standards and who have signed written apprentice agreements will be employed on public works in apprenticeable occupations. This section shall not be enforced if the not-to-exceed amount of this Agreement is less than thirty thousand dollars (\$30,000).

- (b) If the Project falls within the jurisdiction of California Labor Code section 1777.5, COUNTY shall, within five (5) days of the award, send a copy of the award to the Division of Apprenticeship Standards. In addition, COUNTY shall notify the Division of Apprenticeship Standards of a finding of any discrepancy regarding the ratio of apprentices to journeymen within five (5) days of the finding.

Article 19. HOURS OF WORK

Contractor agrees to comply with sections 1810 through 1815 of the California Labor Code and, when applicable, the Contract Work Hours and Safety Standards Act (40 USC §327 et seq.; 29 CFR Part 5) which provide that Contractor's workers and its subcontractor's workers may not be required or permitted to work more than eight (8) hours in any one (1) calendar day and forty (40) hours in any one (1) calendar week. Further, work performed by employees of Contractor or its subcontractor in excess of eight (8) hours per day, and forty (40) hours during any one (1) week, shall be compensated for all hours worked in excess of eight (8) hours per day at not less than one and one-half (1½) times the basic rate of pay. The responsibility for compliance with these provisions is fixed with Contractor. Contractor understands and agrees that it shall, as a penalty to COUNTY, forfeit specific monetary fines to COUNTY should Contractor or its subcontractors fail to comply with the provisions contained within this paragraph.

Article 20. INSURANCE COVERAGES

Contractor hereby agrees at its own cost and expense to procure and maintain, during the entire term of this Agreement and any extended term therefore, insurance in a sum acceptable to COUNTY and adequate to cover potential liabilities arising in connection with the performance of this Agreement and in any event not less than the minimum limit set forth as follows (and in any event not less than the minimum limit set forth in the "Minimum Insurance Amounts" attachment to the Plans and Specifications which are incorporated as if set forth fully herein):

INSURANCE	MINIMUM LIMIT
<u>Worker's Compensation, Coverage A</u>	Statutory
<u>Employers Liability, Coverage B</u>	\$1,000,000.00 per accident for bodily injury or disease.

Commercial General Liability Including Contractual Liability

Operations, Products and Completed Operations:	
Personal/Bodily injury & Property Damage	\$2,000,000.00 / occurrence \$4,000,000.00 / aggregate
Property Damage	\$2,000,000.00 / occurrence \$4,000,000.00 / aggregate If a general aggregate limit applies, either the general aggregate limit shall apply separately to this project/ or the general aggregate limit shall be twice the required occurrence limit.

Commercial Automobile Liability (owned, hired, & non-owned vehicles)

Personal/Bodily Injury & Property Damage	\$1,000,000.00 per accident for bodily injury and property damage.
Professional Liability (Errors and Omissions):	Appropriate to the Contractor's profession, with limit no less than N/A per occurrence or claim, N/A aggregate.
Unemployment Insurance	To Be Determined by Scope of Work
Disability Insurance	To Be Determined by Scope of Work
Liability Insurance	To Be Determined by Scope of Work
Errors and Omissions	N/A
Builder's Risk (Course of Construction) Insurance	"All Risk" (Special Perils) coverage with limits equal to the completed value of the project and no coinsurance penalty provisions.
Surety Bonds: 1. Bid Bond 2. Performance Bond 3. Payment Bond 4. Maintenance Bond	The Payment Bond & Performance Bond shall be in a sum equal to the contract price. If the Performance Bond provides for a one-year warranty a separate Maintenance Bond is not necessary.

Article 21. SPECIAL INSURANCE REQUIREMENTS

(a) All insurance required under Article 20 shall:

- (1) Be procured from an insurer licensed to do business in California with a current rating by Best's Key Rating Guide, acceptable to COUNTY. A rating of at least A-VII shall be acceptable to COUNTY; lesser ratings must be approved in writing by COUNTY.
- (2) Be primary coverage as respects COUNTY and any insurance or self-insurance maintained by COUNTY shall be in excess of Contractor's insurance coverage and shall not contribute to it.
- (3) Name COUNTY as an additional insured on all policies, except Workers' Compensation, and provide that COUNTY may recover for any loss suffered by COUNTY by reason of Contractor's negligence.
- (4) State that it is primary insurance and regards COUNTY as an additional insured and contains a cross-liability or severability of interest clause.
- (5) Not be canceled, non-renewed, or reduced in scope of coverage until after thirty (30) days written notice has been given to COUNTY. However, Contractor may not terminate such coverage until it provides COUNTY with proof that equal or better insurance has been secured and is in place. Cancellation or change without the prior written consent of COUNTY shall, at the option of COUNTY, be grounds for termination of this Agreement.
- (6) If this Agreement remains in effect more than one (1) year from the date of its original execution, COUNTY may, at its sole discretion, require an increase in the amount of liability insurance to the level then customary in similar COUNTY Agreements by giving sixty (60) days notice to Contractor.

(b) Additional Insurance Requirements.

- (1) Complete copies of certificates of insurance for all required coverages including additional insured endorsements and thirty-day (30-day) notice of cancellation clause endorsements shall be attached hereto as Exhibit IV and incorporated herein as though fully set forth.
 - (2) COUNTY is to be notified immediately of all insurance claims. COUNTY is also to be notified if any aggregate insurance limit is exceeded within five (5) working days of any such occurrence.
- (c) Nothing in this, or any other provision of this Agreement, shall be construed to preclude Contractor from obtaining and maintaining any additional insurance policies in addition to those required pursuant to this Agreement.
- (d) Should Contractor make any changes to its insurance, including but not limited to a change in carrier, change in deductible, or change in policy limits, Contractor must provide notice of same to the COUNTY within five (5) working days, and any such

changes shall not take effect for thirty (30) days. Under no circumstances shall Contractor make changes to its insurance coverage such that its insurance coverage does not meet the requirements set forth herein.

Article 22. INSURANCE ENDORSEMENTS, CLAUSES, & INFORMATION

- (a) The comprehensive/commercial general liability insurance shall contain a provision of endorsements stating that such insurance:
- (1) Includes contractual liability;
 - (2) Does not contain a "pro rata" provision which looks to limit the insurer's liability to the total proportion that its policy limits bear to the total coverage available to the insured;
 - (3) Does not contain an "excess only" clause which requires the exhaustion of other insurance prior to providing coverage;
 - (4) Does not contain an "escape clause" which extinguishes the insurer's liability if the loss is covered by other insurance;
 - (5) Includes COUNTY, architect, and the construction manager as additional insured;
 - (6) States that it is primary insurance and regards COUNTY as an additional insured and contains a cross-liability or severability of interest clause; and
 - (7) Does not contain any exclusion as to loss or damage to property caused by explosion or resulting from collapse of buildings or structures or damage to property underground, commonly referred to by insurers as the "XCU Hazards."
- (b) Certificates and insurance policies shall include the following clause: "This policy shall not be canceled or reduced in required limits of liability or amount of insurance until notice has been mailed to COUNTY stating date of cancellation or reduction. Date of cancellation may not be less than thirty (30) days after date of mailing notice."
- (c) Certificates of insurance shall state, in particular, those insured, extent of insurance, location and operation to which insurance applies, expiration date, and cancellation and reduction notice.

Article 23. PROOF OF INSURANCE

Contractor shall not commence work nor shall it allow any subcontractor to commence work under this Agreement until Contractor has obtained all required insurance, certificates and endorsements, including but not limited to, Additional Insured Endorsements and thirty-days (30-days) Notice of Cancellation Clause endorsements have been delivered in duplicate to and approved by COUNTY. The above referenced insurance documents must be received by COUNTY on or before the effective date of this Agreement and shall be sent to the following addresses:

- (i) County of Imperial
Risk Management Department
940 Main Street, Suite 101
El Centro, CA 92243
- and
- (ii) Department of Public Works
Attn: Director of Public Works
1002 State Street
El Centro, CA 92243

Complete copies of certificates of insurance for all required coverages including additional insured endorsements shall be attached hereto as Exhibit E and incorporated herein as though fully set forth.

Article 24. CHOICE OF LAW

The laws of the State of California shall govern this Agreement. This Agreement is made and entered into in Imperial County, California. Any action brought by either Party with respect to this Agreement shall be brought in a court of competent jurisdiction within said County.

Article 25. PERMITS AND LICENSES

Permits and licenses necessary for prosecution of work shall be secured and paid for by Contractor, unless otherwise specified.

Article 26. EASEMENTS

Easements for permanent structures or permanent changes in existing facilities shall be secured and paid for by COUNTY, unless otherwise specified.

Article 27. SURVEYS

Surveys to determine location of property lines and corners will be supplied by COUNTY. Surveys to determine locations of construction, grading, and site work shall be provided by Contractor.

Article 28. EXCISE TAXES

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

Article 29. PATENTS AND ROYALTIES

Contractor shall hold and save COUNTY and its officers, agents, and employees harmless from liability of any nature or kind, including cost and expense, for or on account of any patented or unpatented invention, process, article, or appliance manufactured or used in the performance of this Agreement, including its use by COUNTY, unless otherwise

specifically stipulated in the contract documents.

Article 30. MATERIALS

Except as otherwise specifically stated in this Agreement, Contractor shall provide and pay for all materials, labor, tools, equipment, water, light, power, transportation, superintendence, temporary constructions of every nature, and all other services and facilities of every nature whatsoever necessary to execute and complete this Agreement within the specified time.

Unless otherwise specified, all materials shall be new, and both workmanship and materials shall be of good quality.

Materials shall be furnished in ample quantities and at such times as to insure uninterrupted progress of work, and shall be stored properly and protected as required. Contractor shall be entirely responsible for damage or loss by weather or other causes to materials or work under this Agreement. No material, supplies, or equipment for work under this Agreement shall be purchased subject to any chattel mortgage or under a conditional sale or other agreement by which an interest herein or in any part thereof is retained by seller or supplier. Contractor warrants good title to all material, supplies, and equipment installed or incorporated in work, and agrees upon completion of all work to deliver premises, together with all improvements and appurtenances constructed or placed thereon by Contractor, to COUNTY free from any claims, liens, or charges. Contractor further agrees that neither Contractor nor any person, firm, or corporation furnishing materials or labor for any work covered by this Agreement shall have any right to lien upon premises or any improvement or appurtenance thereon, except that Contractor may install metering devices or other equipment of utility companies or of political subdivisions title to which is commonly retained by utility company or political subdivision. In event of installation of any such metering device or equipment, Contractor shall advise COUNTY as to owner thereof. Nothing contained in this Article, however, shall defeat or impair the right of persons furnishing material or labor under any bond given by Contractor for their protection or any rights under any law permitting such persons to look to funds due Contractor in hands of COUNTY, and this provision shall be inserted in all subcontracts and material contracts, and notice of its provisions shall be given to all persons furnishing material for work when no formal contract is entered into for such material.

Article 31. SUBSTITUTIONS

Whenever specifications for any material, product, thing, service, or process is indicated or specified by grade, patent or propriety name or by name of manufacturer, such specifications shall be deemed to be used for the purpose of facilitating the description of material, product, thing, service, or process desired, and shall be deemed to be followed by the words "or equal", and Contractor may, unless otherwise stated, offer any material, product, thing, service or process which shall be equal or better in every respect to that so indicated or specified. If the material, product, thing, service, or process offered by Contractor is not, in the opinion of COUNTY and Architect/Engineer, equal or better in every respect to that specified, then Contractor shall furnish the material, product, thing, service, or process specified. The burden of proof as to equality of any material, product, thing, service, or process shall rest with Contractor. Contractor shall only be authorized to substitute any designated material, product, thing, service or process required under this Agreement if such request, together with substantiating data for substitution of an "or equal"

item is timely submitted in accordance with the Calendar of Events set forth under section 19.3 of the "INFORMATION FOR BIDDERS" form and approval thereof is authorized in writing by COUNTY within the time frame set forth under Public Contract Code section 4104.5(a). Notwithstanding, in the event Contractor discovers after the stated substitution request filing deadline that a designated material, product, thing, service or process is no longer available and/or the use of the same is necessary to complete the project, Contractor may within thirty (30) days after award of the contract submit a "late substitution request", together with substantiating data for substitution of an "or equal" item for COUNTY's review and consideration. However, COUNTY shall have the sole discretion in granting such a late substitution request and shall not be required to accept the same even if the material, product, thing, service or process is equal or better in every respect.

It should be emphasized that a Contractor's request to substitute an "equal" material, product, thing or service for one designated in the contract specifications and/or COUNTY's subsequent written approval thereof, shall not in any way authorize an extension of time for performance of this Agreement. Moreover, in event Contractor furnishes a material, product, thing or service that is more expensive than that specified, the difference in cost of such material, product, thing, service or process, so furnished shall be borne solely by Contractor.

Article 32. SHOP DRAWINGS

Contractor shall check and verify all field measurements, and shall submit with such promptness as to cause no delay in Contractor's own work or in that of any other Contractor three (3) copies, checked and approved by Contractor, of all shop or setting drawings, schedules and materials lists required for the work of various trades. Architect/Engineer shall check and approve within ten (10) working days such schedules and drawings only for conformance with design concept of project, and compliance with information given in contract documents. Contractor shall make any corrections required by Architect/Engineer; file with Architect/Engineer three (3) corrected copies, and furnish such other copies as may be needed for construction. Architect/Engineer's approval of such drawings or schedules shall not relieve Contractor from responsibility for deviations from drawings or specifications unless Contractor has in writing called Architect/Engineer's attention to such deviations at time of submission and secured Architect/Engineer's written approval, nor shall it relieve Contractor from responsibility for errors in shop drawings or schedule.

Article 33. SAMPLES

Contractor shall furnish for approval, within ten (10) days following award of contract, all samples as required in specifications together with catalogs and supporting data required by Architect/Engineer. This provision shall not authorize any extension of time for performance of this Agreement. Architect/Engineer will check and approve such samples, within five (5) working days from receipt of same, only for conformance with design concept of work and for compliance with information given in contract documents. Work shall be in accordance with approved samples.

Article 34. COST BREAKDOWN AND PERIODICAL ESTIMATES

Contractor shall furnish on forms provided by COUNTY:

(a) Within ten (10) days of award of contract, a detailed estimate giving complete

breakdown of contract price.

- (b) A periodical itemized estimate of work done for purpose of making partial payments thereon.
- (c) Within ten (10) days of request by COUNTY, a schedule of estimated monthly payments which shall be due Contractor under the contract.

Values employed in making up any of these schedules will be used only for determining basis of partial payments, and will not be considered as fixing a basis for additions to or deductions from contract price.

- (d) **Schedule of Values.** Prior to submitting the first application for payment, Contractor must prepare and submit to the County a schedule of values apportioned to the various divisions and phases of the Work, including mobilization and demobilization. If a Bid Schedule was submitted with Contractor's bid, the amounts in the schedule of values must be consistent with the Bid Schedule. Each line item contained in the schedule of values must be assigned a value such that the total of all items equals the Contract Price. The items must be sufficiently detailed to enable accurate evaluation of the percentage of completion claimed in each application for payment, and the assigned value consistent with any itemized or unit pricing submitted with Contractor's bid.

Article 35. PAYMENTS

- (a) Each month, within fifteen (15) days after receipt of approved periodical estimate for partial payment, there shall be paid to Contractor a sum equal to ninety-five percent (95%) of value of work performed up to last day of previous month, less aggregate of previous payments. Monthly payments shall be made only on basis of monthly estimates which shall be prepared by Contractor on a form approved by COUNTY and filed before the fifth (5th) day of month during which payment is to be made. Work completed as estimated shall be an estimate only, and no inaccuracy or error in said estimate shall operate to release Contractor or any bondsman from damages arising from such work or from enforcing each and every provision of this Agreement, and COUNTY shall have the right subsequently to correct any error made in any estimate for payment. Contractor shall not be entitled to have any payment estimates processed or be entitled to have any payment made for work performed so long as any lawful or proper direction concerning work, or any portion thereof given by COUNTY or Architect, shall remain uncomplished with. The final payment of five percent (5%) of the value of work done under this Agreement, if unencumbered, shall be made thirty-five (35) days after acceptance of work by COUNTY. Acceptance will be made only by action of the Board of Supervisors in session. Acceptance by Contractor of said final payment shall constitute a waiver of all claims against COUNTY arising from this Agreement. At any time after fifty percent (50%) of the work has been completed, if COUNTY, by action of its governing body, finds that satisfactory progress is being made, COUNTY may make any of the remaining payments in full on actual work completed or may withhold any amount up to five percent (5%) thereof as COUNTY may find appropriate based on the Contractor's progress.

- (b) Contractor may elect to substitute or execute an escrow agreement (in the form prescribed by the Public Contracts Code) in place of retained funds held by COUNTY pursuant to Public Contract Code section 22300.
- (c) COUNTY shall pay interest at the legal rate set forth in Code of Civil Procedure 685.010 in the event payment is not made within thirty (30) days of an undisputed properly submitted request.

Article 36. PAYMENT WITHHELD

In addition to amount which COUNTY may retain under article entitled "Payments," COUNTY may withhold a sufficient amount of amounts of any payment or payments otherwise due to Contractor, as in COUNTY's judgment may be necessary to cover:

- (a) Payments which may be past due and payable for just claims against Contractor or any subcontractors for labor or materials furnished in and about the performance of work on the project under this Agreement.
- (b) Defective work not remedied.
- (c) Failure of Contractor to make proper payments to subcontractors or for material or labor.
- (d) Completion of contract, if there exists a reasonable doubt that contract can be completed for balance then unpaid.
- (e) Damage to another Contractor.
- (f) When the above grounds are removed, payment shall be made for amounts withheld because of them.

COUNTY may apply such withheld amount to payment of such claims or obligations at COUNTY's discretion. In so doing, COUNTY shall be deemed the agent of Contractor, and any payment so made by COUNTY shall be considered as a payment made under contract by COUNTY to Contractor, and COUNTY shall not be liable to Contractor for such payments made in good faith. Such payments may be made without prior judicial determination of claim or obligations. COUNTY will render Contractor a proper accounting of such funds disbursed on behalf of Contractor.

Article 37. CHANGES AND EXTRA WORK

All change orders shall be subject to the Public Contract Code, including but not limited to sections 20137 and 20142, *et seq.*

- (a) Change Orders. Contractor shall make no changes to the Work to be performed pursuant to this Agreement, including but not limited to additions, deletions, modifications or substitutions, nor shall Contractor perform any extra work (collectively, "Change Order Work") without the prior written consent of COUNTY. If Contractor encounters conditions it considers different from those described in Exhibit A to this Agreement, Contractor may request a change order in conformance with COUNTY's standard procedure ("Change Order"). If COUNTY approves the request, Contractor will execute a Change Order and

Contractor's execution of the Change Order shall confirm approval thereof. COUNTY may order additional work, and Contractor shall perform such changes in the Work as directed by COUNTY in any Change Order prepared by Contractor. COUNTY's rights to eliminate portions of the Work or to initiate a Change Order shall not be limited in any way. The Change Order shall be in writing and shall include:

- (1) Any and all supporting documents and drawings depicting the source and location of the desired change, and explain in detail the field conditions and reasons for the requested change;
 - (2) Any change or adjustment to the compensation set forth in this Agreement in Article 3 as a result of changes in the Work based on a lump sum or time and material basis, as may be directed by COUNTY; and
 - (3) Any request for adjustments to time for completion of the Project.
- (b) Payment for Change Order Work. Contractor shall not be entitled to receive any compensation for work, labor, materials or changes of any kind, regardless of whether ordered by COUNTY or any of its representatives, unless a Change Order has been submitted in writing and approved prior to the commencement of any Change Order Work as described above. If the changes are required by any inspecting governmental agencies or utility companies, or are otherwise required to comply with any codes, laws, rules or regulations, including those set forth in this Agreement, then Contractor shall not be entitled to any increases in the compensation set forth in this Agreement at Article 3 or other compensation as a result of the changes.
- (c) Disputed Change Order Work. Any dispute concerning the performance of such Change Order Work or the amount of compensation to be paid to Contractor by COUNTY shall not affect Contractor's obligation to perform such Change Order Work. Contractor agrees that it shall timely complete all Change Order Work even if there shall be a dispute between Contractor and COUNTY over the amount or scope of the Change Order Work. Contractor shall have the right to be compensated for any undisputed Change Order Work amounts as determined to be undisputed in COUNTY's sole discretion.
- (d) Authorized Representative. No Change Order shall be valid or binding against COUNTY unless such Change Order has been executed by COUNTY's designated representative, who is the Director of Public Works. COUNTY shall notify Contractor in writing if the designated representative is changed. The authority to execute a Change Order on this project shall not exceed the amount allowed by law pursuant to Government Code sections 20137-20142, *et seq.*
- (e) Limits. When applicable, the authority to execute a Change Order on this Project shall not exceed the amount allowed by law pursuant to Public Contract Code sections 20137-20142 *et seq.* Where Change Orders are in an amount between ten percent (10%) and twenty-five percent (25%) of the amount set forth in this Agreement and based on a need for additional quantities due to an increase in the unit quantities Commented [IJ20]: Moved from Sample Contract to General Conditions. required to complete the project in excess of the COUNTY's Engineer's estimate of unit quantities as set forth in the

Invitation to Bid, CONTRACTOR shall be paid pursuant to Public Contract Code sections 20143 and 20139 and section 4 of the Standard Specifications, State of California, Business, Transportation and Housing Agency, May 2006 Issued by the Department of Transportation ("Caltrans Standard Specifications") referred to in Exhibit "A" and incorporated herein by reference.

Article 38. DEDUCTIONS FOR UNCORRECTED WORK

If COUNTY deems it inexpedient to correct work injured or done not in accordance with contract, an equitable deduction from contract price shall be made therefore.

Article 39. PAYMENTS BY CONTRACTOR

Contractor shall pay:

- (a) For all transportation and utility services not later than the twentieth (20th) day of the calendar month following that in which such services are rendered;
- (b) For all materials, tools and other expendable equipment to the extent of ninety-five percent (95%) of cost thereof, not later than the twentieth (20th) day of the calendar month following that in which such materials, tools and equipment are delivered at site of project and balance of cost thereof not later than the thirtieth (30th) day following completion of that part of the work in or on which such materials, tools and equipment are incorporated or used; and
- (c) To each of Contractor's subcontractors, not later than the fifth (5th) day following each payment to Contractor; the respective amounts allowed Contractor on account of work performed by respective subcontractor to the extent of such subcontractor's interest therein.

Article 40. CONTRACTOR'S SUPERVISION

Unless personally present on premises where work is being done, Contractor shall keep on the work, during its progress, a competent superintendent satisfactory to COUNTY.

Contractor represents and warrants that any superintendent, employee, subcontractor and agent who will be performing any of the duties and obligations of Contractor herein possess all required licenses and authorities, as well as the experience, training, and communication skills to perform such tasks and communicate with the COUNTY and its representatives.

Superintendent shall not be changed except with consent of COUNTY unless superintendent proves to be unsatisfactory to Contractor and ceases to be in his employ. Superintendent shall represent Contractor in Contractor's absence, and all directions given to superintendent shall be as binding as if given to Contractor. Other directions shall be so confirmed in written request in each case.

Contractor shall give efficient supervision to work, using Contractor's best skill and attention. Contractor shall carefully study and compare all drawings, specifications and other instructions, and shall at once report to Architect/Engineer any error, inconsistency or omission which Contractor may discover.

Article 41. INSPECTOR'S FIELD OFFICE

Contractor shall provide for use of COUNTY and its representative during construction working hours a temporary office of not less than seventy-five (75) square feet of floor area to be located as directed by COUNTY and its representative and to be maintained until removal is authorized by COUNTY and its representative. Office shall be of substantial waterproof construction with adequate natural light and ventilation by means of stock design windows. Door shall have a key, type walk, or padlock hasp.

A table satisfactory for study of plans and two chairs shall be provided by Contractor. Contractor shall provide and pay for adequate electric lights, local telephone service, and adequate air conditioning and heating for the field office until authorized removal.

Article 42. DOCUMENTS ON WORK

Contractor shall keep one copy of all contract documents, including addenda and change orders which are a part of contract documents, on job at all times. Said documents shall be kept in good order and available to Architect/Engineer representatives. Contractor shall be acquainted with and comply with all California Administrative Code provisions relating to this project, including, but not limited to, Title 19.

Article 43. UTILITIES AND RELOCATION

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

If contract is for addition to existing facility, Contractor may, with written permission of COUNTY, use COUNTY's existing utilities by making prearranged payments to COUNTY for utilities used by Contractor for construction.

- (b) Contractor shall not be assessed damages for delay in completion of the project when such delay was caused by the failure of the awarding authority of this Agreement or the owner of the utility to provide for removal or relocation of the existing main or trunkline utility facilities; however, when the Contractor is aware that removal or relocation of an existing utility has not been provided for, Contractor shall promptly notify the awarding authority and the utility in writing, so that provision for such removal or relocation may be made to avoid and minimize any delay which might be caused by the failure to remove or relocate the main or trunk line utility facilities, or to provide for its removal or relocation.

In accordance with section 4215 of the Government Code, if the Contractor, while performing the contract, discovers any existing main or trunkline utility facilities not identified by the public agency in the contract plans or specifications, Contractor shall immediately notify the public agency and utility in writing. The public utility, where they are the owner, shall have the sole discretion to perform repairs or relocation work at a reasonable price. The Contractor shall be compensated for the costs of locating and repairing damage not due to the failure of the Contractor to exercise reasonable care, and removing or relocating such utility facilities not indicated in the plans and specification with reasonable accuracy and for equipment on the project necessarily idled during such work. Such compensation shall be

in accordance with the extra work provisions set out at Article 37 hereof.

Article 44. SANITARY FACILITIES

Contractor shall provide a sanitary, temporary, portable toilet facility as directed by the COUNTY and its representative for the use of all workers. The building shall be maintained in a sanitary condition at all times, and shall be left at the site until removal is directed by the COUNTY and its representative.

Article 45. TRENCHES

(a) Trenching Requirements – Four Feet (4') Below the Surface. In the event the Project involves digging trenches or other excavations that extend deeper than four feet (4') below the surface, Contractor shall:

- (1) Promptly, and before the following conditions are disturbed, notify COUNTY, in writing, of any:
 - (A) Material that Contractor believes may be material that is hazardous waste, as defined in Health & Safety Code section 25117, that is required to be removed to a Class I, Class II, or Class III disposal site in accordance with provisions of existing law;
 - (B) Subsurface or latent physical conditions at the site differing from those indicated by information about the site made available to bidders prior to the deadline for submitting bids; and
 - (C) Unknown physical conditions at the site of any unusual nature, different materially from those ordinarily encountered and generally recognized as inherent in work of the character provided for in the Agreement.
- (2) In response to any written notice generated pursuant to paragraph (a) above, COUNTY shall promptly investigate the conditions, and if it finds that the conditions do materially so differ, or do involve hazardous waste, and cause a decrease or increase in Contractor's cost of, or the time required for, performance of any part of the Work, shall issue a change order under the procedures described in paragraph 37 of the General Conditions.
- (3) In the event that a dispute arises between COUNTY and Contractor whether the conditions materially differ, or involve hazardous waste, or cause a decrease or increase in Contractor's cost of, or time required for, performance of any part of the Work, Contractor shall not be excused from any scheduled completion date provided for by this Agreement, but shall proceed with all Work to be performed under this Agreement. Contractor shall retain any and all rights provided either by contract or by law which pertain to the resolution of disputes and protests between the Parties.

(b) Trenching Requirements – Project in Excess of Twenty-Five Thousand Dollars (\$25,000) and Five Feet (5') Below the Surface. For projects involving both an estimated expenditure in excess of twenty-five thousand dollars (\$25,000) and the excavation of any trench five feet (5') or more in depth, Contractor shall submit a detailed plan

showing the design of shoring, bracing, sloping or other provisions to be made for worker protection from the hazard of caving ground during the excavation of such trench. The plan must be accepted by COUNTY (or by a registered civil or structural engineer, employed by COUNTY, to whom authority to accept has been delegated) in advance of excavation. If such plan varies from the shoring system standards, the plan shall be prepared by a registered civil or structural engineer. Nothing in this paragraph shall allow Contractor to use a shoring, sloping, or protective system less effective than that required by California Construction Safety Orders. Further, nothing in this paragraph shall be construed to impose tort liability on COUNTY or any of its employees.

- (c) Utilities Relocation. In the event that Contractor, in the scope of work, encounters utilities not shown on COUNTY'S plans, COUNTY shall compensate Contractor for utilities relocation work. COUNTY shall also waive liquidated damages for any delay that occurs as a direct result of said encounter and/or relocation of utilities.

Article 46. PROTECTION OF WORK AND PROPERTY

Contractor shall be responsible for all damages to persons or property that occur as a result of Contractor's fault or negligence in connection with the prosecution of this Agreement, and shall be responsible for the proper care and protection of all materials delivered and work performed until completion and final acceptance by COUNTY. All work shall be solely at Contractor's risk. Contractor shall adequately protect adjacent property from settlement or loss of lateral support as provided by law and contract documents. Contractor shall take all necessary precautions for safety of employees on the work, and shall comply with all applicable safety laws and building codes to prevent accidents or injury to persons on; about or adjacent to premises where work is being performed. Contractor shall erect and properly maintain, at all times, as required by conditions and progress of work, all necessary safeguards, signs, barriers, lights and watchmen for protection of workers and the public, and shall post danger signs warning against hazards created by such features in the course of construction. Contractor shall designate a responsible member of its organization on the work, whose duty shall be prevention of accidents. Name and position of person so designated shall be reported to COUNTY by Contractor.

In an emergency affecting safety of life or of work or of adjoining property, Contractor, without special instruction or authorization from COUNTY and its representative, is hereby permitted to act, at Contractor's discretion, to prevent such threatened loss or injury, and Contractor shall so act, without appeal, if so authorized or instructed by COUNTY and its representative. Any compensation claimed by Contractor on account of emergency work shall be determined by agreement.

Contractor shall provide such heat, covering, and enclosures as are necessary to protect all work, materials, equipment, appliances, and tools against damage by weather conditions.

Contractor shall take adequate precautions to protect existing sidewalks, curbs, pavements, utilities, adjoining property and structures, and to avoid damage thereto, and repair any damage thereto caused by construction operations.

Contractor shall:

- (1) Enclose working area with a substantial dust reducing barrier and public safety barricade, and arrange work to cause minimum amount of inconvenience to public and COUNTY Staff in their regular business activities.
- (2) Provide substantial barricades around any shrubs or trees indicated to be preserved.
- (3) Deliver materials to building area over route designated by Architect.
- (4) When directed by COUNTY, take preventative measures to eliminate objectionable dust.
- (5) Confine Contractor's apparatus, the storage of materials, and the operations of workers to limits indicated by law, ordinances, permits or directions of Architect, and shall not unreasonably encumber premises with materials, and enforce all instructions of COUNTY and Architect regarding signs, advertising, fires, danger signals, barricades and smoking, and require that all persons employed on work comply with all regulations while on construction site. Hazardous materials of any kind are not allowed on site, without prior written approval from COUNTY.
- (6) Take care to prevent disturbing or covering any survey markers, monuments, or other devices marking property boundaries or corners. If such markers are disturbed by accident, they shall be replaced by an approved civil engineer at no cost to COUNTY.

Article 47. LAY OUT AND FIELD ENGINEERING

All field engineering required for laying out Contractor's work and establishing grades for earthwork operations shall be furnished by Contractor at Contractor's expenses. Such work shall be done by a qualified civil engineer approved by Architect/Engineer. Any required "As-Built" drawings of site development shall be prepared by the approved civil engineer.

Article 48. CUTTING AND PATCHING

Contractor shall do all cutting, fitting, or patching of work as required to make its several parts come together properly and fit it to receive or received by work of other Contractors showing upon, or reasonably implied by, the drawings and specifications for the completed structure, and Contractor shall make good after them as Architect/Engineer may direct. Contractor shall not endanger any work by cutting, excavating or otherwise altering work, and shall not cut or alter work of any other Contractor save with consent of Architect/Engineer.

Article 49. CLEANING UP

Contractor at all times shall keep premises free from debris such as waste, rubbish, and excess materials and equipment caused by work; debris shall be removed from premises. Contractor shall not leave debris under, in or about the premises. Upon completion of work, Contractor shall clean any areas where debris has collected. Contractor shall remove temporary fencing, barricades, and any temporary facilities from site.

Article 50. CORRECTION OF WORK

Contractor shall promptly remove from premises all work determined by COUNTY as failing to conform to contract, whether incorporated or not. Contractor shall promptly replace and re-execute his own work to comply with contract documents without additional expense to COUNTY, and shall bear the expense of making good all work of other Contractors destroyed or damaged by such removal or replacement.

If Contractor does not remove such work and materials within a reasonable time, fixed by written notice, COUNTY may remove the work and materials and may store the material at Contractor's expense. If Contractor does not pay expenses of such removal within ten (10) days' time thereafter, COUNTY may liquidate such work and materials upon private sale, and shall account for net proceeds thereof, after deducting all costs and expenses that should have been borne by Contractor.

Article 51. ACCESS TO WORK

COUNTY and its representative shall at all times have access to work wherever it is in preparation or progress. Contractor shall provide safe and proper facilities for such access so that COUNTY's representative may perform their functions under contract.

Article 52. OCCUPANCY

COUNTY reserves the right to occupy buildings at any time before completion, and such occupancy shall not constitute final acceptance of any part of work covered by this Agreement.

Article 53. COUNTY'S INSPECTOR

COUNTY may assign a representative to oversee work. Such representative shall have access to Inspector's Field Office and shall be fully informed of all progress and manner of work and character of materials. Representative shall have authority to stop work whenever provisions of the contract documents are not being complied with and Contractor shall instruct Contractor's employees accordingly.

All work shall be under observation of said COUNTY and its representative. Such personnel shall have free access to any or all parts of work at any time. Contractor shall furnish COUNTY and its representative reasonable facilities "Inspector's Field Office" for obtaining such information as may be necessary to keep COUNTY and its representative fully informed respecting progress and manner of work and character of materials. Inspection of work shall not relieve Contractor from any obligation to fulfill Contractor's contract. COUNTY and its representative shall have authority to stop work whenever provisions of contract documents are not being complied with, and Contractor shall instruct Contractor's employees accordingly.

Article 54. TESTS AND INSPECTIONS

If contract, COUNTY's instructions, laws, ordinances or any public authority require any work to be specially tested or approved, Contractor shall give notice in accordance with such authority of its readiness for observation or inspection at least two (2) working days prior to being tested or covered up. If inspection is by authority other than COUNTY, Contractor shall inform COUNTY of the date fixed for such inspection. Required certificates of inspection shall be secured by Contractor. Observations by COUNTY, its representative and other public authority shall be promptly made, and where practicable, at

source of supply. If any work should be covered up without approval or consent of COUNTY, its representative and public authority, it must, if required by COUNTY, its representative and public authority, be uncovered for examination and satisfactorily reconstruction at Contractor's expenses in compliance with contract.

Costs of tests of any material found to be not in compliance with contract shall be paid for by Contractor.

Where such inspection and testing are to be conducted by an independent laboratory or agency, such materials or samples of materials to be tested shall be selected by such laboratory or agency or COUNTY's representative, and not by Contractor.

Contractor shall notify COUNTY a sufficient time in advance of manufacture of materials to be supplied by Contractor under contract which must by terms of contract be tested, in order that COUNTY may arrange for testing of same at source of supply. Any materials shipped by Contractor from source of supply prior to having satisfactorily passed such testing and inspection, or prior to receipt of notice from said representative that such testing and inspection will not be required, shall not be incorporated in work without prior approval of COUNTY and subsequent testing and inspection.

Re-examination of questioned work may be ordered by COUNTY, and, if so ordered, work must be uncovered by Contractor. If such work be found in accordance with contract documents, COUNTY shall pay costs of re-examination and replacement. If such work be found not in accordance with contract documents, Contractor shall pay such costs.

Article 55. SOILS INVESTIGATION REPORT

When a soils investigation report obtained from test holes in site is available, such report shall not be part of this Agreement. Any information obtained from such report or any information given on drawings as to subsurface soil condition or to elevations of existing grades or elevations of underlying rock is approximate only and is not guaranteed, and does not form a part of the contract. Contractor is required to make a visual examination of site, and must make whatever tests Contractor deems appropriate to determine underground condition of soil. Contractor agrees that it will make no claim against COUNTY for damages in the event that, during progress of the work, Contractor encounters subsurface or latent conditions at site materially differing from those shown on drawings or indicated in specifications, or for unknown conditions of an unusual nature which differ materially from those ordinarily encountered and generally recognized as inherent in the work of the character provided for in plans and specifications.

Article 56. ARCHITECT/ENGINEER'S AND CONSTRUCTION MANAGER'S STATUS

The construction manager shall be COUNTY's representative during the construction period, and shall observe the progress and quality of the work on behalf of COUNTY. The construction manager shall have the authority to act on behalf of COUNTY only to the extent expressly provided in the contract documents. The construction manager shall have authority to stop work whenever such stoppage may be necessary in construction manager's reasonable opinion to insure the proper execution of the contracts.

The Architect/Engineer shall be, in the first instance, the judge of compliance with the design intent of the contract documents.

Article 57. INDEMNITIES

- (a) Contractor agrees to the fullest extent permitted by law to indemnify, defend, protect, and hold COUNTY and its representatives, officers, directors, designees, employees, agents, successors, and assigns harmless from any and all claims, expenses, liabilities, causes of action, demands, losses, penalties, attorney's fees and costs, in law or equity, of every kind and nature whatsoever arising out of or in connection with Contractor's negligent acts and omissions or willful misconduct under this Agreement ("Claims"), whether or not arising from the passive negligence of COUNTY, but does not include Claims that are finally determined to be the result of the sole negligence or willful misconduct of COUNTY.
- (b) Contractor agrees to defend with counsel acceptable to COUNTY, indemnify and hold COUNTY harmless from all Claims, including but not limited to:

- (1) Personal injury, including but not limited to bodily injury, emotional injury, sickness or disease or death to persons including but not limited to COUNTY's representatives, officers, directors, designees, employees, agents, successors and assigns, subcontractors and other third parties and/or damage to property of anyone (including loss of use thereof) arising out of Contractor's negligent performance of, or willful misconduct surrounding, any of the terms contained in this Agreement, or anyone directly or indirectly employed by Contractor or anyone for whose acts Contractor may be liable;

Liability arising from injuries to Contractor and/or any of Contractor's employees or agents arising out of Contractor's negligent performance of, or willful misconduct surrounding, any of the terms contained in this Agreement, or anyone directly or indirectly employed by Contractor or anyone for whose acts Contractor may be liable;

- (2) Penalties imposed upon account of the violation of any law, order, citation, rule, regulation, standard, ordinance or statute caused by the negligent action or inaction, or willful misconduct of Contractor or anyone directly or indirectly employed by Contractor or anyone for whose acts Contractor may be liable including but not limited to:
 - (A) Any loss of funding, penalties, fees, or other costs resulting from Contractor's failure to adhere to Disadvantaged Business Enterprise requirements and/or goals, as determined by COUNTY or such other lawful entity in charge of monitoring Disadvantaged Business Enterprise compliance;
 - (B) Any loss of funding, penalties, fees, or other costs resulting from Contractor's failure to adhere to prevailing wage requirements, as determined by COUNTY, the California Department of Industrial Relations, or such other lawful entity in charge of monitoring prevailing wage compliance;

- (3) Infringement of any patent rights which may be brought against COUNTY arising

out of Contractor's work;

- (4) Any violation or infraction by Contractor of any law, order, citation, rule, regulation, standard, ordinance or statute in any way relating to the occupational health or safety of employees; and
 - (5) Any breach by Contractor of the terms, requirements or covenants of this Agreement.
- (c) The indemnification provisions of Paragraphs 57(b)(1) through 57(b)(6) above shall extend to Claims occurring after this Agreement is terminated, as well as while it is in force.

Article 58. PROVISIONS REQUIRED BY LAW DEEMED INSERTED

Each and every provision of law and clause required by law to be inserted in the contract shall be deemed to be inserted herein, and the contract shall be read and enforced as though it were included herein, and if, through mistake or otherwise, any such provision is not inserted, or is not correctly inserted, then upon application of either party, the contract shall forthwith be physically amended to make such insertion or correction.

Article 59. LABOR - EMPLOYMENT SAFETY

Contractor shall maintain emergency first aid treatment for Contractor's employees which complies with the Federal Occupational Safety and Health Act of 1970 (29 U.S.C.A. 651, *et seq.*).

Article 60. NOTICE OF TAXABLE POSSESSORY INTEREST

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

Article 61. ASSIGNMENT OF UNFAIR BUSINESS PRACTICES CLAIMS (CLAYTON ACT AND CARTWRIGHT ACT)

Bidder shall comply with the following:

"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 or the subcontract. This assignment shall be made and become effective at the time the awarding body tenders final payment to the contractor, without further acknowledgment by the parties." Cal Pub Contract Code § 7103.5(b)

Article 62. SUBSTITUTION OF SECURITY

Upon Contractor's request, COUNTY will make payment of funds withheld from progress

payments to ensure performance under the contract pursuant to the requirements of California Public Contracts Code, section 22300, if the Contractor deposits in escrow with COUNTY, or with a bank acceptable to COUNTY, securities eligible for investment under Government Code section 16430 or bank savings and loan certificates of deposit, subject to the following conditions:

- (a) Contractor shall bear the expense of COUNTY and the escrow agent, and COUNTY and the bank, in connection with the escrow deposit made.
- (b) Securities or certificates of deposit to be placed in escrow shall be of a value at least equivalent to the amount of retention to be paid to the Contractor pursuant to this Article.
- (c) Contractor shall enter into an escrow agreement satisfactory to COUNTY, which agreement shall include provisions governing, inter alias:
 - (1) the amount of securities to be deposited,
 - (2) the providing of powers of attorney or other documents necessary for the transfer of the securities to be deposited,
 - (3) conversion of cash to provide funds to meet defaults by Contractor including, but not limited to, termination of Contractor's control over the work, stop notice filed pursuant to law or other amounts to be kept or retained under the provisions of the contract,
 - (4) decrease in value of securities on deposit,
 - (5) the termination of the escrow upon completion of the contract.
- (d) Contractor shall obtain the written consent of the surety to such agreement.

Article 63. NON-DISCRIMINATION AND DISADVANTAGED BUSINESS ENTERPRISE PROGRAM

- (a) During the performance of this Agreement, Contractor and its subcontractors shall not unlawfully discriminate, harass or allow harassment against any employee or applicant for employment because of sex, race, color, ancestry, religious creed, national origin, physical disability (including HIV and AIDS), mental disability, medical condition, age (over forty (40)), marital status or denial of family care leave. Contractor and its subcontractors shall insure that the evaluation and treatment of their employees and applicants for employment are free from such discrimination and harassment. Contractor and its subcontractors shall comply with the provisions of the Fair Employment and Housing Act (Gov. Code section 12990 (a-f) *et seq.*) and the applicable regulations promulgated thereunder (California Code of Regulations, Title 2, Section 7285 *et seq.*). The applicable regulations of the Fair Employment and Housing Commission implementing Government Code section 12990 (a-f), set forth in Chapter 5 of Division 4 of Title 2 of the California Code of Regulations, are incorporated into this Agreement by reference and made a part hereof as if set forth in

full. The applicable regulations of Section 504 of the Rehabilitation Act of 1973 (29 U.S.C. section 794 (a)) are incorporated into this Agreement by reference and made a part hereof as if set forth in full. Contractor and its subcontractors shall give written notice of their obligations under this clause to labor organizations with which they have a collective bargaining or other agreement. Contractor shall include the nondiscrimination and compliance provisions of this clause in all subcontracts to perform Work under this Agreement.

- (b) Contractor and its subcontractors shall reference and abide by the guidance and Disadvantaged Business Enterprise specifications contained in the California Department of Transportation's Local Programs Procedures 06-01 (which has been approved and released at <http://www.dot.ca.gov/> when working pursuant to this Agreement.

Article 64. SPECIAL CONDITIONS

- (a) The work shall be commenced on the date stated in COUNTY's *Notice to the Contractor to Proceed* which date will not be greater than ten (10) consecutive calendar days from and after the date of execution of the contract, and shall be completed within **Eighty-seven (87) working days** from and after the date stated in such notice. (See Article 2 of *Agreement* and Article 6 of *General Conditions*.)
- (b) The number of copies of drawings and specifications to be furnished to Contractor free of charge, per Article 3 of the *General Conditions* is three (3).
- (c) The number of executed copies of the *Agreement*, the *Performance Bond*, and the *Payment Bond* for the *Public Works* required is six (6).

Article 65. CONTRACT CONSTRUCTION

This Agreement has been reviewed by legal counsel for both COUNTY and Contractor, and no presumption or rule that ambiguities shall be construed against the drafting party shall apply to the interpretation or enforcement of this Agreement and/or any and all amendments thereto.

Article 66. COGNIZANCE OF VIOLATIONS BY COUNTY

- (a) Contractor understands and agrees that COUNTY shall take cognizance of violations of Chapter 1 of Part 7 of Division 2 of the California Labor Code committed in the course of the execution of this Agreement, and shall promptly report any suspected violations to the Labor Commissioner.
- (b) If COUNTY determines as a result of its own investigation that there has been a violation of Chapter 1 of Part 7 of Division 2 of the California Labor Code and withholds payment to Contractor, the procedures in California Labor Code section 1771.6 shall be followed.
- (c) COUNTY may bring an action in a court of competent jurisdiction to recover from Contractor the difference between the wages actually paid to an employee and the wages that were required to be paid to an employee pursuant to Chapter 1 of Part 7 of Division 2 of the California Labor Code, any penalties required to be paid pursuant to Chapter 1 of Part 7 of Division 2 of the California Labor Code, and costs and

attorney's fees related to the action, if either of the following is true:

- (1) COUNTY previously affirmatively represented to Contractor in writing, in the call for bids, or otherwise, that the Work was not a "public work," as defined in Chapter 1 of Part 7 of Division 2 of the California Labor Code; or
- (2) COUNTY received actual written notice from the Department of Industrial Relations that the Work is a "public work," as defined in Chapter 1 of Part 7 of Division 2 of the California Labor Code, and failed to disclose that information to Contractor before the bid opening or award.

Article 67. LABOR STANDARDS COMPLIANCE REQUIREMENTS

- (a) It is Contractor's responsibility to provide all labor compliance documentation from its subcontractors completely and accurately in a timely manner. Contractor is responsible to review promptly and then forward on all required documentation to COUNTY per the time schedules in the Labor Compliance Handout. Included with the Labor Compliance Handout, COUNTY will provide training, documentation requirements, forms, etc., at the preconstruction conference or at a time designated by COUNTY.

For those Public Works Projects that are subject to the State Department of Industrial Relations (DIR), Division of Labor Standards Enforcement (DLSE) compliance monitoring and enforcement it is the Contractor's responsibility to submit certified payroll records directly to the state Compliance Monitoring Unit (CMU). More information concerning state compliance can be found at <https://www.dir.ca.gov/Public-Works/publicworks.html>. The responsibility for compliance with these provisions is fixed with the Contractor.

- (b) In the event, during the review process of labor compliance documentation from COUNTY's labor compliance monitor, inaccurate, missing or incomplete information was provided, the labor compliance monitor will request from Contractor the items, revisions and documentation needed. The cost of this additional labor compliance enforcement shall be borne by Contractor.

Article 68. CONFLICT OF INTEREST AND GRATUITIES

- (a) Contractor agrees that it presently has no interest and shall not acquire any interest, direct or indirect, which could conflict in any manner or degree with the performance of services required to be performed under this Agreement. Contractor further agrees that in the performance of this Agreement, no person having any such interest shall be employed.
- (b) Contractor agrees to designate such person or persons who have responsibility for carrying out the services under this Agreement and that such person or persons as may be designated shall take any and all actions necessary to comply with COUNTY's Conflict of Interest Code adopted pursuant to California Government Code section 81000 to the extent required thereunder.
- (c) If it is found, after notice and hearing by COUNTY, that gratuities (in the form of entertainment, gifts, or otherwise) were offered or given by Contractor, or any agent or

representative of Contractor, to any officer, employee or agent of COUNTY with a view toward securing a contract or securing favorable treatment with respect to the awarding or amending or the making of any determinations with respect to the performance of this Agreement, COUNTY may, by written notice to Contractor, terminate the right of Contractor to proceed under this Agreement and/or may pursue such other rights and remedies provided by law or under this Agreement.

- (d) In the event this Agreement is terminated as provided herein, COUNTY shall be entitled (1) to pursue the same remedies against Contractor as it could pursue in the event of a breach of the Agreement by Contractor, and (2) as a penalty in addition to any other damages to which it may be entitled by law, to exemplary damages in an amount (as determined by COUNTY) which shall be not less than three (3) nor more than ten (10) times the costs incurred by Contractor in providing any such gratuities to any such officer, employee or agent.

Article 69. FEDERAL CONTRACT REQUIREMENTS

(a) Signage Requirements.

- (1) Project Identity Signage. Contractor is required to provide and install the required project identity signage as detailed in the Plans and Specifications, in the size and at the location indicated by the Director of Public Works or his/her designee, and to maintain the signage in good condition for the duration of the Project. The signage may not be removed until the Notice of Completion is recorded or by written direction of the Director of Public Works or his/her designee.
 - (2) Required Employee Signage and Posters. Contractor is required to provide and install the Federal and State required employee posters and the required material pertaining to the required labor standards provisions are posted (including, but not limited to, WH-1321, OSHA 3165 and OFCCP-English, EFCCP-Spanish) at the worksite in a prominent and accessible place.
 - (3) Section 3 Compliant Signage. If required by COUNTY, Contractor is directed to provide and install the “Offer for Employment” signage as detailed in the Plans and Specifications in the size and at the location indicated by the Director of Public Works or his/her designee and to maintain the signage in good condition for the duration of the Project. The signage may not be removed until the Notice of Completion is recorded or by written direction of the Director of Public Works or his/her designee.
- (b) Housing And Urban Development Act Compliance. When applicable, Contractor agrees to comply with Section 3 of the Housing and Urban Development Act of 1968 (42 U.S.C. 3601 *et seq.*) which provides that to the greatest extent feasible, Contractor shall provide job training, employment and contracting opportunities for low- or very-low income residents in connection with the Project. The responsibility for compliance with these provisions is fixed with Contractor.
- (c) Copeland “Anti-Kickback” Act Compliance. When applicable, Contractor agrees to comply with the Copeland Act (18 USC §874 and 40 USC §276c; 29 CFR Part 3)

which precludes Contractor and its subcontractors from in any way inducing an employee to give up any part of the compensation to which he or she is entitled under his or her contract of employment. Contractor and its subcontractors shall submit a weekly statement of the wages paid to each employee performing on covered work during the preceding payroll period. Contractor understands and agrees that should Contractor its subcontractors induce an employee working on a covered contract to give up any part of the compensation to which he or she is entitled, the inducing party may be subject to a five thousand dollar (\$5,000) fine, or imprisonment for up to five (5) years, or both. Contractor also understands and agrees that willful falsification of the statement of compliance may subject the employer to civil or criminal prosecution and may be cause for contract termination or debarment. The responsibility for compliance with these provisions is fixed with Contractor.

- (d) Fair Labor Standards Act Compliance. When applicable, Contractor agrees to comply with the Fair Labor Standards Act of 1938 as amended (29 U.S.C. 201 *et seq.*) which establishes minimum wage, overtime pay, recordkeeping, and youth employment standards affecting full-time and part-time workers on the Project. The responsibility for compliance with these provisions is fixed with Contractor.
- (e) Certification Regarding Debarment, Suspension and Other Responsibility Matters. When applicable, Contractor agrees to execute a certification regarding debarment, suspension and other responsibility matters. The responsibility for compliance with this provision is fixed with Contractor.
- (f) Federal Equal Employment Opportunity Construction Contract Specifications. When applicable, Contractor agrees to incorporate the notice set forth in paragraph (d) of 41 C.F.R. 60-4.2 relating to the "Equal Opportunity Clause" and the "Standard Federal Equal Employment Specifications." The responsibility for compliance with this provision is fixed with Contractor.
- (g) Clean Air Act and the Federal Water Pollution Control Act. When applicable, Contractor agrees to comply with all applicable standards, orders or regulations issued pursuant to the Clean Air Act (42 U.S.C. 7401 *et seq.*), the Federal Water Pollution Control Act as amended (33 U.S.C. 1251 *et seq.*), Presidential Executive Order 11738 and Environmental Protection Agency regulations set forth at 40 C.F.R. Part 15. Contractor understands and agrees that violations shall be reported to the Federal awarding agency and the Regional Office of the Environmental Protection Agency. The responsibility for compliance with these provisions is fixed with Contractor.
- (h) Prohibition on the Use of Federal Funds for Lobbying. When applicable, Contractor shall file the required certification. Each tier certifies to the tier above that it will not and has not used Federal appropriated funds to pay any person or organization for influencing or attempting to influence an officer or employee of any agency, a member of Congress, officer or employee of Congress, or an employee of a member of Congress in connection with obtaining any Federal contract, grant or any other award covered by 31 U.S.C. 1352. Each tier shall also disclose any lobbying with non-Federal funds that takes place in connection with obtaining any Federal award. Such disclosures are forwarded from tier to tier up to the recipient. The responsibility for compliance with this provision is fixed with Contractor.

- (i) Federal Employment Eligibility Verification. Contractor shall verify name, date of birth and social security number, along with immigration information for non-citizens in order to verify the identity and employment eligibility of both citizen and non-citizen new hires. The responsibility for compliance with this provision is fixed with Contractor.
- (j) The Civil Rights, HCD and Age Discrimination Act Assurances. During the performance of this Agreement, Contractor assures that no otherwise qualified person shall be excluded from participation or employment, denied program benefits or be subjected to discrimination based on race, color, national origin, gender, age or handicap, under any program or activity funded by this Agreement, as required by Title VI of the Civil Rights Act of 1964, Title I of the Housing and Community Development Act of 1974, as amended, and the Age Discrimination Act of 1975, and all implementing regulations. The responsibility for compliance with these provisions is fixed with Contractor.
- (k) Standard Equal Opportunity Clause.

- (1) Contractor hereby agrees that it will incorporate or cause to be incorporated into any contract for construction work, or modification thereof, as defined in the regulations of the Secretary of Labor at 41 CFR Chapter 60, which is paid for in whole or in part with funds obtained from the Federal Government or borrowed on the credit of the Federal Government pursuant to a grant, contract, loan insurance, or guarantee, or undertaken pursuant to any Federal program involving such grant, contract, loan, insurance, or guarantee, the following equal opportunity clause.

“During the performance of this Agreement, the Contractor agrees as follows:

- (A) The Contractor will not discriminate against any employee or applicant for employment because of race, color, religion, sex, national origin or disabilities. The Contractor will take affirmative action to ensure that applicants are employed, and that employees are treated during employment without regard to their race, color, religion, sex, or national origin. Such action shall include, but not be limited to, the following: employment, upgrading, demotion or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship. The Contractor agrees to post in conspicuous places, available to employees and applicants for employment, notices to be provided setting forth the provisions of this nondiscrimination clause.
 - (B) The Contractor will, in all solicitations or advertisements for employees placed by or on behalf of the Contractor, state that all qualified applicants will receive consideration for employment without regard to race, color, religion, sex, national origin or disabilities.
 - (C) The Contractor will send to each labor union or representative of workers with which the Contractor has a collective bargaining agreement or other

contract or understanding, a notice to be provided advising the said labor union or workers' representatives of the Contractor's commitments under this section, and shall post copies of the notice in conspicuous places available to employees and applicants for employment.

- (D) The Contractor will comply with all provisions of Executive Order 11246 of September 24, 1965, and of the rules, regulations, and relevant orders of the Secretary of Labor.
- (E) The Contractor will furnish all information and reports required by Executive Order 11246 of September 24, 1965, and by rules, regulations, and orders of the Secretary of Labor, or pursuant thereto, and will permit access to its books, records, and accounts by the administering agency and the Secretary of Labor for purposes of investigation to ascertain compliance with such rules, regulations, and orders.
- (F) In the event of the Contractor's noncompliance with the discrimination clauses of this Agreement or with any of the said rules, regulations, or orders, this Agreement may be canceled, terminated, or suspended in whole or in part and the Contractor may be declared ineligible for further government contracts or federally assisted construction contracts in accordance with procedures authorized in Executive Order 11246 of September 24, 1965, and such other sanctions may be imposed and remedies invoked as provided in Executive Order 11246 of September 24, 1965, or by rules, regulations, or orders of the Secretary of Labor, or as otherwise provided by law.
- (G) The Contractor will include the portion of the sentence immediately preceding paragraph "1" and the provisions of paragraphs "1" through "7" in every contract or purchase order unless exempted by rules, regulations, or orders of the Secretary of Labor issued pursuant to Section 504 of Executive Order 11246 of September 24, 1965, so that such provisions will be binding upon each contractor or vendor. The Contractor will take such action with respect to any contract or purchase order as the administering agency may direct as a means of enforcing such provisions, including sanctions for noncompliance; provided, however, that in the event a Contractor becomes involved in, or is threatened with, litigation with a contractor or vendor as a result of such direction by the administering agency, the Contractor may request the United States to enter into such litigation to protect the interests of the United States."
 - (1) Contractor further agrees that it will be bound by the above equal opportunity clause with respect to its own employment practices when it participates in federally-assisted construction work; provided that if Contractor so participating is a State or local government, the above equal opportunity clause is not applicable to any agency, instrumentality, or subdivision of such government which does not participate in work on or under the Agreement.

- (2) Contractor agrees that it will assist and cooperate actively with the administering agency and the Secretary of Labor in obtaining the compliance of Contractors and subcontractors with the equal opportunity clause and the rules, regulations, and relevant orders of the Secretary of Labor, that it will furnish the Department and HUD and the Secretary of Labor such information as they may require for the supervision of such compliance, and that it will otherwise assist the administering agency in the discharge of the agency's primary responsibility for securing compliance.
- (3) Contractor further agrees that it will refrain from entering into any contract or contract modification subject to Executive Order 11246 of September 24, 1965, with a contractor debarred from, or who has not demonstrated eligibility for, government contracts and federally-assisted construction contracts, pursuant to the Executive Order and will carry out such sanctions and penalties for violation of the equal opportunity clause as may be imposed upon contractors and subcontractors by the administering agency or the Secretary of Labor pursuant to Part II, Subpart D of the Executive Order. In addition, Contractor agrees that if it fails or refuses to comply with these undertakings, COUNTY may take any or all of the following actions: Cancel, terminate, or suspend in whole or in part this funding commitment (contract, loan, grant, insurance, guarantee); refrain from extending any further assistance to the applicant under the program with respect to which the failure or refund occurred until satisfactory assurance of future compliance has been received from such Contractor; and refer the case to the Department of Justice for appropriate legal proceedings.

Article 70. INELIGIBILITY

If the Bidder has been deemed ineligible to perform work on public works projects pursuant to Labor Code Sections 1777.1 or 1777.7, then it shall be prohibited from bidding on, being awarded a contract for, or performing work as a subcontractor on this project, or any other public works project within the state of California.

Article 71. RESOLUTION OF CLAIMS

- (a) Compliance with all change order procedures is a prerequisite to filing a Public Contract Code Claim pursuant to this Section. Claims must be submitted no later than (a) 30 days after the dispute resolution process set forth in Section 5-1.43 is complete or (b) 30 days after the occurrence of the event giving rise to the claim.
- (b) In accordance with the procedures set forth in Public Contract Code Sections 9204 and 20104-20104.6, a Contractor may submit a claim by registered or certified mail with return receipt requested for one or more of the following: (a) a time extension, including, without limitation, for relief from damages or penalties for delay assessed by the County; (b) payment by the County of money or damages arising from work done by, or on behalf of, the Contractor pursuant to this Agreement and payment for which is not otherwise expressly provided or to which the Contractor is not otherwise entitled; or (c) payment of an amount that is disputed by the County.

- (c) The Contractor shall furnish reasonable documentation to support the claim, including, but not limited to: 1) a clear concise recital of the basis upon which the claim is asserted, including a designation of the provisions of the Contract upon which the claim is based. 2) a statement as to the amount of time and/or compensation sought pursuant to the claim; 3) whether the Contractor's claim arises from an ongoing occurrence, and if so a description of the specific work activities affected by the claim, 4) a time impact analysis in the event that Contractor request a time extension, 5) full and complete cost records supporting the amount of any claim for additional compensation, and 6) a notarized certification by the Contractor as follows: "Under the penalty of law for perjury or falsification and with specific reference to the California False Claims Act. Government Code Section 12650 et seq. The undersigned hereby certifies that the information contained herein is a true, accurate and complete statement of all features relating to the claim asserted." Failure by the Contractor to provide sufficient documentation will result in denial of the claim. The County reserves the right to request additional documentation, or clarification of the documentation provided.
- (d) Upon receipt of a claim, the County will conduct a reasonable review and provide a written statement to the Contractor identifying what portion of the claim is disputed and what portion is undisputed within 45 days of receipt of the claim. The County and Contractor may, by mutual agreement, extend the 45 day time period. For any undisputed portion of a claim, the County must make payment within 60 days of its issuance of the written statement.
- (e) If the Contractor disputes the County's written statement, or if the County fails to respond, the Contractor may demand an informal conference to meet and confer for the settlement of the issues in dispute. The County will then schedule the meet and confer conference within 30 days of the demand. Within 10 business days following the meet and confer conference. The County will provide a written statement identifying the portion of the claim that remain in dispute. Any payment due on an undisputed portion of the claim will be made within 60 days of the meet and confer conference.
- (f) After the meet and confer conference, any disputed portion of the claim shall be submitted to non-binding mediation. Alternatively, upon receipt of a claim, the parties may mutually agree to waive in writing, mediation and proceed directly to the commencement of a civil action or binding arbitration as applicable, if mediation is unsuccessful, the parts of the claim that remain in dispute shall be subject to applicable procedures set forth below.
- (g) Failure of a public entity to respond to a claim within the time periods described above shall result in the claim being deemed rejected in its entirety. Additionally amounts not paid in a timely manner shall bear interest at 7 percent per year.
- (h) In the event that the mediation is unsuccessful, Contractor must file a government claim pursuant to Government Code Sections 910 et seq. in order to initiate a civil action.

- (i) In any civil action filed to resolve claims, the court shall submit the matter to nonbinding mediation within 60 days following the filing or responsive pleading provided that the parties have not already participated in mediation of the claim as outlined above. If the matter remains in dispute after nonbinding mediation, the court shall submit the matter to judicial arbitration pursuant to the Code of Civil Procedure Section 1141.10 et seq. If the matter remains in dispute after judicial arbitration, the County or the Contractor may request a trial de novo.

Article 72. MISCELLANEOUS

- (a) Entire Agreement. This Agreement contains the entire agreement between COUNTY and Contractor relating to the transactions contemplated hereby and supersedes all prior or contemporaneous agreements, understandings, provisions, negotiations, representations, 20104 or statements, either written or verbal. No modification, amendment, or waiver of any provision of this Agreement will be effective unless in writing and signed by the party against whom the modification, amendment or waiver is to be asserted.
- (b) Modification. No modification, waiver, amendment, discharge, or change of this Agreement shall be valid unless the same is in writing and signed by the Party against whom the enforcement of such modification, waiver, amendment, discharge, or change is or may be sought.
- (c) Captions. Captions in this Agreement are inserted for convenience of reference only and do not define, describe, or limit the scope or the intent of this Agreement or any of the terms thereof.
- (d) Partial Invalidity. If any provision in this Agreement is held by a court of competent jurisdiction to be invalid, void, or unenforceable, the remaining provisions will nevertheless continue in full force without being impaired or invalidated in any way.
- (e) Gender and Interpretation of Terms and Provisions. As used in this Agreement and whenever required by the context thereof, each number, both singular and plural, shall include all numbers, and each gender shall include a gender. Contractor as used in this Agreement or in any other document referred to in or made a part of this Agreement shall likewise include singular and the plural, a corporation, a partnership, individual, firm, or person acting in any fiduciary capacity as executor, administrator, trustee or in any other representative capacity or any other entity. All covenants herein contained on the part of Contractor shall be joint and several if more than one person, firm or entity executes this Agreement.
- (f) Waiver. No waiver of any breach or of any of the covenants or conditions of this Agreement shall be construed to be a waiver of any other breach or to be consent to any further or succeeding breach of the same or any other covenant or condition.
- (g) Attorneys' Fees and Costs. If either Party herein brings an action to enforce the terms thereof or to declare rights hereunder, the prevailing Party in any such action, on trial or appeal, shall be entitled to reasonable attorneys' fees as fixed by the court and actual costs to be paid by the losing Party.

- (h) Authority.
 - (1) Each individual executing this Agreement on behalf of Contractor represents and warrants that:
 - (A) He/She is duly authorized to execute and deliver this Agreement on behalf of Contractor;
 - (B) Such execution and delivery is in accordance with the terms of the Articles of Incorporation or Partnership, any by-laws or Resolutions of Contractor and;
 - (C) This Agreement is binding upon Contractor in accordance with its terms.
 - (2) Contractor shall deliver to COUNTY evidence acceptable to COUNTY of the foregoing within thirty days of execution of this Agreement.
- (i) Review of Agreement Terms. This Agreement has been reviewed and revised by legal counsel for both COUNTY and Contractor, and no presumption or rule that ambiguities shall be construed against the drafting Party shall apply to the interpretation or enforcement of the same or any subsequent amendments thereto.

EXHIBIT “A”

SAMPLE AGREEMENT FOR SERVICES

**COUNTY OF IMPERIAL PUBLIC HEALTH LAB
OSA AIR CONDITIONER REPLACEMENT PROJECT
LOCATED AT
935 BROADWAY, EL CENTRO, CA 92243**

COUNTY PROJECT NO. SR6983HTH

1 **AGREEMENT FOR CONSTRUCTION SERVICES**

2 <<Business Name>>

3 THIS AGREEMENT FOR CONSTRUCTION SERVICES ("Agreement"), made and entered
4 into effective the ____ day of _____, 2024, by and between the COUNTY OF IMPERIAL, a
5 political subdivision of the State of California, through its Department of Public Works ("COUNTY")
6 and<<Business Name>>, a «Consultant_Business_Type» licensed to do business within the state of
7 California ("CONTRACTOR") (individually, "Party;" collectively, "Parties") shall be as follows:

8 **RECITALS**

9 **WHEREAS**, COUNTY desires to retain a qualified individual, firm or business entity to provide
10 professional construction services for <<Project Description>>("Project"); and

11 **WHEREAS**, COUNTY wishes to engage CONTRACTOR for performance of such services as
12 are provided for herein and CONTRACTOR is willing to accept such engagement.

13 **NOW, THEREFORE**, COUNTY and CONTRACTOR have and hereby agree to the following:

14 **1. DEFINITIONS.**

15 **1.1.** "Invitation for Bid" shall mean the document entitled, "«Name_of_RFP»," dated
16 «Date_of_RFP», which includes all special notices, addendums, exhibits and Plans and
17 Specifications as defined in Paragraph 1.3. The Invitation for Bid is attached hereto as
18 **Exhibit "A"** and incorporated herein as though fully set forth.

19 **1.2.** "Proposal" shall mean CONTRACTOR's document entitled "«Name_of_Proposal»,"
20 dated «Date_of_Proposal» and submitted to the Clerk of the Board. The Proposal is
21 attached hereto as **Exhibit "B"** and incorporated herein as though fully set forth.

22 **1.3.** "Plans and Specifications" shall mean the plans and specifications approved by the
23 Director of Public Works, or his/her designee, for Project Number «Project_Number».
24 While COUNTY is responsible for the completeness and accuracy of the Plans and
25 Specifications for the Project, CONTRACTOR is required to review the Plans and
26 Specifications and promptly report any errors or omissions to COUNTY.

27 **2. CONTRACT COORDINATION.**

28 **2.1.** The Director of Public Works or his/her designee shall be the representative of
COUNTY for all purposes under this Agreement. The Director of Public Works or
his/her designee is hereby designated as the Contract Manager for COUNTY. He/she

shall supervise the progress and execution of this Agreement.

2.2. CONTRACTOR shall assign a single Contract Manager to have overall responsibility for the progress and execution of this Agreement. Should circumstances or conditions subsequent to the execution of this Agreement require a substitute Contract Manager for any reason, the Contract Manager designee shall be subject to the prior written acceptance and approval of COUNTY's Contract Manager.

3. **SCOPE OF WORK TO BE PERFORMED BY CONTRACTOR.**

3.1. CONTRACTOR shall furnish all work, labor, tools, equipment, materials, supervision, scheduling, coordination and contract administration necessary to construct and complete the Project in a good, expeditious, workman-like and substantial manner under the terms of and in full and complete compliance with this Agreement ("Work").

3.2. CONTRACTOR shall comply with and perform work consistent with all terms, conditions and requirements of the Plans, Specifications, the Invitation for Bids and this Agreement.

3.3. All described work shall be constructed, installed, placed and performed in conformance with the Plans and Specifications and all Special Provisions contained therein and as directed by COUNTY's engineer.

3.4. In the event of a conflict among this Agreement, the Invitation for Bid and the Proposal, the Invitation for Bid shall take precedence over the Proposal and this Agreement shall take precedence over both.

3.5. CONTRACTOR shall perform such other tasks as necessary and proper for the full performance of the obligations assumed by CONTRACTOR hereunder; including but not limited to any additional work or change orders agreed upon pursuant to written authorization as described in Section 5. Proposed additional work or change order requests, when applicable, will be attached and incorporated herein under **Exhibit "B"** (as "B-1," "B-2," etc.).

4. **TRENCHING REQUIREMENTS AND UTILITY RELOCATION.**

4.1. Four Feet (4') Below the Surface. In the event the Project involves digging trenches or

1 other excavations that extend deeper than four feet (4') below the surface,
2 CONTRACTOR shall:

3 **4.1.1.** Promptly, and before the following conditions are disturbed, notify COUNTY,
4 in writing, of any:

- 5 (a) Material that CONTRACTOR believes may be material that is hazardous
6 waste, as defined in Health & Safety Code §25117, that is required to be
7 removed to a Class I, Class II or Class III disposal site in accordance
8 with provisions of existing law;
- 9 (b) Subsurface or latent physical conditions at the site differing from those
10 indicated by information about the site made available to bidders prior to
11 the deadline for submitting bids; and
- 12 (c) Unknown physical conditions at the site of any unusual nature, different
13 materially from those ordinarily encountered and generally recognized as
14 inherent in work of the character provided for in the Agreement.

15 **4.1.2.** In response to any written notice generated pursuant to Subparagraph 4.1.1,
16 COUNTY shall promptly investigate the conditions, and if it finds that the
17 conditions do materially so differ, or do involve hazardous waste, and cause a
18 decrease or increase in CONTRACTOR's cost of, or the time required for,
19 performance of any part of the Work, COUNTY shall issue a change order
20 under the procedures described in this Agreement.

21 **4.1.3.** In the event that a dispute arises between COUNTY and CONTRACTOR
22 whether the conditions materially differ, or involve hazardous waste, or cause a
23 decrease or increase in CONTRACTOR's cost of, or time required for,
24 performance of any part of the Work, CONTRACTOR shall not be excused
25 from any scheduled completion date provided for by this Agreement, but shall
26 proceed with all Work to be performed under this Agreement. CONTRACTOR
27 shall retain any and all rights provided either by contract or by law which pertain
28 to the resolution of disputes and protests between the Parties.

1 **4.2. Trenching Requirements – Project in Excess of Twenty-Five Thousand Dollars (\$25,000)**
2 **and Five Feet (5') Below the Surface.** For projects involving both an estimated
3 expenditure in excess of twenty-five thousand dollars (\$25,000) and the excavation of
4 any trench five feet (5') or more in depth, CONTRACTOR shall submit a detailed plan
5 showing the design of shoring, bracing, sloping or other provisions to be made for
6 worker protection from the hazard of caving ground during the excavation of such
7 trench. The plan must be accepted by COUNTY (or by a registered civil or structural
8 engineer, employed by COUNTY, to whom authority to accept has been delegated) in
9 advance of excavation. If such plan varies from the shoring system standards, the plan
10 shall be prepared by a registered civil or structural engineer. Nothing in this Paragraph
11 shall allow CONTRACTOR to use a shoring, sloping, or protective system less
12 effective than that required by California Construction Safety Orders. Further, nothing
13 in this Paragraph shall be construed to impose tort liability on COUNTY or any of its
14 employees.

15 **4.3. Utilities Relocation.** In the event that CONTRACTOR, in the scope of work,
16 encounters utilities not shown on COUNTY'S plans, COUNTY shall compensate
17 CONTRACTOR for utilities relocation work. COUNTY shall also waive liquidated
18 damages for any delay that occurs as a result of said encounter and/or relocation of
19 utilities.

20 **5. CHANGE ORDERS.**

21 **5.1. Change Orders.** CONTRACTOR shall make no changes to the Work to be performed
22 pursuant to this Agreement, including but not limited to additions, deletions, modifications
23 or substitutions, nor shall CONTRACTOR perform any extra work (collectively, "Change
24 Order Work") without the prior written consent of COUNTY. If CONTRACTOR
25 encounters conditions it considers different from those described in **Exhibit "A"** to this
26 Agreement, CONTRACTOR may request a change order in conformance with
27 COUNTY's standard procedure ("Change Order"). If COUNTY approves the request,
28 CONTRACTOR will execute a Change Order and CONTRACTOR's execution of the

Change Order shall confirm approval thereof. COUNTY may order additional work, and CONTRACTOR shall perform such changes in the Work as directed by COUNTY in any Change Order prepared by CONTRACTOR. COUNTY's rights to eliminate portions of the Work or to initiate a Change Order shall not be limited in any way. The Change Order shall be in writing and shall include:

5.1.1. Any and all supporting documents and drawings depicting the source and location of the desired change, and explain in detail the field conditions and reasons for the requested change;

5.1.2. Any change or adjustment to the compensation set forth in this Agreement as a result of changes in the Work based on a lump sum or time and material basis, as may be directed by COUNTY; and

5.1.3. Any request for adjustments to time for completion of the Project.

5.2. Payment for Change Order Work. CONTRACTOR shall not be entitled to receive any compensation for work, labor, materials or changes of any kind, regardless of whether ordered by COUNTY or any of its representatives, unless a Change Order has been submitted in writing and approved prior to the commencement of any Change Order Work as described above. If the changes are required by any inspecting governmental agencies or utility companies, or are otherwise required to comply with any codes, laws, rules or regulations, including those set forth in this Agreement, then CONTRACTOR shall not be entitled to any increases in the compensation set forth in this Agreement or other compensation as a result of the changes.

5.3. Disputed Change Order Work. Any dispute concerning the performance of such Change Order Work or the amount of compensation to be paid to CONTRACTOR by COUNTY shall not affect CONTRACTOR's obligation to perform such Change Order Work. CONTRACTOR agrees that it shall timely complete all Change Order Work even if there shall be a dispute between CONTRACTOR and COUNTY over the amount or scope of the Change Order Work. CONTRACTOR shall have the right to be compensated for any undisputed Change Order Work amounts as determined to be undisputed in COUNTY's

sole discretion.

5.4. Authorized Representative. No Change Order shall be valid or binding against COUNTY unless such Change Order has been executed by COUNTY's designated representative, who is the Director of Public Works. COUNTY shall notify CONTRACTOR in writing if the designated representative is changed.

5.5. Limits. When applicable, the authority to execute a Change Order on this Project shall not exceed the amount allowed by law pursuant to Public Contract Code sections 20137-20142 et seq. Where Change Orders are in an amount between ten percent (10%) and twenty-five percent (25%) of the amount set forth in this Agreement and based on a need for additional quantities due to an increase in the unit quantities required to complete the project in excess of the COUNTY's Engineer's estimate of unit quantities as set forth in the Invitation to Bid, CONTRACTOR shall be paid pursuant to Public Contract Code sections 20143 and 20139 and section 4 of the Standard Specifications, State of California, Business, Transportation and Housing Agency, May 2006 Issued by the Department of Transportation ("Caltrans Standard Specifications") referred to in **Exhibit "A"** and incorporated herein by reference.

6. REPRESENTATIONS BY CONTRACTOR.

6.1. CONTRACTOR understands and agrees that COUNTY has limited knowledge in the construction specified in the description of work. CONTRACTOR has represented itself to be expert in these fields and understands that COUNTY is relying upon such representation.

6.2. CONTRACTOR represents and warrants that it is a lawful entity possessing all required licenses and authorities to do business in the State of California and perform all aspects of this Agreement.

6.3. CONTRACTOR shall not commence any work under this Agreement or provide any other services, or materials, in connection therewith until CONTRACTOR has received written authorization from the Director of Public Works, or his/her designee ("Notice to Proceed") to do so.

- 1 **6.4.** CONTRACTOR represents and warrants that the people executing this Agreement on
2 behalf of CONTRACTOR have the authority of CONTRACTOR to sign this
3 Agreement and bind CONTRACTOR to the performance of all duties and obligations
4 assumed by CONTRACTOR herein.
- 5 **6.5.** CONTRACTOR represents and warrants that any employee, contractor, subcontractor and
6 agent who will be performing any of the duties and obligations of CONTRACTOR herein
7 possess all required licenses and authorities, as well as the experience and training, to
8 perform such tasks.
- 9 **6.6.** CONTRACTOR represents and warrants that the allegations contained in its Proposal are
10 true and correct.
- 11 **6.7.** CONTRACTOR understands that COUNTY considers the representations made herein
12 to be material and would not enter into this Agreement with CONTRACTOR if such
13 representations were not made.
- 14 **6.8.** Retention and Access of Books and Records. CONTRACTOR represents and warrants
15 that it shall maintain books, records, documents, reports and other materials developed
16 under this Agreement as follows:
- 17 **6.8.1.** CONTRACTOR shall hold and possess as the property of COUNTY all papers,
18 books, files, correspondence and other records of all kinds which at any time
19 shall come into its possession or under its control relating only to services
20 performed by CONTRACTOR under this Agreement for a minimum period of
21 five (5) years, or for any longer period required by law, from the date said
22 papers came into the possession of CONTRACTOR pursuant to this Agreement.
- 23 **6.8.2.** Any records or documents required to be maintained by CONTRACTOR
24 pursuant to this Agreement shall be made available to COUNTY for inspection
25 or audit, at any time during CONTRACTOR's regular business hours provided
26 COUNTY provides CONTRACTOR with seven (7) days advanced written or
27 oral notice. Copies of such documents shall, at no cost to COUNTY, be
28 provided to COUNTY for inspection at CONTRACTOR's address indicated for

receipt of notices under this Agreement.

6.8.3. CONTRACTOR shall surrender all papers maintained by CONTRACTOR pursuant to Subparagraph 6.8.1 of this Agreement within thirty (30) days of termination of this Agreement.

6.8.4. CONTRACTOR represents and warrants that it has not been engaged by, nor will it be engaged by and owes no duty of performance to any other person or entity that would constitute a conflict. For breach or violation of this warranty, COUNTY shall amongst other remedies at law, have the right to terminate this Agreement without liability, or at its sole discretion, to deduct from the Agreement price or consideration, or otherwise recover the full amount of such fee, commission, percentage brokerage fee, gift or contingent fee paid or received from another entity or person.

6.9. CONTRACTOR shall perform pursuant to this Agreement in accordance with and in full compliance with all applicable Federal, State and local statutes, rules, regulations and policies and procedures, regardless of whether they are expressly set forth in this Agreement. It is understood that in the event COUNTY is investigated or audited by any State or Federal governmental agency, or any other recognized investigative/auditing entity, CONTRACTOR shall fully cooperate with such agencies' reasonable and lawful request for information.

7. TERM OF AGREEMENT.

This Agreement shall commence on the date first written above and shall remain in effect until the services provided as outlined in Section 3, ("SCOPE OF WORK TO BE PERFORMED BY CONTRACTOR"), have been completed, unless otherwise terminated as provided for in this Agreement.

8. COMPENSATION.

The total compensation payable under this Agreement shall be in accordance with the item prices incorporated within the Proposal submitted by CONTRACTOR for labor, materials and all other services related to the performance of this Agreement, attached hereto as **Exhibit "B"** and incorporated herein as though fully set forth. The total compensation payable under this Agreement shall not exceed <<**Compensation Amount**>>

9. PAYMENT AND RETENTION OF FUNDS.

COUNTY shall pay CONTRACTOR for completed and approved services upon presentation

and approval of its itemized billing, subject to the following.

9.1. Retention.

9.1.1. In accordance with Cal. Pub. Contract Code §§ 7201 and 9203, COUNTY shall generally retain five percent (5%) of the total compensation payable under this Agreement until the Work to be performed has been completed in accordance with this Agreement, as determined by COUNTY, and payment in full of all of CONTRACTOR's subcontractors has been certified.

9.1.2. The 5% retention amount may be exceeded if the COUNTY's Board of Supervisors has approved a finding, during a properly noticed and normally scheduled public hearing conducted either prior to or concurrent with authorizing this Project to go out to bid, that the Project is substantially complex and therefore requires a higher retention amount than 5%. Should the retention amount exceed 5% for this Project, then the actual retention amount will be listed in the Plans and Specifications, along with the findings justifying the increased retention amount.

9.2. Substitution of Retention.

9.2.1. CONTRACTOR may elect to substitute securities for any retention of funds by COUNTY to ensure performance under this Agreement. At the request and expense of CONTRACTOR, securities equivalent to the amount retained shall be deposited with the COUNTY, or with a state or federally chartered bank in this state as the escrow agent, who shall then return the securities to CONTRACTOR once the Work to be performed has been completed in accordance with this Agreement, as determined by COUNTY, and payment in full of all of CONTRACTOR's subcontractors has been certified.

9.2.2. Alternatively, CONTRACTOR may request and COUNTY shall make payment of retentions earned directly to the escrow agent at the expense of CONTRACTOR. CONTRACTOR, at its sole cost and expense, may direct the investment of the payments into securities, and CONTRACTOR shall receive the interest earned on the investments upon the same terms provided for in this Section for securities

1 deposited by CONTRACTOR. Once the Work to be performed has been
2 completed in accordance with this Agreement, as determined by COUNTY, and
3 payment in full of all of CONTRACTOR's subcontractors has been certified,
4 CONTRACTOR shall receive from the escrow agent all securities, interest, and
5 payments received by the escrow agent from COUNTY, pursuant to the terms of
6 this Section.

7 **9.2.3.** Securities eligible for investment under this Section shall include those listed in
8 Cal. Gov. Code § 16430, bank or savings and loan certificates of deposit, interest-
9 bearing demand deposit accounts, standby letters of credit, or any other security
10 mutually agreed to by COUNTY and CONTRACTOR. CONTRACTOR shall be
11 the beneficial owner of any securities substituted for retained funds and shall
12 receive any interest thereon.

13 **9.2.4.** Substitution of securities shall be conducted through an Escrow Agreement
14 substantially similar to that found in Cal. Pub. Contract Code § 22300(f).

15 **9.2.5.** Notwithstanding any other provision in this Section, substitution of securities is
16 prohibited where funding for the Project, in whole or in part, will be provided by
17 the Farmers Home Administration of the United States Department of Agriculture
18 pursuant to the Consolidated Farm and Rural Development Act (7 U.S.C. Sec.
19 1921 et seq.), or where otherwise disallowed by federal law.

20 **10. METHOD OF PAYMENT.**

21 **10.1.** CONTRACTOR shall at any time prior to the fifteenth (15th) day of any month, submit
22 to COUNTY's Director of Public Works or his/her designee, a complete and accurate
23 written claim for compensation for services performed. The claim shall be in a format
24 approved by COUNTY. COUNTY shall make no payment prior to the claims being
25 approved in writing by the Director of Public Works or his/her designee.

26 **10.2.** After determining that the claim is a proper payment request, the Director of Public
27 Works, or his/her designee, shall submit to COUNTY's Auditor/Controller undisputed
28 and properly submitted claims approved for payment within ten (10) days following the

1 date the claim was submitted to his/her Department.

2 **10.3.** CONTRACTOR may expect to receive payment within a reasonable time thereafter and
3 in any event in the normal course of business within thirty (30) days after the
4 undisputed and properly submitted claim is submitted.

5 **10.4.** Any claim determined to be an improper payment request shall be returned to
6 CONTRACTOR as soon as practicable, but not later than seven (7) days, after receipt with
7 a written explanation as to why the claim is an improper request for payment.

8 **10.5.** In order for prompt payment to be made by COUNTY pursuant to Public Contract Code
9 §20104.50, CONTRACTOR must properly fill out all written claims for compensation for
10 services performed.

11 **10.6.** COUNTY shall pay interest at the legal rate set forth in Code of Civil Procedure §685.010
12 in the event payment is not made within thirty (30) days of an undisputed properly
13 submitted request.

14 **11. INDEMNIFICATION.**

15 **11.1.** CONTRACTOR agrees to the fullest extent permitted by law to indemnify, defend,
16 protect and hold COUNTY and its representatives, officers, directors, designees,
17 employees, agents, successors and assigns harmless from any and all claims, expenses,
18 liabilities, causes of action, demands, losses, penalties, attorneys' fees and costs, in law
19 or equity, of every kind and nature whatsoever arising out of or in connection with
20 CONTRACTOR's negligent acts and omissions or willful misconduct under this
21 Agreement ("Claims"), whether or not arising from the passive negligence of
22 COUNTY, but does not include Claims that are finally determined to be the result of the
23 sole negligence or willful misconduct of COUNTY.

24 **11.2.** CONTRACTOR agrees to defend with counsel acceptable to COUNTY, indemnify and
25 hold COUNTY harmless from all Claims, including but not limited to:

26 **11.2.1.** Personal injury, including but not limited to bodily injury, emotional injury,
27 sickness or disease or death to persons including but not limited to COUNTY's
28 representatives, officers, directors, designees, employees, agents, successors and

1 assigns, subcontractors and other third parties and/or damage to property of
2 anyone (including loss of use thereof) arising out of CONTRACTOR's
3 negligent performance of, or willful misconduct surrounding, any of the terms
4 contained in this Agreement, or anyone directly or indirectly employed by
5 CONTRACTOR or anyone for whose acts CONTRACTOR may be liable;

6 **11.2.2.** Liability arising from injuries to CONTRACTOR and/or any of
7 CONTRACTOR's employees or agents arising out of CONTRACTOR's
8 negligent performance of, or willful misconduct surrounding, any of the terms
9 contained in this Agreement, or anyone directly or indirectly employed by
10 CONTRACTOR or anyone for whose acts CONTRACTOR may be liable;

11 **11.2.3.** Penalties imposed upon account of the violation of any law, order, citation, rule,
12 regulation, standard, ordinance or statute caused by the negligent action or
13 inaction, or willful misconduct of CONTRACTOR or anyone directly or
14 indirectly employed by CONTRACTOR or anyone for whose acts
15 CONTRACTOR may be liable, including but not limited to:

16 (a) Any loss of funding, penalties, fees, or other costs resulting from
17 CONTRACTOR's failure to adhere to Disadvantaged Business
18 Enterprise requirements and/or goals, as determined by COUNTY or
19 such other lawful entity in charge of monitoring Disadvantaged Business
20 Enterprise compliance;

21 (b) Any loss of funding, penalties, fees, or other costs resulting from
22 CONTRACTOR's failure to adhere to prevailing wage requirements, as
23 determined by COUNTY, the California Department of Industrial
24 Relations, or such other lawful entity in charge of monitoring prevailing
25 wage compliance;

26 **11.2.4.** Infringement of any patent rights which may be brought against COUNTY
27 arising out of CONTRACTOR's work;

28 **11.2.5.** Any violation or infraction by CONTRACTOR of any law, order, citation, rule,

1 regulation, standard, ordinance or statute in any way relating to the occupational
2 health or safety of employees; and

3 **11.2.6.** Any breach by CONTRACTOR of the terms, requirements or covenants of this
4 Agreement.

5 **11.3.** The indemnification provisions of this Agreement shall extend to Claims occurring after
6 this Agreement is terminated, as well as while it is in force.

7 **12. INDEPENDENT CONTRACTOR.**

8 **12.1.** In all situations and circumstances arising out of the terms and conditions of this
9 Agreement, CONTRACTOR is an independent contractor, and as an independent
10 contractor, the following shall apply:

11 **12.2.** CONTRACTOR is not an employee or agent of COUNTY and is only responsible for
12 the requirements and results specified by this Agreement.

13 **12.3.** CONTRACTOR shall be responsible to COUNTY only for the requirements and results
14 specified by this Agreement and except as specifically provided in this Agreement, shall
15 not be subject to COUNTY's control with respect to the physical actions or activities of
16 CONTRACTOR in fulfillment of the requirements of this Agreement.

17 **12.4.** CONTRACTOR is not, and shall not be, entitled to receive from, or through,
18 COUNTY, and COUNTY shall not provide, or be obligated to provide,
19 CONTRACTOR with Worker's Compensation coverage or any other type of
20 employment or worker insurance or benefit coverage required or provided by any
21 Federal, State or local law or regulation for, or normally afforded to, an employee of
22 COUNTY.

23 **12.5.** CONTRACTOR shall not be entitled to have COUNTY withhold or pay, and
24 COUNTY shall not withhold or pay, on behalf of CONTRACTOR, any tax or money
25 relating to the Social Security Old Age Pension Program, Social Security Disability
26 Program, or any other type of pension, annuity, or disability program required or
27 provided by any Federal, State or local law or regulation.

28 **12.6.** CONTRACTOR shall not be entitled to participate in, or receive any benefit from, or

1 make any claim against any COUNTY fringe benefit program, including, but not
2 limited to, COUNTY's pension plan, medical and health care plan, dental plan, life
3 insurance plan, or any other type of benefit program, plan, or coverage designated for,
4 provided to, or offered to COUNTY's employee.

5 **12.7.** COUNTY shall not withhold or pay, on behalf of CONTRACTOR, any Federal, State,
6 or local tax, including, but not limited to, any personal income tax, owed by
7 CONTRACTOR.

8 **12.8.** CONTRACTOR is, and at all times during the term of this Agreement shall represent
9 and conduct itself as, an independent contractor, not an employee of COUNTY.

10 **12.9.** CONTRACTOR shall not have the authority, express or implied, to act on behalf of,
11 bind or obligate COUNTY in any way without the written consent of COUNTY.

12 **13. INSURANCE.**

13 **13.1.** CONTRACTOR hereby agrees at its own cost and expense to procure and maintain,
14 during the entire term of this Agreement and any extended term therefore, insurance in
15 a sum acceptable to COUNTY and adequate to cover potential liabilities arising in
16 connection with the performance of this Agreement and in any event not less than the
17 minimum limit set forth in the "Minimum Insurance Amounts" attachment to the Plans
18 and Specifications which are incorporated as if set forth fully herein.

19 **13.2. Special Insurance Requirements.** All insurance required shall:

20 **13.2.1.** Be procured from California admitted insurers (licensed to do business in
21 California) with a current rating by Best's Key Rating Guide, acceptable to
22 COUNTY. A rating of at least A-VII shall be acceptable to COUNTY; lesser
23 ratings must be approved in writing by COUNTY.

24 **13.2.2.** Be primary coverage as respects COUNTY and any insurance or self-insurance
25 maintained by COUNTY shall be in excess of CONTRACTOR's insurance
26 coverage and shall not contribute to it.

27 **13.2.3.** Name COUNTY as an additional insured on all policies, except Workers'
28 Compensation, and provide that COUNTY may recover for any loss suffered by

COUNTY by reason of CONTRACTOR's negligence.

13.2.4. State that it is primary insurance and regards COUNTY as an additional insured and contains a cross-liability or severability of interest clause.

13.2.5. Not be canceled, non-renewed or reduced in scope of coverage until after thirty (30) days written notice has been given to COUNTY. However, CONTRACTOR may not terminate such coverage until it provides COUNTY with proof that equal or better insurance has been secured and is in place. Cancellation or change without the prior written consent of COUNTY shall, at the option of COUNTY, be grounds for termination of this Agreement.

13.2.6. If this Agreement remains in effect more than one (1) year from the date of its original execution, COUNTY may, at its sole discretion, require an increase in the amount of liability insurance to the level then customary in similar COUNTY Agreements by giving sixty (60) days notice to CONTRACTOR.

13.3. Additional Insurance Requirements.

13.3.1. COUNTY is to be notified immediately of all insurance claims. COUNTY is also to be notified if any aggregate insurance limit is exceeded.

13.3.2. The comprehensive or commercial general liability shall contain a provision of endorsements stating that such insurance:

- (a) Includes contractual liability;
- (b) Does not contain any exclusions as to loss or damage to property caused by explosion or resulting from collapse of buildings or structures or damage to property underground, commonly referred to by insurers as the "XCU Hazards";
- (c) Does not contain a "pro rata" provision which looks to limit the insurer's liability to the total proportion that its policy limits bear to the total coverage available to the insured;
- (d) Does not contain an "excess only" clause which requires the exhaustion of other insurance prior to providing coverage;

- (e) Does not contain an “escape clause” which extinguishes the insurer’s liability if the loss is covered by other insurance;
- (f) Includes COUNTY as an additional insured; and
- (g) States that it is primary insurance and regards COUNTY as an additional insured and contains a cross-liability or severability of interest clause.

13.4. Deposit of Insurance Policy. Promptly on issuance, reissuance, or renewal of any insurance policy required by this Agreement, CONTRACTOR shall, if requested by COUNTY, cause to be given to COUNTY satisfactory evidence that insurance policy premiums have been paid together with a duplicate copy of the policy or a certificate evidencing the policy and executed by the insurance company issuing the policy or its authorized agent.

13.5. Certificates of Insurance. Complete copies of certificates of insurance for all required coverages including additional insured endorsements shall be attached hereto as **Exhibit “C”** and incorporated herein as though fully set forth.

13.6. Additional Insurance. Nothing in this, or any other provision of this Agreement, shall be construed to preclude CONTRACTOR from obtaining and maintaining any additional insurance policies in addition to those required pursuant to this Agreement.

14. WORKERS’ COMPENSATION CERTIFICATION.

14.1. Prior to the commencement of work, CONTRACTOR shall sign and file with COUNTY the following certification: “I am aware of the provisions of California Labor Code §§3700 et seq. which require every employer to be insured against liability for workers’ compensation or to undertake self-insurance in accordance with the provisions of that code, and I will comply with such provisions before commencing the performance of the work of this contract.”

14.2. This certification is included in this Agreement and signature of the Agreement shall constitute signing and filing of the certificate.

14.3. CONTRACTOR understands and agrees that any and all employees, regardless of hire date, shall be covered by Workers’ Compensation pursuant to statutory requirements

1 prior to beginning work on the Project.

2 **14.4.** If CONTRACTOR has no employees, initial here: _____.

3 **15. WARRANTY.**

4 **15.1. One Year Warranty.** CONTRACTOR agrees to provide a one-year warranty for all of
5 its work and component parts and guarantees that all work shall be performed in a
6 professional and workman-like manner and be free from defects. CONTRACTOR
7 guarantees to timely correct all work performed by it under this Agreement which
8 COUNTY determines to be defective in design, material and/or workmanship within a
9 period of one (1) year from the date of the completion of the Work. The warranties set
10 forth in this Agreement shall be in addition to, and not in lieu of, all other statutory and
11 case law warranties and obligations of CONTRACTOR. CONTRACTOR expressly
12 agrees that all warranties made by CONTRACTOR, all obligations under this
13 Agreement and all remedies for breach of such warranties shall survive this Agreement
14 in the event it is terminated or expires for any reason prior to the running of the full
15 warranty periods listed above.

16 **15.2. Materials.** All materials furnished by CONTRACTOR shall be new, manufactured
17 during the current year, of first quality and carrying full manufacturer's warranty.
18 CONTRACTOR shall be responsible for any expiration of manufacturer or other
19 warranties of material or equipment being supplied for this Agreement.
20 CONTRACTOR guarantees that all warranties of material and equipment shall become
21 effective when the project is accepted by COUNTY's Board of Supervisors, not at time
22 of installation by CONTRACTOR.

23 **15.3. Manufacturers' Warranty Information.** CONTRACTOR agrees to promptly provide
24 such information and maintenance recommendations to COUNTY at the inception of
25 CONTRACTOR's work to the extent such information is reasonably available.

26 **16. DEFAULT AND REMEDIES.**

27 **16.1. Default.** In the event that (i) CONTRACTOR files a petition requesting relief under
28 any bankruptcy act, or is adjudged as bankrupt, or makes a general assignment for the

benefit of creditors or has a receiver appointed on account of its insolvency, or (ii) CONTRACTOR refuses or is unable, for whatever reason, to supply enough properly skilled workers or proper materials to complete the Project, or (iii) CONTRACTOR fails to follow the directions of COUNTY, or (iv) CONTRACTOR fails to make prompt payment to its subcontractors and suppliers for materials or labor supplied or permits any lien to be imposed upon all or any portion of the Project, or (v) CONTRACTOR disregards any laws or orders of any public or private authority having jurisdiction over the Work or the Project, or (vi) CONTRACTOR fails to perform in accordance with any of the terms of this Agreement or breaches any provision of this Agreement, COUNTY may give notice of such failure or breach to CONTRACTOR, identifying the failure or breach of this Agreement. Should any such failure or breach continue for twenty-four (24) hours after delivery of notice without a good faith effort on the part of CONTRACTOR to commence all necessary corrective action, or should such a breach continue despite CONTRACTOR's efforts for forty-eight (48) hours, then at that time such failure shall be deemed a default by CONTRACTOR under this Agreement and COUNTY shall have all rights and remedies available at law or in equity, including the right to terminate this Agreement. Without limiting its rights and remedies, COUNTY may then proceed as follows:

16.1.1. Without terminating this Agreement or the obligations of CONTRACTOR hereunder as to all of the Work required to be performed or furnished by CONTRACTOR pursuant to this Agreement, COUNTY may require CONTRACTOR, at CONTRACTOR's expense, to cure such default(s) as may exist in the performance of CONTRACTOR's obligations hereunder within forty-eight (48) hours after such default(s) has/have occurred including but not limited to repairing, replacing and correcting material or Work determined by COUNTY to be defective or not complying with the requirements of this Agreement. Should CONTRACTOR fail to timely repair, replace and/or correct non-complying or defective materials and workmanship or otherwise cure its

1 default(s) hereunder, and in the case of emergencies in which case COUNTY
2 may act immediately if CONTRACTOR is not available or is not responding,
3 and without further notice, COUNTY may make required repairs, replacements
4 and other corrections or otherwise remedy the default by CONTRACTOR
5 pursuant to the subparagraph below.

6 **16.1.2.** Without terminating this Agreement or the obligations of CONTRACTOR
7 hereunder as to all of the Work required to be performed or furnished by
8 CONTRACTOR pursuant to this Agreement, COUNTY may engage another
9 contractor to perform such portion of CONTRACTOR's Work required
10 pursuant to this Agreement or furnish any materials or other items required
11 hereunder as COUNTY in its sole discretion may deem necessary to avoid delay
12 in the progress of the Work, and in connection therewith, COUNTY may
13 perform such Work or any portion thereof itself or have the same performed by
14 others and COUNTY may procure all necessary materials, equipment or other
15 items required for the continued progress of such Work. The costs incurred by
16 COUNTY as a result of engaging another contractor shall be deducted from the
17 compensation payable pursuant to this Agreement and if COUNTY's costs
18 exceed or may reasonably be anticipated to exceed the balance of the
19 compensation due to CONTRACTOR for such work, such excess, or anticipated
20 excess, shall be immediately due and owing from CONTRACTOR to COUNTY
21 and may be withheld from any funds due to CONTRACTOR pursuant to this
22 Agreement or any other agreement.

23 **16.1.3.** COUNTY may terminate CONTRACTOR's right to perform upon written
24 notice and COUNTY shall then have the option of completing the Work or any
25 portion thereof by exercise of its interest under the performance bond issued in
26 favor by CONTRACTOR, or having such Work in whole or in part be
27 completed by others for CONTRACTOR's account. A calculation shall take
28 place at the conclusion of the Project wherein to the degree the sum of

COUNTY's costs and any amounts paid to complete the Project exceed the compensation payable pursuant to this Agreement, then any such excess shall be immediately due and owing from CONTRACTOR to COUNTY.

16.2. Damages. CONTRACTOR shall be liable for all damages suffered by COUNTY by reason of CONTRACTOR's default in any provision of this Agreement and the exercise of COUNTY of its option to terminate this Agreement shall not release CONTRACTOR of such liability. CONTRACTOR shall have no right to receive any further payment after a default has occurred until such time as the Work to be performed by CONTRACTOR pursuant hereto has been completed and accepted by COUNTY and damages suffered by COUNTY, if any, ascertained. Damages shall include by way of illustration, but not of exclusion, COUNTY's costs of completing the Work which exceeds the compensation payable pursuant to this Agreement, other general, liquidated, special or consequential damages, attorney fees and costs.

16.3. Actions After Default. Should COUNTY exercise any of its options, remedies or rights granted pursuant to the terms of this Agreement in the event of a default by CONTRACTOR, COUNTY at its sole election may, but shall not be obligated to, use any materials, supplies, tools or equipment on the work site which belong to CONTRACTOR to complete the Work required to be completed by CONTRACTOR, whether such work is completed by COUNTY or by others, and CONTRACTOR agrees that it shall not remove such materials, supplies, tools and equipment from the work site unless directed in writing by COUNTY to do so.

16.4. Limit on Force Majeure Damages. CONTRACTOR shall not be responsible for repairing or restoring damage to work caused by an act of God in excess of five (5) percent of the contract amount, provided that the work damaged is built in accordance with accepted and applicable building standards and the plans and specifications of COUNTY. In the event of such damage, COUNTY may, at its option, elect to terminate this Agreement. For purposes of this Agreement, an "act of God" shall be defined as an earthquake in excess of 3.5 on the Richter Scale and a tidal wave.

1 **16.5. Resolution of Claims.** COUNTY and CONTRACTOR agree to follow and comply
2 with the mediation, arbitration, claim, civil action procedure and trial de novo
3 provisions set forth in California Public Contracts Code §§ 9204 and 20104 – 20104.6.

4 **16.6. No Limitation of Rights.** The options and rights granted to COUNTY herein shall not
5 be deemed as limitations upon the other rights and remedies of COUNTY in the event
6 of a failure of performance or breach by CONTRACTOR, and COUNTY shall be
7 entitled to exercise the rights and remedies hereinabove specified and all other rights
8 and remedies which may be provided in this Agreement or by law or in equity, either
9 cumulatively or consecutively, and in such order as COUNTY in its sole discretion shall
10 determine.

11 **17. NON-DISCRIMINATION.**

12 **17.1.** During the performance of this Agreement, CONTRACTOR and its subcontractors
13 shall not unlawfully discriminate, harass or allow harassment against any employee or
14 applicant for employment because of sex, race, color, ancestry, religious creed, national
15 origin, physical disability (including HIV and AIDS), mental disability, medical
16 condition (cancer), age (over forty (40)), marital status and denial of family care leave.

17 **17.2.** CONTRACTOR and its subcontractors shall insure that the evaluation and treatment of
18 their employees and applicants for employment are free from such discrimination and
19 harassment.

20 **17.3.** CONTRACTOR and its subcontractors shall comply with the provisions of the Fair
21 Employment and Housing Act (Gov. Code §12990 (a-f) et seq.) and the applicable
22 regulations promulgated thereunder (California Code of Regulations, Title 2, Section
23 7285 et seq.).

24 **17.4.** The applicable regulations of the Fair Employment and Housing Commission
25 implementing Government Code §12990 (a-f), set forth in Chapter 5 of Division 4 of
26 Title 2 of the California Code of Regulations, are incorporated into this Agreement by
27 reference and made a part hereof as if set forth in full.

28 **17.5.** The applicable regulations of Section 504 of the Rehabilitation Act of 1973 (29 U.S.C.

§794 (a)) are incorporated into this Agreement by reference and made a part hereof as if set forth in full.

17.6. CONTRACTOR and its subcontractors shall give written notice of their obligations under this clause to labor organizations with which they have a collective bargaining or other agreement.

17.7. CONTRACTOR shall include the nondiscrimination and compliance provisions of this clause in all subcontracts to perform Work under this Agreement.

18. DISADVANTAGED BUSINESS ENTITY COMPLIANCE.

18.1. When applicable, CONTRACTOR and its subcontractors shall reference and abide by the guidance and Disadvantaged Business Enterprise (“DBE”) specifications contained in the California Department of Transportation’s Standard Specifications.

18.2. CONTRACTOR represents and warrants that is has fully read the applicable DBE requirements pertaining to this Project and has fully and accurately completed any and all required DBE forms.

18.3. CONTRACTOR represents and warrants that it will comply with all applicable DBE requirements for this Project.

18.4. CONTRACTOR shall comply with the applicable DBE provisions attached hereto as **Exhibit “D”** and incorporated by this reference as though fully set forth herein.

18.5. If any state or federal funds are withheld from COUNTY or not reimbursed to COUNTY due to CONTRACTOR’s failure to either comply with the DBE requirements set forth in the RFP and this Agreement, or to meet the mandatory DBE goals as determined by COUNTY, Caltrans, the Federal Highway Administration, and/or any other state or federal agency contributing funds to the Project, then CONTRACTOR shall fully reimburse COUNTY the amount of funding lost. COUNTY reserves the right to deduct any such loss in funding from the amount of compensation due to CONTRACTOR under this Agreement.

18.6. In addition to the above, CONTRACTOR’s failure to comply with DBE requirements/goals shall subject it to such sanctions as are permitted by law, which may

include, but shall not be limited to the following:

18.6.1. Termination of this Agreement;

18.6.2. Withholding monthly progress payments;

18.6.3. Denial of payment for any portion of the Project that was committed at the time of the execution of this Agreement to be performed by a DBE subcontractor, but was completed by CONTRACTOR or a substitute non-DBE subcontractor;

18.6.4. Compensatory, special, incidental, liquidated and other damages; and/or

18.6.5. Designation of CONTRACTOR as “nonresponsible,” and disqualification from bidding on future public works projects advertised by COUNTY.

19. PREVAILING WAGE.

19.1. CONTRACTOR and its subcontractors shall pay all workers employed on the Project the higher of either the rates determined by the Director of the California Department of Industrial Relations (“DIR”) or, when applicable, the Davis-Bacon Federal wage rates as supplemented by the Department of Labor regulations. The Davis-Bacon Federal wage rates are attached to the RFP. Copies of the State prevailing rate of per diem wages are on file with the Department of Industrial Relations, Division of Apprenticeship Standards, 445 Golden Gate Avenue, San Francisco, California, and at COUNTY’s Department of Public Works, and are available to CONTRACTOR and any other interested party upon request. CONTRACTOR shall post the prevailing rate of per diem wages to be posted at the Project site.

19.2. CONTRACTOR is aware of Labor Code Sections 1720 et seq, and 1770 et seq., as well as California Code of Regulations, Title 8 , Section 16000 et seq. (“Prevailing Wage Law”), which require the payment of prevailing wage rates and the performance of other requirements on certain “public works” projects, including work done for irrigation, utility, reclamation, and improvement districts, and other districts of this type. The Work on the Project involves “public works”, as defined by the Prevailing Wage Laws, and the total compensation is \$1,000 (one thousand) dollars or more. Contractor therefore agrees to fully comply with such Prevailing Wage Laws. To the

1 extent required under the Civil Code or any other provision of law, Contractor shall
2 deliver bonds to secure the payment of its workers and subcontractors, including the
3 payment of wages to works performing the work identified in Labor Code section
4 1720(a)(2).

5 **19.3.** CONTRACTOR is responsible for compliance with the provisions herein.

6 **19.4.** Mandatory Registration with the Department of Industrial Relations – NEW
7 REQUIREMENTS PURSUANT TO SB 854.

8 **19.4.1.** CONTRACTOR and its subcontractors shall register with the DIR and pay all
9 applicable fees as set forth in Labor Code section 1725.5.

10 **19.4.2.** CONTRACTOR and its subcontractors acknowledge that they shall not be listed
11 on any bid proposal for a public works project (submitted on or after March 1,
12 2015) unless registered with the DIR pursuant to Labor Code section 1725.5.
13 The requirements of this section shall apply unless one of the limited exceptions
14 provided under Labor Code Section 1771.1(a) applies.

15 **19.4.3.** CONTRACTOR and its subcontractors acknowledge that they shall not be
16 awarded any contract for public work on a public works project (awarded on or
17 after April 1, 2015) unless registered with the DIR pursuant to Labor Code
18 section 1725.5.

19 **19.4.4.** The Project described herein is subject to compliance monitoring and
20 enforcement with the DIR.

21 **19.4.5.** For further information concerning compliance with SB 854, please visit:
22 <http://www.dir.ca.gov/Public-Works/SB854.html>.

23 **19.5.** Cognizance of Violations by County.

24 **19.5.1.** CONTRACTOR understands and agrees that COUNTY shall take cognizance of
25 violations of Chapter 1 of Part 7 of Division 2 of the California Labor Code
26 committed in the course of the execution of this Agreement, and shall promptly
27 report any suspected violations to the Labor Commissioner.

28 **19.5.2.** If CONTRACTOR determines as a result of its own investigation that there has

1 been a violation of Chapter 1 of Part 7 of Division 2 of the California Labor
2 Code and withholds payment to CONTRACTOR, the procedures in California
3 Labor Code §1771.6 shall be followed.

4 **19.5.3.** CONTRACTOR may bring an action in a court of competent jurisdiction to
5 recover from COUNTY the difference between the wages actually paid to an
6 employee and the wages that were required to be paid to an employee pursuant
7 to Chapter 1 of Part 7 of Division 2 of the California Labor Code, any penalties
8 required to be paid pursuant to Chapter 1 of Part 7 of Division 2 of the
9 California Labor Code, and costs and attorney's fees related to the action, if
10 either of the following is true:

- 11 (a) COUNTY previously affirmatively represented to CONTRACTOR in
12 writing, in the call for bids, or otherwise, that the Work was not a "public
13 work," as defined in Chapter 1 of Part 7 of Division 2 of the California
14 Labor Code; or
- 15 (b) COUNTY received actual written notice from the Department of
16 Industrial Relations that the Work is a "public work," as defined in
17 Chapter 1 of Part 7 of Division 2 of the California Labor Code, and
18 failed to disclose that information to CONTRACTOR before the bid
19 opening or award.

20 **19.6.** Prevailing Wage Rates and Payroll Records.

21 **19.6.1.** CONTRACTOR agrees to comply with §§1775 and 1776 of the California
22 Labor Code relating to the payment of prevailing wage and the maintenance of
23 certified payroll records and to make the certified payroll records available for
24 inspection at all reasonable hours at CONTRACTOR's principal office. The
25 responsibility for compliance with these provisions is fixed with
26 CONTRACTOR. CONTRACTOR understands and agrees that it shall, as a
27 penalty to COUNTY, forfeit specific monetary fines for each worker paid less
28 than the prevailing wage rates as determined by the Labor Commissioner for the

1 work or craft in which the worker is employed for any Work done pursuant to
2 this Agreement.

3 **19.6.2. Prevailing Wage Compliance For those Projects subject to DIR Monitoring and**
4 *Enforcement.* CONTRACTOR has reviewed and agrees to comply with any
5 applicable provisions for those Projects subject to Department of Industrial
6 Relations (DIR) Monitoring and Enforcement of prevailing wages. COUNTY
7 hereby notifies CONTRACTOR that CONTRACTOR is responsible for
8 complying with the requirements of Senate Bill 854 (SB854) regarding certified
9 payroll record reporting. Further information concerning the requirements of
10 SB854 is available on the DIR website located at: [http://www.dir.ca.gov/Public-](http://www.dir.ca.gov/Public-Works/PublicWorksEnforcement.html)
11 [Works/PublicWorksEnforcement.html](http://www.dir.ca.gov/Public-Works/PublicWorksEnforcement.html).

12 **19.6.3.** CONTRACTOR shall be liable for penalties pursuant to this section when a
13 subcontractor on the Project fails to pay its workers the general prevailing rate
14 of per diem wages and any of the following conditions are met:

- 15 (a) CONTRACTOR had knowledge of that failure of the subcontractor to
16 pay the specified prevailing rate of wages to those workers; or
17 (b) CONTRACTOR fails to comply with the following requirement: The
18 contract executed between CONTRACTOR and the subcontractor for the
19 performance of Work on the Project shall include a copy of the
20 provisions of California Labor Code §§1771, 1775, 1776, 1777.5, 1813
21 and 1815; and
22 (c) CONTRACTOR fails to comply with the following requirement:
23 CONTRACTOR shall monitor the payment of the specified general
24 prevailing rate of per diem wages by the subcontractor to the employees,
25 by periodic review of the certified payroll records of the subcontractor;
26 and
27 (d) Upon becoming aware of the failure of the subcontractor to pay his or
28 her workers the specified prevailing rate of wages, CONTRACTOR shall

1 diligently take corrective action to halt or rectify the failure, including,
2 but not limited to, retaining sufficient funds due the subcontractor for
3 work performed on the public works project; and

- 4 (e) Prior to making final payment to the subcontractor for Work performed
5 on the Project, CONTRACTOR shall obtain an affidavit signed under
6 penalty of perjury from the subcontractor that the subcontractor has paid
7 the specified general prevailing rate of per diem wages to his or her
8 employees on the Project and any amounts due pursuant to California
9 Labor Code §1813.

10 **19.7. Work Day and Work Week Requirements.** CONTRACTOR agrees to comply with
11 §§1810 through 1815 of the California Labor Code and, when applicable, sections 103
12 and 107 of the Contract Work Hours and Safety Standards Act, 40 U.S.C. §§3700 et
13 seq., as supplemented by the Department of Labor regulations, which provide that
14 CONTRACTOR's workers and its subcontractor's workers may not be required or
15 permitted to work more than eight (8) hours in any one (1) calendar day and forty (40)
16 hours in any one (1) calendar week. Further, work performed by employees of
17 CONTRACTOR or its subcontractor in excess of eight (8) hours per day, and forty (40)
18 hours during any one (1) week, shall be compensated for all hours worked in excess of
19 eight (8) hours per day at not less than one and one-half (1½) times the basic rate of
20 pay. The responsibility for compliance with these provisions is fixed with
21 CONTRACTOR. CONTRACTOR understands and agrees that it shall, as a penalty to
22 COUNTY, forfeit specific monetary fines to COUNTY should CONTRACTOR or its
23 subcontractors fail to comply with the provisions contained within this Paragraph.

24 **19.8. Apprenticeship Requirements.**

25 **19.8.1.** CONTRACTOR agrees to comply with §§1777.5, 1777.6 and 1777.7 of the
26 California Labor Code relating to the employment of apprentices and to provide
27 COUNTY with copies of any contract award information and verified
28 statements of the journeyman and apprentice hours performed pursuant to this

1 Agreement as required by §1777.5(e). The responsibility for compliance with
2 these provisions is fixed with CONTRACTOR for all apprenticeable
3 occupations, where journeymen in the craft are employed on the public work, in
4 a ratio of not less than one (1) apprentice for each five (5) journeymen (unless
5 an exemption is granted in accordance with §1777.5) and CONTRACTOR and
6 its subcontractors shall not discriminate among otherwise qualified employees
7 as indentured apprentices on any public work solely on the ground of race,
8 religious creed, color, national origin, ancestry, sex, or age, except as provided
9 in California Labor Code §3077. Only apprentices, as defined in California
10 Labor Code §3077, who are in training under apprenticeship standards and who
11 have signed written apprentice agreements will be employed on public works in
12 apprenticeable occupations. This section shall not be enforced if the not-to-
13 exceed amount of this Agreement set forth and/or incorporated in the
14 “COMPENSATION” Section is less than thirty thousand dollars (\$30,000).

15 **19.8.2.** If the Project falls within the jurisdiction of California Labor Code §1777.5,
16 COUNTY shall, within five (5) days of the award, send a copy of the award to
17 the Division of Apprenticeship Standards. In addition, COUNTY shall notify
18 the Division of Apprenticeship Standards of a finding of any discrepancy
19 regarding the ratio of apprentices to journeymen within five (5) days of the
20 finding.

21 **19.9. Labor Standards Compliance Requirements.**

22 **19.9.1.** It is CONTRACTOR’s responsibility to provide all labor compliance
23 documentation from its subcontractors completely and accurately in a timely
24 manner. CONTRACTOR is responsible to review promptly and then forward
25 on all required documentation to COUNTY per the time schedules in the Labor
26 Compliance Handout. Included with the Labor Compliance Handout, COUNTY
27 will provide training, documentation requirements, forms, etc., at the
28 preconstruction conference or at a time designated by COUNTY.

1 **19.9.2.** In the event, during the review process of labor compliance documentation from
2 COUNTY's labor compliance monitor, inaccurate, missing or incomplete
3 information was provided, the labor compliance monitor will request from
4 CONTRACTOR the items, revisions and documentation needed. The cost of
5 this additional labor compliance enforcement shall be borne by
6 CONTRACTOR.

7 **20. INELIGIBILITY.**

8 **20.1.** CONTRACTOR represents and warrants that it and its subcontractors are not ineligible
9 to work for COUNTY due to violations of Labor Code §§1777.1 and 1777.7.

10 **20.2.** If CONTRACTOR is deemed ineligible to perform work on public works projects
11 pursuant to Labor Code Sections 1777.1 or 1777.7, then CONTRACTOR shall be
12 prohibited from bidding on, being awarded an agreement for, or performing work as a
13 subcontractor on this Project, or any other public works project within the state of
14 California.

15 **21. SIGNAGE REQUIREMENTS.**

16 **21.1.** Project Identity Signage. CONTRACTOR is required to provide and install the
17 required project identity signage as detailed in the Plans and Specifications, in the size
18 and at the location indicated by the Director of Public Works or his/her designee, and to
19 maintain the signage in good condition for the duration of the Project. The signage may
20 not be removed until the Notice of Completion is recorded or by written direction of the
21 Director of Public Works or his/her designee.

22 **21.2.** Required Employee Signage and Posters. CONTRACTOR is required to provide and
23 install the Federal and State required employee posters and the required material
24 pertaining to the required labor standards provisions are posted (including, but not
25 limited to, WH-1321, OSHA 3165 and OFCCP-English, EFCCP-Spanish) at the
26 worksite in a prominent and accessible place.

27 **21.3.** Section 3 Compliant Signage. If required by COUNTY, CONTRACTOR is directed to
28 provide and install the "Offer for Employment" signage as detailed in the Plans and

Specifications in the size and at the location indicated by the Director of Public Works or his/her designee and to maintain the signage in good condition for the duration of the Project. The signage may not be removed until the Notice of Completion is recorded or by written direction of the Director of Public Works or his/her designee.

22. CONFLICT OF INTEREST AND GRATUITIES.

22.1. CONTRACTOR agrees that it presently has no interest and shall not acquire any interest, direct or indirect, which could conflict in any manner or degree with the performance of services required to be performed under this Agreement. CONTRACTOR further agrees that in the performance of this Agreement, no person having any such interest shall be employed.

22.2. CONTRACTOR agrees to designate such person or persons who have responsibility for carrying out the services under this Agreement and that such person or persons as may be designated shall take any and all actions necessary to comply with COUNTY's Conflict of Interest Code adopted pursuant to California Government Code §81000 to the extent required thereunder.

22.3. If it is found, after notice and hearing by COUNTY, that gratuities (in the form of entertainment, gifts, or otherwise) were offered or given by CONTRACTOR, or any agent or representative of CONTRACTOR, to any officer, employee or agent of COUNTY with a view toward securing a contract or securing favorable treatment with respect to the awarding or amending or the making of any determinations with respect to the performance of this Agreement, COUNTY may, by written notice to CONTRACTOR, terminate the right of CONTRACTOR to proceed under this Agreement and/or may pursue such other rights and remedies provided by law or under this Agreement.

22.4. In the event this Agreement is terminated as provided herein, COUNTY shall be entitled to:

22.4.1. Pursue the same remedies against CONTRACTOR as it could pursue in the event of a breach of the Agreement by CONTRACTOR; and

1 **22.4.2.** As a penalty in addition to any other damages to which it may be entitled by
2 law, to exemplary damages in an amount (as determined by COUNTY) which
3 shall be not less than three (3) nor more than ten (10) times the costs incurred by
4 CONTRACTOR in providing any such gratuities to any such officer, employee
5 or agent.

6 **23. HOUSING AND URBAN DEVELOPMENT ACT COMPLIANCE.**

7 When applicable, CONTRACTOR agrees to comply with Section 3 of the Housing and Urban
8 Development Act of 1968 (42 U.S.C. 3601 et seq.) which provides that to the greatest extent feasible,
9 CONTRACTOR shall provide job training, employment and contracting opportunities for low- or
 very-low income residents in connection with the Project. The responsibility for compliance with
 these provisions is fixed with CONTRACTOR.

10 **24. COPELAND "ANTI-KICKBACK" ACT COMPLIANCE.**

11 When applicable, CONTRACTOR agrees to comply with the Copeland Act
12 ([18 USC §874](#) and [40 USC §276c](#); [29 C.F.R. Part 3](#)) which precludes CONTRACTOR and its
13 subcontractors from in any way inducing an employee to give up any part of the compensation to
14 which he or she is entitled under his or her contract of employment. CONTRACTOR and its
15 subcontractors shall submit a weekly statement of the wages paid to each employee performing on
16 covered work during the preceding payroll period. CONTRACTOR understands and agrees that
17 should CONTRACTOR its subcontractors induce an employee working on a covered contract to give
18 up any part of the compensation to which he or she is entitled, the inducing party may be subject to a
19 five thousand dollar (\$5,000) fine, or imprisonment for up to five (5) years, or both. CONTRACTOR
20 also understands and agrees that willful falsification of the statement of compliance may subject the
21 employer to civil or criminal prosecution and may be cause for contract termination or debarment. The
22 responsibility for compliance with these provisions is fixed with CONTRACTOR.

23 **25. FAIR LABOR STANDARDS ACT COMPLIANCE.**

24 When applicable, CONTRACTOR agrees to comply with the Fair Labor Standards Act of 1938
25 as amended (29 U.S.C. 201 et seq.) which establishes minimum wage, overtime pay, recordkeeping,
26 and youth employment standards affecting full-time and part-time workers on the Project. The
27 responsibility for compliance with these provisions is fixed with CONTRACTOR.

28 **26. CERTIFICATION REGARDING DEBARMENT, SUSPENSION AND OTHER
 RESPONSIBILITY MATTERS.**

 When applicable, CONTRACTOR agrees to execute a certification regarding debarment,
 suspension and other responsibility matters. The responsibility for compliance with this provision is
 fixed with CONTRACTOR.

**27. FEDERAL EQUAL EMPLOYMENT OPPORTUNITY CONSTRUCTION CONTRACT
 SPECIFICATIONS.**

 When applicable, CONTRACTOR agrees to incorporate the notice set forth in paragraph (d) of
 41 C.F.R. 60-4.2 relating to the "Equal Opportunity Clause" and the "Standard Federal Equal
 Employment Specifications." The responsibility for compliance with this provision is fixed with

CONTRACTOR.

28. CLEAN AIR ACT AND THE FEDERAL WATER POLLUTION CONTROL ACT.

When applicable, CONTRACTOR agrees to comply with all applicable standards, orders or regulations issued pursuant to the Clean Air Act (42 U.S.C. 7401 et seq.), the Federal Water Pollution Control Act as amended (33 U.S.C. 1251 et seq.), Presidential Executive Order 11738 and Environmental Protection Agency regulations set forth at 40 C.F.R. Part 15. CONTRACTOR understands and agrees that violations shall be reported to the Federal awarding agency and the Regional Office of the Environmental Protection Agency. The responsibility for compliance with these provisions is fixed with CONTRACTOR.

29. PROHIBITION ON THE USE OF FEDERAL FUNDS FOR LOBBYING.

When applicable, CONTRACTOR shall file the required certification. Each tier certifies to the tier above that it will not and has not used Federal appropriated funds to pay any person or organization for influencing or attempting to influence an officer or employee of any agency, a member of Congress, officer or employee of Congress, or an employee of a member of Congress in connection with obtaining any Federal contract, grant or any other award covered by 31 U.S.C. 1352. Each tier shall also disclose any lobbying with non-Federal funds that takes place in connection with obtaining any Federal award. Such disclosures are forwarded from tier to tier up to the recipient. The responsibility for compliance with this provision is fixed with CONTRACTOR.

30. FEDERAL EMPLOYMENT ELIGIBILITY VERIFICATION.

CONTRACTOR shall verify name, date of birth and social security number, along with immigration information for non-citizens in order to verify the identity and employment eligibility of both citizen and non-citizen new hires. The responsibility for compliance with this provision is fixed with CONTRACTOR.

31. THE CIVIL RIGHTS, HCD AND AGE DISCRIMINATION ACT ASSURANCES.

31.1. During the performance of this Agreement, CONTRACTOR assures that no otherwise qualified person shall be excluded from participation or employment, denied program benefits or be subjected to discrimination based on race, color, national origin, gender, age or handicap, under any program or activity funded by this Agreement, as required by Title VI of the Civil Rights Act of 1964, Title I of the Housing and Community Development Act of 1974, as amended, and the Age Discrimination Act of 1975, and all implementing regulations. The responsibility for compliance with these provisions is fixed with CONTRACTOR.

31.2. CONTRACTOR and its subcontractors shall not discriminate on the basis of race, color, national origin, or sex in the performance of this Agreement. CONTRACTOR shall carry out the applicable requirements of 49 C.F.R. Chapter 26 in the award and administration of Department of Transportation assisted contracts. Failure by

1 CONTRACTOR to carry out these requirements is a material breach of this Agreement,
2 which may result in the termination of this Agreement, or such other remedy as
3 COUNTY deems appropriate. CONTRACTOR shall include the nondiscrimination and
4 compliance provisions of this Paragraph in all subcontracts to perform Work under this
5 Agreement.

6 **32. FEDERAL EQUAL EMPLOYMENT OPPORTUNITY REQUIREMENTS.**

7 **32.1.** CONTRACTOR hereby agrees that it will incorporate or cause to be incorporated into
8 any contract for construction work, or modification thereof, as defined in the regulations
9 of the Secretary of Labor at 41 C.F.R. Chapter 60, which is paid for in whole or in part
10 with funds obtained from the Federal Government or borrowed on the credit of the
11 Federal Government pursuant to a grant, contract, loan insurance, or guarantee, or
12 undertaken pursuant to any Federal program involving such grant, contract, loan,
13 insurance, or guarantee, the following equal opportunity clause. For the purposes of
14 this Subsection, the term “contractor” shall refer to CONTRACTOR, and the term
15 “contract” shall refer to this Agreement:

16 *“During the performance of this contract, the Contractor agrees as follows:*

- 17 (1) *The contractor will not discriminate against any employee or applicant for*
18 *employment because of race, color, religion, sex, or national origin. The*
19 *contractor will take affirmative action to ensure that applicants are*
20 *employed, and that employees are treated during employment, without*
21 *regard to their race, color, religion, sex, or national origin. Such action*
22 *shall include, but not be limited to the following: Employment, upgrading,*
23 *demotion, or transfer, recruitment or recruitment advertising; layoff or*
24 *termination; rates of pay or other forms of compensation; and selection*
25 *for training, including apprenticeship. The contractor agrees to post in*
26 *conspicuous places, available to employees and applicants for*
27 *employment, notices to be provided by the contracting officer setting forth*
28 *the provisions of this nondiscrimination clause.*

- 1 (2) *The contractor will, in all solicitations or advertisements for employees*
2 *placed by or on behalf of the contractor, state that all qualified applicants*
3 *will receive consideration for employment without regard to race, color,*
4 *religion, sex, or national origin.*
- 5 (3) *The contractor will send to each labor union or representative of workers*
6 *with which he has a collective bargaining agreement or other contract or*
7 *understanding, a notice to be provided by the agency contracting officer,*
8 *advising the labor union or workers' representative of the contractor's*
9 *commitments under section 202 of Executive Order 11246 of September*
10 *24, 1965, and shall post copies of the notice in conspicuous places*
11 *available to employees and applicants for employment.*
- 12 (4) *The contractor will comply with all provisions of Executive Order 11246*
13 *of September 24, 1965, and of the rules, regulations, and relevant orders*
14 *of the Secretary of Labor.*
- 15 (5) *The contractor will furnish all information and reports required by*
16 *Executive Order 11246 of September 24, 1965, and by the rules,*
17 *regulations, and orders of the Secretary of Labor, or pursuant thereto, and*
18 *will permit access to his books, records, and accounts by the contracting*
19 *agency and the Secretary of Labor for purposes of investigation to*
20 *ascertain compliance with such rules, regulations, and orders.*
- 21 (6) *In the event of the contractor's non-compliance with the nondiscrimination*
22 *clauses of this contract or with any of such rules, regulations, or orders,*
23 *this contract may be canceled, terminated or suspended in whole or in*
24 *part and the contractor may be declared ineligible for further Government*
25 *contracts in accordance with procedures authorized in Executive Order*
26 *11246 of September 24, 1965, and such other sanctions may be imposed*
27 *and remedies invoked as provided in Executive Order 11246 of September*
28 *24, 1965, or by rule, regulation, or order of the Secretary of Labor, or as*

otherwise provided by law.

(7) the contractor will include the provisions of paragraphs (1) through (7) in every subcontract or purchase order unless exempted by rules, regulations, or orders of the Secretary of Labor issued pursuant to section 204 of Executive Order 11246 of September 24, 1965, so that such provisions will be binding upon each subcontractor or vendor. The contractor will take such action with respect to any subcontract or purchase order as may be directed by the Secretary of Labor as a means of enforcing such provisions including sanctions for noncompliance: Provided, however, that in the event the contractor becomes involved in, or is threatened with, litigation with a subcontractor or vendor as a result of such direction, the contractor may request the United States to enter into such litigation to protect the interests of the United States.”

32.2. CONTRACTOR further agrees that it will be bound by the above equal opportunity clause with respect to its own employment practices when it participates in federally-assisted construction work; provided that if CONTRACTOR so participating is a State or local government, the above equal opportunity clause is not applicable to any agency, instrumentality, or subdivision of such government which does not participate in work on or under the Agreement.

32.3. CONTRACTOR agrees that it will assist and cooperate actively with the administering agency and the Secretary of Labor in obtaining the compliance of Contractors and subcontractors with the equal opportunity clause and the rules, regulations, and relevant orders of the Secretary of Labor, that it will furnish the Department and HUD and the Secretary of Labor such information as they may require for the supervision of such compliance, and that it will otherwise assist the administering agency in the discharge of the agency’s primary responsibility for securing compliance.

32.4. CONTRACTOR further agrees that it will refrain from entering into any contract or contract modification subject to Executive Order 11246 of September 24, 1965, with a

contractor debarred from, or who has not demonstrated eligibility for, government contracts and federally-assisted construction contracts, pursuant to the Executive Order and will carry out such sanctions and penalties for violation of the equal opportunity clause as may be imposed upon contractors and subcontractors by the administering agency or the Secretary of Labor pursuant to Part II, Subpart D of the Executive Order. In addition, CONTRACTOR agrees that if it fails or refuses to comply with these undertakings, COUNTY may take any or all of the following actions: Cancel, terminate, or suspend in whole or in part this funding commitment (contract, loan, grant, insurance, guarantee); refrain from extending any further assistance to the applicant under the program with respect to which the failure or refund occurred until satisfactory assurance of future compliance has been received from such Contractor; and refer the case to the Department of Justice for appropriate legal proceedings.

33. ASSIGNMENT OF CLAIMS – CLAYTON OR CARTWRIGHT ACTS.

CONTRACTOR shall comply with the following provisions regarding the assignment of claims arising from either the Clayton Act or the Cartwright. For the purposes of this Section, the term “contractor” shall refer to CONTRACTOR, the term “awarding body” shall refer to COUNTY, and the term “public works contract” shall refer to this Agreement:

“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 or the subcontract. This assignment shall be made and become effective at the time the awarding body tenders final payment to the contractor, without further acknowledgment by the parties.”

34. NON-COLLUSION.

CONTRACTOR agrees he/she has executed and submitted with the Bid a Non-Collusion Affidavit that complies with Cal. Public Code §7106, included in **Exhibit “B”** and incorporated herein.

35. NOTICES AND REPORTS.

35.1. All notices and reports under this Agreement shall be in writing and may be given by

personal delivery or by mailing by certified mail, addressed as follows:

COUNTY
Imperial County Department of Public Works
Attention: Director

CONTRACTOR
«Consultant_Business_Name»
«Consultant_Street_Address»

155 South Eleventh Street
El Centro, CA 92243

«Consultant_City_State»

with copies to:

Imperial County Executive Office
Attention: County Executive Officer
940 West Main Street, Suite 208
El Centro, CA 92243

and:

Imperial County Department of Human
Resources and Risk Management
Attention: Director
940 West Main Street, Suite 101
El Centro, CA 92243

35.2. Notices and reports under this Agreement may be given by personal delivery or by mailing by certified mail at such other address as either Party may designate in a notice to the other Party given in such manner. Any notice given by mail shall be considered given when deposited in the United States Mail, postage prepaid, addressed as provided herein.

36. ENTIRE AGREEMENT.

This Agreement contains the entire agreement between COUNTY and CONTRACTOR relating to the transactions contemplated hereby and supersedes all prior or contemporaneous agreements, understandings, provisions, negotiations, representations, or statements, either written or verbal.

37. ASSIGNMENT.

Neither this Agreement nor any duties or obligations hereunder shall be assignable by CONTRACTOR without the prior written consent of COUNTY.

38. MODIFICATION.

No modification, waiver, amendment, discharge, or change of this Agreement shall be valid unless the same is in writing and signed by the Party against whom the enforcement of such modification, waiver, amendment, discharge, or change is or may be sought.

39. CAPTIONS.

Captions in this Agreement are inserted for convenience of reference only and do not define, describe or limit the scope or the intent of this Agreement or any of the terms thereof.

40. PARTIAL INVALIDITY.

If any provision in this Agreement is held by a court of competent jurisdiction to be invalid, void, or unenforceable, the remaining provisions will nevertheless continue in full force without being impaired or invalidated in any way.

1 **41. GENDER AND INTERPRETATION OF TERMS AND PROVISIONS.**

2 Words and expressions in the masculine gender include the feminine and neuter genders.
3 Words and expressions in the singular include the plural and words and expressions in the plural
4 include the singular. CONTRACTOR as used in this Agreement or in any other document referred to
5 in or made a part of this Agreement shall likewise include both singular and the plural, a corporation, a
6 partnership, individual, firm or person acting in any fiduciary capacity as executor, administrator,
7 trustee or in any other representative capacity or any other entity. All covenants herein contained on
8 the part of CONTRACTOR shall be joint and several if more than one person, firm or entity executes
9 the Agreement.

10 **42. WAIVER.**

11 No waiver of any breach or of any of the covenants or conditions of this Agreement shall be
12 construed to be a waiver of any other breach or to be consent to any further or succeeding breach of the
13 same or any other covenant or condition.

14 **43. CHOICE OF LAW.**

15 The laws of the State of California shall govern this Agreement. This Agreement is made and
16 entered into in Imperial County, California. Any action brought by either Party with respect to this
17 Agreement shall be brought in a court of competent jurisdiction within said County.

18 **44. AUTHORITY.**

19 **44.1.** Each individual executing this Agreement on behalf of CONTRACTOR represents and
20 warrants that:

21 **44.1.1.** He/She is duly authorized to execute and deliver this Agreement on behalf of
22 CONTRACTOR;

23 **44.1.2.** Such execution and delivery is in accordance with the terms of the Articles of
24 Incorporation or Partnership, any by-laws or Resolutions of CONTRACTOR
25 and;

26 **44.1.3.** This Agreement is binding upon CONTRACTOR in accordance with its terms.

27 **44.2.** CONTRACTOR shall deliver to COUNTY evidence acceptable to COUNTY of the
28 foregoing within thirty days of execution of this Agreement.

45. COUNTERPARTS.

This Agreement and any subsequent modifications may be executed in any number of
counterparts, each of which when executed shall be an original, and all of which together shall
constitute one and the same Agreement. No counterparts shall be effective until all Parties have
executed a counterpart hereof.

46. TIMING.

The Parties agree that time is of the essence in this Agreement.

1 **47. REVIEW OF AGREEMENT TERMS.**

2 **47.1.** Each Party has had the opportunity to receive independent legal advice from its
3 attorneys with respect to the advisability of making the representations, warranties,
4 covenants and agreements provided for herein, and with respect to the advisability of
5 executing this Agreement.

6 **47.2.** Each Party represents and warrants to and covenants with the other Party that:

7 **47.2.1.** This Agreement in its reduction to final written form is a result of extensive
8 good faith negotiations between the Parties and/or their respective legal counsel;
9 and

10 **47.2.2.** The Parties and/or their legal counsel have carefully reviewed and examined this
11 Agreement for execution by said Parties.

12 **47.3.** Any statute or rule of construction that ambiguities are to be resolved against the
13 drafting party shall not be employed in the interpretation of this Agreement.

14 **48. APPENDIX E OF THE TITLE VI ASSURANCES.**

15 During the performance of this contract, the CONTRACTOR, for itself, its assignees, and
16 successors in interest agrees to comply with the following nondiscrimination statutes and
authorities; including but not limited to:

17 **48.1.** Pertinent Nondiscrimination Authorities:

- 18 (a) Title VI of the Civil Rights Act of 1964 (42 U.S.C. § 2000d et seq, 78 stat. 252),
19 (prohibits discrimination on the basis of race, color, national origin); and 49
CFR Part 21.
- 20 (b) The Uniform Relocation Assistance and Real Property Acquisition Policies Act
21 of 1970, (42 U.S.C. § 4601), (prohibits unfair treatment of persons displaced or
22 whose property has been acquired because of Federal or Federal-Aid programs
and projects);
- 23 (c) Federal-Aid Highway Act of 1973, (23 U.S.C. § 324 et seq.), prohibits
24 discrimination on the basis of sex);
- 25 (d) Section 504 of the Rehabilitation Act of 1973, (29 U.S.C. § 794 et seq.) as
26 amended, (prohibits discrimination on the basis of disability); and 49 CFR Part
27 27;
- 28 (e) The Age Discrimination Act of 1975, as amended, (42 U.S.C. § 6101 et seq.),
(prohibits discrimination on the basis of age);
- (f) Airport and Airway Improvement Act of 1982, 949 U.S.C. § 4 71, Section 4
7123), as amended, (prohibits discrimination based on race, creed, color,
national origin, or sex);
- (g) The Civil Rights Restoration Act of 1987, (PL 100-209), (Broadened the scope,
coverage and applicability of Title VI of the Civil Rights Act of 1964, The Age

1 Discrimination Act of 1975 and Section 504 of the Rehabilitation Act of 1973,
2 by expanding the definition of the terms “programs or activities” to include all the
3 programs or activities of the Federal-aid recipients, subrecipients and
4 contractors, whether such programs or activities are Federally funded or not);
5 (h) Titles II and III of the Americans with Disabilities Act, which prohibit
6 discrimination on the basis of disability in the operation of public entities, public
7 and private transportation systems, places of public accommodation, and certain
8 testing entities (42 U.S.C. §§ 12131-12189) as implemented by Department of
9 Transportation regulations at 49 C.F.R. parts 37 and 38;
10 (i) The Federal Aviation Administration’s Nondiscrimination statute (49 U.S.C. §
11 47123) (prohibits discrimination on the basis of race, color, national origin, and
12 sex);
13 (j) Executive Order 12898, Federal Actions to Address Environmental Justice in
14 Minority Populations and Low-Income Populations, which ensures
15 discrimination against minority populations by discouraging programs, policies,
16 and activities with disproportionately high and adverse human health or environmental
17 effects on minority and low-income populations;
18 (k) Executive Order 13166, Improving Access to Services for persons with Limited
19 English Proficiency, and resulting agency guidance, national origin
20 discrimination includes discrimination because of limited English proficiency
21 (LEP). To ensure compliance with Title VI, you must take reasonable steps to
22 ensure that LEP persons have meaningful access to your programs (70
23 Fed. Reg. at 74087 to 74100);
24 (l) Title IX of the Education Amendment of 1972, as amended, which prohibits you
25 from discriminating because of sex in education programs or activities (20
26 U.S.C. 1681 et seq).

1 **IN WITNESS WHEREOF**, the Parties have executed this Agreement on the day and year first above
2 written.

3 **County of Imperial**

<<Business Entity Name>>

4
5 By: _____
6 John Hawk, Chairman
7 Imperial County Board of Supervisors

By: _____
«Consultant_Name_for_Signature»

8 **ATTEST:**

9
10 By: _____
11 Cynthia Medina,
12 Clerk of the Board of Supervisors

13 **APPROVED AS TO FORM:**

14 Eric R. Havens,
15 County Counsel

16
17 By: _____
18 Mistelle Abdelmagied,
19 Assistant County Counsel

EXHIBIT B

GENERAL SPECIFICATIONS

COUNTY OF IMPERIAL PUBLIC HEALTH LAB OSA AIR CONDITIONER REPLACEMENT PROJECT LOCATED AT 935 BROADWAY, EL CENTRO, CA 92243

COUNTY PROJECT NO. SR6983HTH

LAWS AND REGULATIONS

Contractor shall comply with all applicable and current local, state and federal laws, guidelines, standards, and California building codes.

SCHEDULE WORK HOURS

Monday-Friday between 7:00AM to 5:00PM per article 19, Hours of Work.

BACKGROUND:

The Imperial County Department of Public Health are in need of replacement of a 10 ton outside air conditioner and its impacted components to current (or upcoming new) code standards, which are used exclusively for an existing laboratory located within the County of Imperial Public Health Department. The existing 10 ton OSA air conditioner unit is over 15 years old and is at the end of its functionality.

PROJECT DESCRIPTION

Prepare plans and specifications to replace the existing 100% OSA AC unit with a new 100% OSA AC unit for the existing laboratory facility within the County of Imperial Public Health Department

SCOPE OF WORK

- 1.Design includes structural review of existing roof to determine if roof can accommodate new unit.
- 2.Include load calculations.
- 3.Field investigation to determine existing conditions.
- 4.Provide new 100% OSA AC unit to replace existing unit. Includes all associated equipment.
 - a- HVAC demolition.
 - b- Electrical demolition.

- c- New roof curb.
- d- New power feeder: Disconnect, conduit, and conductors to new unit.
- e- New insulation.
- f- New plenum drops supply.
- g- New rectangular/round duct.
- h- New flex connector.
 - i- New condensate copper pipe (insulation included in pipe plus hangers estimate).
- j- Gas piping connection.
- k- New lab space press system.
- l- Test and balance of new AC unit.
- m- New structural steel platform (TBD).
- n- Equipment rental (e.g. crane and rigging).
- o- Start-up and testing.
- p- Certification testing.
- q- Others costs (Permits)

See the Plans and Specifications for a detailed Scope of Work

The contract lump sum price paid for this project shall include full compensation for furnishing all labor, materials, tools, equipment and incidentals, and for doing all the work involved in this item of work as specified here in this Project Manual and no additional compensation shall be allowed therefore.

EXHIBIT C

SALES TAX CONDITIONS

**COUNTY OF IMPERIAL PUBLIC HEALTH LAB
OSA AIR CONDITIONER REPLACEMENT PROJECT
LOCATED AT
935 BROADWAY, EL CENTRO, CA 92243**

COUNTY PROJECT NO. SR6983HTH

Sales Tax Condition.

1. Sales Tax Condition: The permittee is required to have a Construction Site Permit reflecting the project site address, ensuring all eligible sales tax payments are allocated to the County of Imperial, Jurisdictional Code 13998. The permittee will provide the County of Imperial with a copy of the CDTFA account number and sub-permit for its contractor and subcontractors (if any) related to the job site. The permittee shall provide written verification to the County Executive Office that the necessary sales and use tax permits have been obtained prior to the issuance of any grading permits.
2. Construction/Material Budget: Prior to a grading permit, the permittee will provide the County Executive Office with a construction materials budget, an official construction materials budget, or a detailed budget outlining the construction and materials cost for the processing facility on permittee letterhead.
3. County of Imperial will require that all qualifying contractors and subcontractors exercise their option to obtain a California Department of Tax and Fee Administration (CDTFA) sub-permit for the jobsite and allocate all eligible use tax payments to Imperial County and LTA.
4. Prior to commencement of any construction activity at the Project Site, County of Imperial shall require that the contractor or subcontractor provide County with a copy of their CDTFA account number and sub-permit. County of Imperial shall either cause its construction contractor to treat the Project in accordance with California Sales and Use Tax Regulation 1521(b)(2)(B), California Sales and Use Tax Regulation 1521(c)(13)(B), and California Sales and Use Tax Regulation 1826(b) for sales and use tax purposes, or form a "Buying Company" as defined in the California Sales and Use Tax Regulation 1699(h). County of Imperial may adopt an alternate methodology to accomplish this goal if such methodology is approved by the County's Executive

Officer, which approval shall not be unreasonably withheld or delayed, prior to issuance of any building permit.

5. No later than forty-five (45) days after the due date for filing sales and use tax returns for each calendar quarter, occurring after the commencement of any construction activity on-site through and including the first anniversary of commercial operating date ("COD"), Contractor shall report to County of Imperial, the total amount of sales and use taxes related to the Project that are allocated to the County, and reported on County of Imperial's, general contractor's and subcontractors' applicable California sales and use tax returns.
6. **Guarantee Amounts.** Prior to the issuance of any building permit for the Project, Contractor shall provide County with a guarantee of the minimum sales and use taxes (based on a total construction and materials budget for the Project) that will be received by County and LTA under existing applicable sales and use tax laws. Contractor warrants that the sales/use tax guarantee amounts to be provided to County as mandated in this paragraph shall be true and accurate estimates of the projected sales and use taxes that will be generated for this Project. Contractor shall provide County with evidence of the projected sales/use taxes for the Project, including but not limited to sales tax receipts, and executed or anticipated engineering contracts, procurement contracts, and construction contracts. If the Parties are unable to agree upon a guarantee amount, then the dispute shall be referred to an independent accountant mutually acceptable to both Parties. The costs for such nonbinding mediation shall be borne by Contractor. Contractor warrants that the sales/use tax guarantee amounts to be provided to County as mandated in this paragraph will incorporate any and all sales/use tax exemptions that Contractor and/or its subcontractors intend to utilize, and that such exemptions will be disclosed to County fully and in good faith prior to the issuance of any building permit for this Project. Contractor understands and acknowledges that the sales/use tax guarantee amounts to be provided to County as mandated by this paragraph are a part of the consideration to be received by County in return for entering into this Agreement, and further understands and acknowledges that County would not enter into this Agreement but for said guarantee from Contractor. In the event that County and / or LTA receives less than the amount of sales / use taxes guaranteed pursuant to this paragraph, then Contractor shall pay, as and when provided below, to County or LTA as applicable, the amount of the applicable shortfall.
7. Adjustments to Guarantee Amounts.
 - a) The amount of sales and use tax anticipated to be generated is based on the projected construction materials. Additional construction materials beyond the original contract now projected will require the sales / use tax guarantee amounts to be adjusted.

- b)** To the extent of any reduction in the size of the Project as the result of any final ruling, stipulated judgment, or settlement, the sales / use tax guarantee amounts mandated under paragraph D shall be reduced pro rata based on the size of such reduction. To the extent of any reduction in the size of the Project as the result of any final ruling, stipulated judgment, or settlement, in accordance with Section V.C below, the not-to-exceed amounts set forth in Section III.B shall be reduced pro rata based on the size of such reduction.
- 8.** The complete amount due to County for the Project must be received within one (1) year after Project Closeout/Completion for this Project. If, within one (1) year after issuance of the final Certificate of Occupancy, the sales and use taxes received by the County are less than the amount guaranteed for that portion of the project, Contractor shall pay the difference to the County.
- 9.** Payments to County and LTA as a result of a shortfall shall be due within thirty days of County of Imperial's receipt of written notice of shortfall from the County. Payments received by County after the ninetieth (90th) day following County of Imperial's receipt of notice shall be deemed late. County of Imperial hereby agrees to pay interest at the rate of six percent (6%) per annum of the payment due for any payment received by County beyond the due date. Said interest shall be included with the late payment. The obligation to pay interest shall be stayed when such amounts are disputed in good faith, so long as Contractor submits the payments "under written protest." Upon determination of dispute, such interest may be assessed if it is determined that the dispute was not made in good faith.
- 10.** In the event that Contractor repowers or replaces the equipment onsite, each Site shall be designated as the "Point of Sale" so as to create an additional local tax-funding source for the County of Imperial.

EXHIBIT D

ASBESTOS REPORT

**COUNTY OF IMPERIAL PUBLIC HEALTH LAB
OSA AIR CONDITIONER REPLACEMENT PROJECT
LOCATED AT
935 BROADWAY, EL CENTRO, CA 92243**

COUNTY PROJECT NO. SR6983HTH



EMSL Analytical, Inc.

7916 Convo Court, Building 4, Suite A San Diego, CA 92111

Tel/Fax: (858) 499-1303 / (858) 499-1304

<http://www.EMSL.com> / sandiegolab@emsl.com

EMSL Order: 431603519

Customer ID: WEST60

Customer PO:

Project ID:

Attention: David A Christy

Western Environmental & Safety Tech.

7966 Arjons Drive

Suite 110

San Diego, CA 92126

Phone: (619) 571-3987

Fax: (858) 271-1856

Received Date: 12/15/2016 4:22 PM

Analysis Date: 12/16/2016

Collected Date:

Project: IMPERIAL COUNTY HEALTH CENTER / EL CENTRO CA

Test Report: Asbestos Analysis of Bulk Materials via EPA 600/R-93/116 Method using Polarized Light Microscopy

Sample	Description	Appearance	Non-Asbestos		Asbestos % Type
			% Fibrous	% Non-Fibrous	
01 431603519-0001	NORTH WALL / DRYWALL CORE	White Non-Fibrous Homogeneous	2% Glass	98% Non-fibrous (Other)	None Detected
02 431603519-0002	EAST WALL / DRYWALL CORE	White Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
03 431603519-0003	SOUTH WALL / DRYWALL CORE	White Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
04 431603519-0004	WEST CEILING / 2X4 CEILING TILE	White Fibrous Homogeneous	60% Cellulose 10% Min. Wool	10% Perlite 20% Non-fibrous (Other)	None Detected
05 431603519-0005	SIDE WALL / 12X12 WALL TILE	Yellow Fibrous Homogeneous	80% Glass	20% Non-fibrous (Other)	None Detected
06 431603519-0006	WEST ABOVE CEILING / 12X12 UPPER CEILING TILE	Yellow Fibrous Homogeneous	80% Glass	20% Non-fibrous (Other)	None Detected
07 431603519-0007	WEST ABOVE CEILING / UPPER CEILING TILE MASTIC	Brown Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
08 431603519-0008	WEST ABOVE CEILING / UPPER CEILING TILE DRYWALL CORE	White Fibrous Homogeneous	2% Glass	98% Non-fibrous (Other)	None Detected
09-Skim Coat 431603519-0009	WALL BEHIND DOOR / WALL PLASTER CORE	White Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
09-Plaster 431603519-0009A	WALL BEHIND DOOR / WALL PLASTER CORE	Gray Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
10 431603519-0010	WALL RIGHT OF DOOR / WALL DRYWALL CORE	White Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
11-Drywall 431603519-0011	CEILING / CEILING DRYWALL CORE	White Fibrous Homogeneous	2% Cellulose	98% Non-fibrous (Other)	None Detected
11-Joint Compound 431603519-0011A	CEILING / CEILING DRYWALL CORE	White Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
12 431603519-0012	LEFT WALL / WALL PLASTER CORE	White Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
13 431603519-0013	LOBBY ENTRY CEILING / 2X4 CEILING TILE	White Fibrous Homogeneous	60% Cellulose	10% Perlite 30% Non-fibrous (Other)	None Detected

Initial report from: 12/16/2016 19:12:47



7916 Convoy Court, Building 4, Suite A San Diego, CA 92111

Tel/Fax: (858) 499-1303 / (858) 499-1304

<http://www.EMSL.com> / sandiegolab@emsl.com

Customer ID: W20100

Customer PO:

Project ID:

Test Report: Asbestos Analysis of Bulk Materials via EPA 600/R-93/116 Method using Polarized Light Microscopy

Sample	Description	Appearance	Non-Asbestos		Asbestos
			% Fibrous	% Non-Fibrous	% Type
14-Shingle 431603519-0014	ROOF ABOVE CEILING / ROOF CORE	Black Fibrous Homogeneous	7% Glass	93% Non-fibrous (Other)	None Detected
14-Felt 431603519-0014A	ROOF ABOVE CEILING / ROOF CORE	Black Fibrous Homogeneous	10% Glass	90% Non-fibrous (Other)	None Detected
15-Shingle 431603519-0015	ROOF ABOVE EXAM RM 1 / ROOF CORE	Black Fibrous Homogeneous	5% Glass	95% Non-fibrous (Other)	None Detected
15-Felt 431603519-0015A	ROOF ABOVE EXAM RM 1 / ROOF CORE	Black Fibrous Homogeneous	10% Glass	90% Non-fibrous (Other)	None Detected
16 431603519-0016	ROOF - NORTH / ROOF EDGE MASTIC	Black Fibrous Homogeneous	5% Cellulose	95% Non-fibrous (Other)	None Detected

Analyst(s)

Natalia Toscano (20)

Mariah Curran, Laboratory Manager
or Other Approved Signatory

EMSL maintains liability limited to cost of analysis. This report relates only to the samples reported and may not be reproduced, except in full, without written approval by EMSL. EMSL bears no responsibility for sample collection activities or analytical method limitations. Interpretation and use of test results are the responsibility of the client. This report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST or any agency of the federal government. Non-friable organically bound materials present a problem matrix and therefore EMSL recommends gravimetric reduction prior to analysis. Samples received in good condition unless otherwise noted. Estimated accuracy, precision and uncertainty data available upon request. Unless requested by the client, building materials manufactured with multiple layers (i.e. linoleum, wallboard, etc.) are reported as a single sample. Reporting limit is 1%

Samples analyzed by EMSL Analytical, Inc. San Diego, CA NVLAP Lab Code 200855-0, CA ELAP 2713

Report #

209252

0

CEPA OPERATIONS, INC.

1140 E. LOCUST STREET

ONTARIO, CA 91761

909.923-1988 FAX 909.923-8712

Date of Test

5/26/2021

Unit Mfg.	Customer (IMPE0004)			Type of Equipment
NUAIRE	IMPERIAL COUNTY PUBLIC HEALTH			CLASS II TYPE B2
N/A	935 BROADWAY			Serial# A
Model	EL CENTRO	CA	92243	22345WN
NU-430-600	Unit Location			Serial# B
N/A	LAB			N/A

Supply Velocity Profile

C11

Average Supply Velocity

48.58 FPM

47	48	51	50	51	50	51	51	50	50	48					
46	45	49	49	49	53	48	48	50	48	48					
43	44	46	49	51	54	53	50	47	44	42					

Exhaust Velocity Profile

A5

Average Exhaust Velocity

405.00 FPM

409	406	402	406	402											

Front Access Opening Velocity Calculated

Avg 91.21 FPM

Ducted Exhaust HARD DUCTED

Front Access Opening 64X10" 4.44

Secondary Access Opening N/A N/A

Hepa Filters

Supply 1-21X61X6

9.22 22-1/8X64

Sec. Supply N/A

Exhaust 1-24X30X

N/A N/A

Testing Criteria (Avg)

Supply Velocity 54-65 FPM

N/A

Front Acc. Opening Velocity 100-110 FPM

Exhaust Velocity 444.00-488.40 CFM

Belt N/A

Pre-Filter N/A

N/A

U.V. Lamp 1-1015L 632

Fluor. Lamp 1-F60T12 CW/HO

Serial# A

22345WN

Remarks

N/A

UNIT NEEDS DECONTAMINATION AND FILTER CHANGE. UNIT TAGGED OUT. DUCTED ON BOTH SUPPLY AND EXHAUST.

Hepa Leak Test Location

Leakage Detected

Supply

N/A

Exhaust

N/A

Leakage Sealed

N/A

N/A

Leak Type

Media

N/A

N/A

Gasket

N/A

N/A

Structural

N/A

N/A

Equipment Calibration Data: Nist Traceable

I.D.#

Cal. Due Date

Photometer

D05PH-D

1/22/22

Air Velocity Meter

D05VE-C

7/9/21

Particle Counter

S14PC-A

9/21/21

Noise

N/A

N/A

U.V. Meter

N/A

N/A

Light Meter

N/A

N/A

Elec. Safety Tester

N/A

N/A

N/A

N/A

N/A

N/A

Laminar Flow Criteria

0.5 Micron

3520/M3

5.0 Micron

N/A

Airflow Velocity

N/A

Y	N	(Tests Required)	Value	Pass:	Y	N	N/A
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Aerosol Challenge (Emery 3004)			<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Velocity Profile			<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Inflow Velocity Test (FAO)			<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Airflow Smoke Pattern			<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Particle Counts			<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Ground Polarity					
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Cabinet Leak Test					
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Site Survey			<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Electric Leakage		N/A			
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Scan Test < .01% Leakage		N/A	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Penetration Test < .005% Leakage		N/A	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Light Intensity (Foot Candles)		N/A			
<input type="checkbox"/>	<input checked="" type="checkbox"/>	U.V. (> 40 Microwatts)		N/A			
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Temperature (Degrees F)		N/A			
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Motor Voltage		N/A			
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Line Voltage		N/A			
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Sound D.B. "A"		N/A			
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Scan Rate (inches per sec)		2	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Static Hood	+	N/A	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Static Exhaust	-	1.500	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Aerosol Concentration (Supply mgl)		N/A	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Aerosol Concentration (Exhaust mgl)		N/A	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Decon:		N/A			

Particle Count

0.5

5.0

0

N/A

0

N/A

0

N/A

0

N/A

0

N/A

0

N/A

Avg

0

N/A

Status Summary

- ☐ Certifies ☒ Initial
☐ Certifies Clean Only ☐ Retest
☒ Does Not Certify ☐ Repair

Tested In Accordance With

MANUFACTURER'S SPECIFICATIONS
ISO 14644 CLASS 5

Tested By

CHARLES TAYLOR

N/A

N/A

Next Service Due

EXHIBIT F

SPECIFICATIONS

**COUNTY OF IMPERIAL PUBLIC HEALTH LAB
OSA AIR CONDITIONER REPLACEMENT PROJECT
LOCATED AT
935 BROADWAY, EL CENTRO, CA 92243

COUNTY PROJECT NO. SR6983HTH**

SECTION 23 05 29
HANGERS AND SUPPORTS 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. Metal pipe hangers and supports.
- 2. Trapeze pipe hangers.
- 3. Metal framing systems.
- 4. Thermal-hanger shield inserts.
- 5. Fastener systems.
- 6. Pipe stands.
- 7. Equipment supports.

- B. Related Sections:

- 1. Section 23 31 13 "Metal Ducts" for duct hangers and supports.

1.3 DEFINITIONS

- A. MSS: Manufacturers Standardization Society of The Valve and Fittings Industry Inc.

PART 2 - PRODUCTS

2.1 METAL PIPE HANGERS AND SUPPORTS

- A. Carbon-Steel Pipe Hangers and Supports:

- 1. Description: MSS SP-58, Types 1 through 58, factory-fabricated components.
- 2. Galvanized Metallic Coatings: Pregalvanized or hot dipped.
- 3. Nonmetallic Coatings: Plastic coating, jacket, or liner.
- 4. Padded Hangers: Hanger with fiberglass or other pipe insulation pad or cushion to support bearing surface of piping.
- 5. Hanger Rods: Continuous-thread rod, nuts, and washer made of carbon steel.

B. Copper Pipe Hangers:

1. Description: MSS SP-58, Types 1 through 58, copper-coated-steel, factory-fabricated components.
2. Hanger Rods: Continuous-thread rod, nuts, and washer made of copper-coated steel.

2.2 TRAPEZE PIPE HANGERS

- A. Description: MSS SP-58, Type 59, shop- or field-fabricated pipe-support assembly made from structural carbon-steel shapes with MSS SP-58 carbon-steel hanger rods, nuts, saddles, and U-bolts.

2.3 THERMAL-HANGER SHIELD INSERTS

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
1. National Pipe Hanger Corporation.
 2. Piping Technology & Products, Inc.
 3. Rilco Manufacturing Co., Inc.
 4. Or equal.
- B. Insulation-Insert Material for Cold Piping: ASTM C 591, Type VI, Grade 1 polyisocyanurate with 125-psig minimum compressive strength and vapor barrier.
- C. Insulation-Insert Material for Hot Piping: Water-repellent treated, ASTM C 533, Type I calcium silicate with 100-psig minimum compressive strength.
- D. For Trapeze or Clamped Systems: Insert and shield shall cover entire circumference of pipe.
- E. For Clevis or Band Hangers: Insert and shield shall cover lower 180 degrees of pipe.
- F. Insert Length: Extend 2 inches beyond sheet metal shield for piping operating below ambient air temperature.

2.4 FASTENER SYSTEMS

- A. Powder-Actuated Fasteners: Threaded-steel stud, for use in hardened Portland cement concrete with pull-out, tension, and shear capacities appropriate for supported loads and building materials where used.
- B. Mechanical-Expansion Anchors: Insert-wedge-type, zinc-coated steel anchors, for use in hardened Portland cement concrete; with pull-out, tension, and shear capacities appropriate for supported loads and building materials where used.

2.5 PIPE STANDS

- A. General Requirements for Pipe Stands: Shop- or field-fabricated assemblies made of manufactured corrosion-resistant components to support roof-mounted piping.
- B. Compact Pipe Stand: One-piece plastic unit with integral-rod roller, pipe clamps, or V-shaped cradle to support pipe, for roof installation without membrane penetration.
- C. Low-Type, Single-Pipe Stand: One-piece plastic base unit with plastic roller, for roof installation without membrane penetration.
- D. High-Type, Single-Pipe Stand:
 - 1. Description: Assembly of base, vertical and horizontal members, and pipe support, for roof installation without membrane penetration.
 - 2. Base: Stainless steel.
 - 3. Vertical Members: Two or more cadmium-plated-steel or stainless-steel, continuous-thread rods.
 - 4. Horizontal Member: Cadmium-plated-steel or stainless-steel rod with plastic or stainless-steel, roller-type pipe support.
- E. High-Type, Multiple-Pipe Stand:
 - 1. Description: Assembly of bases, vertical and horizontal members, and pipe supports, for roof installation without membrane penetration.
 - 2. Bases: One or more; plastic.
 - 3. Vertical Members: Two or more protective-coated-steel channels.
 - 4. Horizontal Member: Protective-coated-steel channel.
 - 5. Pipe Supports: Galvanized-steel, clevis-type pipe hangers.
- F. Curb-Mounted-Type Pipe Stands: Shop- or field-fabricated pipe supports made from structural-steel shapes, continuous-thread rods, and rollers, for mounting on permanent stationary roof curb.

2.6 EQUIPMENT SUPPORTS

- A. Description: Welded, shop- or field-fabricated equipment support made from structural carbon-steel shapes.

PART 3 - EXECUTION

3.1 HANGER AND SUPPORT INSTALLATION

- A. Metal Pipe-Hanger Installation: Comply with MSS SP-58. Install hangers, supports, clamps, and attachments as required to properly support piping from the building structure.
- B. Metal Trapeze Pipe-Hanger Installation: Comply with MSS SP-58. Arrange for grouping

of parallel runs of horizontal piping, and support together on field-fabricated trapeze pipe hangers.

1. Pipes of Various Sizes: Support together and space trapezes for smallest pipe size or install intermediate supports for smaller diameter pipes as specified for individual pipe hangers.
 2. Field fabricate from ASTM A 36/A 36M, carbon-steel shapes selected for loads being supported. Weld steel according to AWS D1.1/D1.1M.
- C. Metal Framing System Installation: Arrange for grouping of parallel runs of piping, and support together on field-assembled metal framing systems.
- D. Thermal-Hanger Shield Installation: Install in pipe hanger or shield for insulated piping.
- E. Fastener System Installation:
1. Install mechanical-expansion anchors in concrete after concrete is placed and completely cured. Install fasteners according to manufacturer's written instructions.
- F. Pipe Stand Installation:
1. Pipe Stand Types except Curb-Mounted Type: Assemble components and mount on smooth roof surface. Do not penetrate roof membrane.
 2. Curb-Mounted-Type Pipe Stands: Assemble components or fabricate pipe stand and mount on permanent, stationary roof curb.
- G. Install hangers and supports complete with necessary attachments, inserts, bolts, rods, nuts, washers, and other accessories.
- H. Equipment Support Installation: Fabricate from welded-structural-steel shapes.
- I. Install hangers and supports to allow controlled thermal and seismic movement of piping systems, to permit freedom of movement between pipe anchors, and to facilitate action of expansion joints, expansion loops, expansion bends, and similar units.
- J. Install lateral bracing with pipe hangers and supports to prevent swaying.
- K. Install building attachments within concrete slabs or attach to structural steel. Install additional attachments at concentrated loads, including valves, flanges, and strainers, NPS 2-1/2 and larger and at changes in direction of piping. Install concrete inserts before concrete is placed; fasten inserts to forms and install reinforcing bars through openings at top of inserts.
- L. Load Distribution: Install hangers and supports so that piping live and dead loads and stresses from movement will not be transmitted to connected equipment.
- M. Pipe Slopes: Install hangers and supports to provide indicated pipe slopes and to not exceed maximum pipe deflections allowed by ASME B31.9 for building services piping.
- N. Insulated Piping:

1. Attach clamps and spacers to piping.
 - a. Piping Operating above Ambient Air Temperature: Clamp may project through insulation.
 - b. Piping Operating below Ambient Air Temperature: Use thermal-hanger shield insert with clamp sized to match OD of insert.
 - c. Do not exceed pipe stress limits allowed by ASME B31.9 for building services piping.
2. Install MSS SP-58, Type 39, protection saddles if insulation without vapor barrier is indicated. Fill interior voids with insulation that matches adjoining insulation.
 - a. Option: Thermal-hanger shield inserts may be used. Include steel weight-distribution plate for pipe NPS 4 and larger if pipe is installed on rollers.
3. Install MSS SP-58, Type 40, protective shields on cold piping with vapor barrier. Shields shall span an arc of 180 degrees.
 - a. Option: Thermal-hanger shield inserts may be used. Include steel weight-distribution plate for pipe NPS 4 and larger if pipe is installed on rollers.
4. Shield Dimensions for Pipe: Not less than the following:
 - a. NPS 1/4 to NPS 3-1/2: 12 inches long and 0.048 inch thick.
 - b. NPS 4: 12 inches long and 0.06 inch thick.
 - c. NPS 5 and NPS 6: 18 inches long and 0.06 inch thick.
 - d. NPS 8 to NPS 14: 24 inches long and 0.075 inch thick.
5. Pipes NPS 8 and Larger: Include reinforced calcium-silicate-insulation inserts of length at least as long as protective shield.
6. Thermal-Hanger Shields: Install with insulation same thickness as piping insulation.

3.2 EQUIPMENT SUPPORTS

- A. Fabricate structural-steel stands to suspend equipment from structure overhead or to support equipment above floor.
- B. Grouting: Place grout under supports for equipment and make bearing surface smooth.
- C. Provide lateral bracing, to prevent swaying, for equipment supports.

3.3 ADJUSTING

- A. Hanger Adjustments: Adjust hangers to distribute loads equally on attachments and to achieve indicated slope of pipe.
- B. Trim excess length of continuous-thread hanger and support rods to 1-1/2 inches.

3.4 HANGER AND SUPPORT SCHEDULE

- A. Specific hanger and support requirements are in Sections specifying piping systems and equipment.
- B. Comply with MSS SP-58 for pipe-hanger selections and applications that are not specified in piping system Sections.
- C. Use hangers and supports with galvanized metallic coatings for piping and equipment that will not have field-applied finish.
- D. Use nonmetallic coatings on attachments for electrolytic protection where attachments are in direct contact with copper tubing.
- E. Use carbon-steel pipe hangers and supports, metal trapeze pipe hangers and metal framing systems and attachments for general service applications.
- F. Use copper-plated pipe hangers and copper attachments for copper piping and tubing.
- G. Use padded hangers for piping that is subject to scratching.
- H. Use thermal-hanger shield inserts for insulated piping and tubing.
- I. Vertical-Piping Clamps: Unless otherwise indicated and except as specified in piping system Sections, install the following types:
 - 1. Extension Pipe or Riser Clamps (MSS Type 8): For support of pipe risers NPS 3/4 to NPS 24.
 - 2. Carbon- or Alloy-Steel Riser Clamps (MSS Type 42): For support of pipe risers NPS 3/4 to NPS 24 if longer ends are required for riser clamps.
- J. Building Attachments: Unless otherwise indicated and except as specified in piping system Sections, install the following types:
 - 1. Steel or Malleable Concrete Inserts (MSS Type 18): For upper attachment to suspend pipe hangers from concrete ceiling.
 - 2. Top-Beam C-Clamps (MSS Type 19): For use under roof installations with bar-joist construction, to attach to top flange of structural shape.
 - 3. Side-Beam or Channel Clamps (MSS Type 20): For attaching to bottom flange of beams, channels, or angles.
 - 4. Center-Beam Clamps (MSS Type 21): For attaching to center of bottom flange of beams.
 - 5. Welded Beam Attachments (MSS Type 22): For attaching to bottom of beams if loads are considerable and rod sizes are large.
 - 6. C-Clamps (MSS Type 23): For structural shapes.
 - 7. Top-Beam Clamps (MSS Type 25): For top of beams if hanger rod is required tangent to flange edge.
 - 8. Side-Beam Clamps (MSS Type 27): For bottom of steel I-beams.
 - 9. Steel-Beam Clamps with Eye Nuts (MSS Type 28): For attaching to bottom of steel I-beams for heavy loads.
 - 10. Linked-Steel Clamps with Eye Nuts (MSS Type 29): For attaching to bottom of

- steel I-beams for heavy loads, with link extensions.
11. Malleable-Beam Clamps with Extension Pieces (MSS Type 30): For attaching to structural steel.
 12. Welded-Steel Brackets: For support of pipes from below or for suspending from above by using clip and rod. Use one of the following for indicated loads:
 - a. Light (MSS Type 31): 750 lb.
 - b. Medium (MSS Type 32): 1500 lb.
 - c. Heavy (MSS Type 33): 3000 lb.
 13. Side-Beam Brackets (MSS Type 34): For sides of steel or wooden beams.
 14. Horizontal Travelers (MSS Type 58): For supporting piping systems subject to linear horizontal movement where headroom is limited.
- K. Saddles and Shields: Unless otherwise indicated and except as specified in piping system Sections, install the following types:
1. Steel-Pipe-Covering Protection Saddles (MSS Type 39): To fill interior voids with insulation that matches adjoining insulation.
 2. Protection Shields (MSS Type 40): Of length recommended in writing by manufacturer to prevent crushing insulation.
 3. Thermal-Hanger Shield Inserts: For supporting insulated pipe.
- L. Comply with MSS SP-58 for trapeze pipe-hanger selections and applications that are not specified in piping system Sections.
- M. Comply with MFMA-103 for metal framing system selections and applications that are not specified in piping system Sections.
- N. Use mechanical-expansion anchors instead of building attachments where required in concrete construction.

END OF SECTION 23 05 29

SECTION 23 05 53
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. Pipe labels.
 - 3. Volume Damper Location Flags.
 - 4. Above Ceiling Equipment Markers

1.3 ACTION SUBMITTALS

- A. Product Data: For each type of product.

PART 2 - PRODUCTS

2.1 EQUIPMENT LABELS

- A. Plastic Labels for Equipment:
 - 1. Material and Thickness: Multilayer, multicolor, plastic labels for mechanical engraving, 1/16 inch thick, and having predrilled holes for attachment hardware.
 - 2. Letter Color: Black
 - 3. Background Color: White.
 - 4. Maximum Temperature: Able to withstand temperatures up to 160 deg F.
 - 5. Minimum Label Size: Length and width vary for required label content, but not less than 2-1/2 by 3/4 inch.
 - 6. 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-quarters the size of principal lettering.
 - 7. Fasteners: Stainless-steel rivets self-tapping screw.
 - 8. Adhesive: Contact-type permanent adhesive, compatible with label and with substrate.

- B. Label Content: Include equipment's Drawing designation or unique equipment number,
- C. instructions.

2.2 PIPE LABELS

- A. General Requirements for Manufactured Pipe Labels: Preprinted, color-coded, with lettering indicating service, and showing flow direction.
- B. Self-Adhesive Pipe Labels: Printed plastic with contact-type, permanent-adhesive backing.
- C. Pipe Label Contents: Include identification of piping service using same designations or abbreviations as used on Drawings; also include pipe size and an arrow indicating flow direction.
 - 1. Flow-Direction Arrows: Integral with piping-system service lettering to accommodate both directions or as separate unit on each pipe label to indicate flow direction.
- D. Lettering Size: At least 1/2 inch for viewing distances up to 72 inches and proportionately larger lettering for greater viewing distances.

2.3 VOLUME DAMPER FLAGS

- A. Flags: Yellow one-inch wide tape, minimum 18 inches long.

2.4 ABOVE CEILING EQUIPMENT MARKERS

- A. 3/4" self-adhesive, colored dots.

PART 3 - EXECUTION

3.1 PREPARATION

- A. Clean piping and equipment surfaces of substances that could impair bond of identification devices, including dirt, oil, grease, release agents, and incompatible primers, paints, and encapsulants.

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 VOLUME DAMPER FLAG INSTALLATION

- A. Install volume damper flags at each volume damper prior to insulation installation. Flags shall remain visible throughout construction
- B. Remove flags from ductwork exposed in finished spaces after balancing reports are accepted.

3.5 ABOVE CEILING EQUIPMENT LOCATOR

- A. Affix to ceiling grid nearest to directly below in a discrete manner. Label with an arrow pointing to the optimal tile to be lifted for access.
- B. Install self-adhesive dots schedule:
 - 1. Controls: Blue
 - 2. Filter Access: Yellow
 - 3. Electrical Disconnect; Green.

3.6 PIPE LABEL INSTALLATION

- A. Pipe Label Locations: Locate pipe labels where piping is exposed or above accessible ceilings in finished spaces; machine rooms; accessible maintenance spaces such as shafts, tunnels, and plenums; and exterior exposed locations as follows:
 - 1. Near each valve and control device.
 - 2. Near each branch connection, excluding short takeoffs for fixtures and terminal units. Where flow pattern is not obvious, mark each pipe at branch.
 - 3. Near penetrations and on both sides of through walls, floors, ceilings, and inaccessible enclosures.
 - 4. At access doors, manholes, and similar access points that permit view of concealed piping.
 - 5. Near major equipment items and other points of origination and termination.
 - 6. Spaced at maximum intervals of 50 feet along each run. Reduce intervals to 25 feet in areas of congested piping and equipment.
 - 7. On piping above removable acoustical ceilings. Omit intermediately spaced labels.
- B. Directional Flow Arrows: Arrows shall be used to indicate direction of flow in pipes,

including pipes where flow is allowed in both directions.

- C. Pipe Label Color Schedule:
 - 1. Condensate Piping: White Lettering on Green Background
 - 2. Gas Piping: Black Lettering on Yellow Background

END OF SECTION 23 05 53

SECTION 23 05 93
TESTING, ADJUSTING, AND BALANCING 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. Balancing Air Systems:
 - a. Constant-volume air systems.
 - 2. Duct leakage tests.

1.3 DEFINITIONS

- A. BAS: Building automation system.
- B. TAB: Testing, adjusting, and balancing.
- C. TAB Specialist: An independent entity meeting qualifications to perform TAB work.
- D. TDH: Total dynamic head.

1.4 INFORMATIONAL SUBMITTALS

- A. Qualification Data: Submit documentation that the TAB specialist and this Project's TAB team members meet the qualifications specified in "Quality Assurance" Article.
- B. Strategies and Procedures Plan: Submit TAB strategies and step-by-step procedures as specified in "Preparation" Article.
- C. System Readiness Checklists: Within 30 days of Contractor's Notice to Proceed, submit system readiness checklists as specified in "Preparation" Article.
- D. Certified TAB reports.
- E. Sample report forms.

F. Instrument calibration reports, to include the following:

1. Instrument type and make.
2. Serial number.
3. Application.
4. Dates of use.
5. Dates of calibration.

1.5 QUALITY ASSURANCE

- A. TAB Specialists Qualifications: Certified by AABC, NEBB or TABB.
- B. Instrumentation Type, Quantity, Accuracy, and Calibration: Comply with requirements in ASHRAE 111, Section 4, "Instrumentation."

1.6 FIELD CONDITIONS

- A. Partial Owner Occupancy: Owner may occupy completed areas of building before Substantial Completion. Cooperate with Owner during TAB operations to minimize conflicts with Owner's operations.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine the Contract Documents to become familiar with Project requirements and to discover conditions in systems designs that may preclude proper TAB of systems and equipment.
- B. Examine installed systems for balancing devices, such as test ports, gage cocks, thermometer wells, flow-control devices, balancing valves and fittings, and manual volume dampers. Verify that locations of these balancing devices are applicable for intended purpose and are accessible.
- C. Examine the approved submittals for HVAC systems and equipment.
- D. Examine design data including HVAC system descriptions, statements of design assumptions for environmental conditions and systems output, and statements of philosophies and assumptions about HVAC system and equipment controls.
- E. Examine equipment performance data including fan and pump curves.
 1. Relate performance data to Project conditions and requirements, including system effects that can create undesired or unpredicted conditions that cause

- reduced capacities in all or part of a system.
2. Calculate system-effect factors to reduce performance ratings of HVAC equipment when installed under conditions different from the conditions used to rate equipment performance. To calculate system effects for air systems, use tables and charts found in AMCA 201, "Fans and Systems," or in SMACNA's "HVAC Systems - Duct Design." Compare results with the design data and installed conditions.
- F. Examine system and equipment installations and verify that field quality-control testing, cleaning, and adjusting specified in individual Sections have been performed.
 - G. Examine test reports specified in individual system and equipment Sections.
 - H. Examine HVAC equipment and verify that bearings are greased, belts are aligned and tight, filters are clean, and equipment with functioning controls is ready for operation.
 - I. Examine heat-transfer coils for correct piping connections and for clean and straight fins.
 - J. Examine operating safety interlocks and controls on HVAC equipment.
 - K. Report deficiencies discovered before and during performance of TAB procedures. Observe and record system reactions to changes in conditions. Record default set points if different from indicated values.

3.2 PREPARATION

- A. Prepare a TAB plan that includes the following:
 1. Equipment and systems to be tested.
 2. Strategies and step-by-step procedures for balancing the systems.
 3. Instrumentation to be used.
 4. Sample forms with specific identification for all equipment.
- B. Perform system-readiness checks of HVAC systems and equipment to verify system readiness for TAB work. Include, at a minimum, the following:
 1. Airside:
 - a. Verify that leakage and pressure tests on air distribution systems have been satisfactorily completed.
 - b. Duct systems are complete with terminals installed.
 - c. Volume, smoke, and fire dampers are open and functional.
 - d. Clean filters are installed.
 - e. Fans are operating, free of vibration, and rotating in correct direction.
 - f. Variable-frequency controllers' startup is complete and safeties are verified.
 - g. Automatic temperature-control systems are operational.
 - h. Ceilings are installed.
 - i. Windows and doors are installed.
 - j. Suitable access to balancing devices and equipment is provided.

3.3 GENERAL PROCEDURES FOR TESTING AND BALANCING

- A. Perform testing and balancing procedures on each system according to the procedures contained in NEBB's "Procedural Standards for Testing, Adjusting, and Balancing of Environmental Systems" and in this Section.
- B. Cut insulation, ducts and equipment cabinets for installation of test probes to the minimum extent necessary for TAB procedures.
 - 1. After testing and balancing, patch probe holes in ducts with same material and thickness as used to construct ducts.
 - 2. After testing and balancing, install test ports and duct access doors that comply with requirements in Section 23 33 00 "Air Duct Accessories."
 - 3. Install and join new insulation that matches removed materials. Restore insulation, coverings, vapor barrier, and finish according to Division 23 insulation specification sections.
- C. Mark equipment and balancing devices, including damper-control positions, valve position indicators, fan-speed-control levers, and similar controls and devices, with paint or other suitable, permanent identification material to show final settings.
- D. Take and report testing and balancing measurements in inch-pound (IP) units.

3.4 GENERAL PROCEDURES FOR BALANCING AIR SYSTEMS

- A. Prepare test reports for both fans and outlets. Obtain manufacturer's outlet factors and recommended testing procedures. Cross-check the summation of required outlet volumes with required fan volumes.
- B. Prepare schematic diagrams of systems' "as-built" duct layouts.
- C. Determine the best locations in main and branch ducts for accurate duct-airflow measurements.
- D. Check airflow patterns from the outdoor-air louvers and dampers and the return- and exhaust-air dampers through the supply-fan discharge and mixing dampers.
- E. Locate start-stop and disconnect switches, electrical interlocks, and motor starters.
- F. Verify that motor starters are equipped with properly sized thermal protection.
- G. Check dampers for proper position to achieve desired airflow path.
- H. Check for airflow blockages.
- I. Check condensate drains for proper connections and functioning.
- J. Check for proper sealing of air-handling-unit components.
- K. Verify that air duct system is sealed as specified in Section 23 31 13 "Metal Ducts."

3.5 PROCEDURES FOR CONSTANT-VOLUME AIR SYSTEMS

- A. Adjust fans to deliver total indicated airflows within the maximum allowable fan speed listed by fan manufacturer. System at all times shall maintain a negative room pressurization and shall vary the VFD & fan speed in response to the differential pressure sensor with all space exhaust fans on.
 - 1. Measure total airflow.
 - a. Set outside-air, return-air, and relief-air dampers for proper position that simulates minimum outdoor-air conditions.
 - b. Where duct conditions allow, measure airflow by Pitot-tube traverse. If necessary, perform multiple Pitot-tube traverses to obtain total airflow.
 - c. Where duct conditions are not suitable for Pitot-tube traverse measurements, a coil traverse may be acceptable.
 - d. If a reliable Pitot-tube traverse or coil traverse is not possible, measure airflow at terminals and calculate the total airflow.
 - 2. Measure fan static pressures as follows:
 - a. Measure static pressure directly at the fan outlet or through the flexible connection.
 - b. Measure static pressure directly at the fan inlet or through the flexible connection.
 - c. Measure static pressure across each component that makes up the air-handling system.
 - d. Report artificial loading of filters at the time static pressures are measured.
 - 3. Review Record Documents to determine variations in design static pressures versus actual static pressures. Calculate actual system-effect factors. Recommend adjustments to accommodate actual conditions.
 - 4. Comply with requirements in HVAC Sections for air-handling units for adjustment of fans, belts, and pulley sizes to achieve indicated air-handling-unit performance.
 - 5. Do not make fan-speed adjustments that result in motor overload. Consult equipment manufacturers about fan-speed safety factors. Modulate dampers and measure fan-motor amperage to ensure that no overload occurs. Measure amperage in full-cooling, full-heating, economizer, and any other operating mode to determine the maximum required brake horsepower.
- B. Adjust volume dampers for main duct, submain ducts, and major branch ducts to indicated airflows.
 - 1. Measure airflow of submain and branch ducts.
 - 2. Adjust submain and branch duct volume dampers for specified airflow.
 - 3. Re-measure each submain and branch duct after all have been adjusted.
- C. Adjust air inlets and outlets for each space to indicated airflows.
 - 1. Set airflow patterns of adjustable outlets for proper distribution without drafts.
 - 2. Measure inlets and outlets airflow.

3. Adjust each inlet and outlet for specified airflow.
 4. Re-measure each inlet and outlet after they have been adjusted.
- D. Verify final system conditions.
1. Re-measure and confirm that minimum outdoor, return, and relief airflows are within design. Readjust to design if necessary.
 2. Re-measure and confirm that total airflow is within design.
 3. Re-measure all final fan operating data, rpms, volts, amps, and static profile.
 4. Mark all final settings.
 5. Test system in economizer mode. Verify proper operation and adjust if necessary.
 6. Measure and record all operating data.
 7. Record final fan-performance data.

3.6 DUCT LEAKAGE TESTS

- A. Witness the duct pressure testing performed by Installer.
- B. Verify that proper test methods are used and that leakage rates are within specified tolerances.
- C. Report deficiencies observed.

3.7 TOLERANCES

- A. Set HVAC system's airflow rates and water flow rates within the following tolerances:
 1. Supply, Return, and Exhaust Fans and Equipment with Fans: Plus or minus 5 percent.
 2. Air Outlets and Inlets: Plus or minus 5 percent.
- B. Maintaining pressure relationships as designed shall have priority over the tolerances specified above.

3.8 FINAL REPORT

- A. General: Prepare a certified written report; tabulate and divide the report into separate sections for tested systems and balanced systems.
 1. Include a certification sheet at the front of the report's binder, signed and sealed by the certified testing and balancing engineer.
 2. Include a list of instruments used for procedures, along with proof of calibration.
 3. Certify validity and accuracy of field data.
- B. Final Report Contents: In addition to certified field-report data, include the following:
 1. Fan curves.
 2. Manufacturers' test data.

3. Field test reports prepared by system and equipment installers.
4. Other information relative to equipment performance; do not include Shop Drawings and Product Data.

C. General Report Data: In addition to form titles and entries, include the following data:

1. Title page.
2. Name and address of the TAB specialist.
3. Project name.
4. Project location.
5. Architect's name and address.
6. Engineer's name and address.
7. Contractor's name and address.
8. Report date.
9. Signature of TAB supervisor who certifies the report.
10. Table of Contents with the total number of pages defined for each section of the report. Number each page in the report.
11. Summary of contents including the following:
 - a. Indicated versus final performance.
 - b. Notable characteristics of systems.
 - c. Description of system operation sequence if it varies from the Contract Documents.
12. Nomenclature sheets for each item of equipment.
13. Data for terminal units, including manufacturer's name, type, size, and fittings.
14. Notes to explain why certain final data in the body of reports vary from indicated values.
15. Test conditions for fans and pump performance forms including the following:
 - a. Settings for outdoor-, return-, and exhaust-air dampers.
 - b. Conditions of filters.
 - c. Fan drive settings including settings and percentage of maximum pitch diameter.
 - d. Settings for supply-air, static-pressure controller.
 - e. Other system operating conditions that affect performance.

D. System Diagrams: Include schematic layouts of air and hydronic distribution systems. Present each system with single-line diagram and include the following:

1. Quantities of outdoor air

E. Air-Handling-Unit Test Reports: For air-handling units with coils, include the following:

1. Unit Data:
 - a. Unit identification.
 - b. Location.
 - c. Make and type.
 - d. Model number and unit size.
 - e. Manufacturer's serial number.

- f. Unit arrangement and class.
- g. Discharge arrangement.
- h. Sheave make, size in inches, and bore.
- i. Center-to-center dimensions of sheave and amount of adjustments in inches.
- j. Number, make, and size of belts.
- k. Number, type, and size of filters.

2. Motor Data:

- a. Motor make, and frame type and size.
- b. Horsepower and rpm.
- c. Volts, phase, and hertz.
- d. Full-load amperage and service factor.
- e. Sheave make, size in inches, and bore.
- f. Center-to-center dimensions of sheave and amount of adjustments in inches.

3. Test Data (Indicated and Actual Values):

- a. Total airflow rate in cfm.
- b. Total system static pressure in inches wg.
- c. Fan rpm.
- d. Discharge static pressure in inches wg.
- e. Filter static-pressure differential in inches wg.
- f. Preheat-coil static-pressure differential in inches wg.
- g. Cooling-coil static-pressure differential in inches wg.
- h. Heating-coil static-pressure differential in inches wg.
- i. Outdoor airflow in cfm.
- j. Return airflow in cfm.
- k. Outdoor-air damper position.
- l. Return-air damper position.

F. Gas-Fired Heat Apparatus Test Reports: In addition to manufacturer's factory startup equipment reports, include the following:

1. Unit Data:

- a. System identification.
- b. Location.
- c. Make and type.
- d. Model number and unit size.
- e. Manufacturer's serial number.
- f. Fuel input data.
- g. Output capacity in Btu/h.
- h. Ignition type.
- i. Burner-control types.
- j. Motor horsepower and rpm.
- k. Motor volts, phase, and hertz.
- l. Motor full-load amperage and service factor.

- m. Sheave make, size in inches, and bore.
 - n. Center-to-center dimensions of sheave and amount of adjustments in inches.
- 2. Test Data (Indicated and Actual Values):
 - a. Total airflow rate in cfm.
 - b. Entering-air temperature in deg F.
 - c. Leaving-air temperature in deg F.
 - d. Air temperature differential in deg F.
 - e. Entering-air static pressure in inches wg.
 - f. Leaving-air static pressure in inches wg.
 - g. Air static-pressure differential in inches wg.
 - h. Low-fire fuel input in Btu/h.
 - i. High-fire fuel input in Btu/h.
 - j. Manifold pressure in psig.
 - k. High-temperature-limit setting in deg F.
 - l. Operating set point in Btu/h.
 - m. Motor voltage at each connection.
 - n. Motor amperage for each phase.
 - o. Heating value of fuel in Btu/h.
- G. Fan Test Reports: For supply, return, and exhaust fans, include the following:
 - 1. Fan Data:
 - a. System identification.
 - b. Location.
 - c. Make and type.
 - d. Model number and size.
 - e. Manufacturer's serial number.
 - f. Arrangement and class.
 - g. Sheave make, size in inches, and bore.
 - h. Center-to-center dimensions of sheave and amount of adjustments in inches.
 - 2. Motor Data:
 - a. Motor make, and frame type and size.
 - b. Horsepower and rpm.
 - c. Volts, phase, and hertz.
 - d. Full-load amperage and service factor.
 - e. Sheave make, size in inches, and bore.
 - f. Center-to-center dimensions of sheave, and amount of adjustments in inches.
 - g. Number, make, and size of belts.
 - 3. Test Data (Indicated and Actual Values):
 - a. Total airflow rate in cfm.
 - b. Total system static pressure in inches wg.

- c. Fan rpm.
 - d. Discharge static pressure in inches wg.
 - e. Suction static pressure in inches wg.
- H. Round, Flat-Oval, and Rectangular Duct Traverse Reports: Include a diagram with a grid representing the duct cross-section and record the following:
 - 1. Report Data:
 - a. System and air-handling-unit number.
 - b. Location and zone.
 - c. Traverse air temperature in deg F.
 - d. Duct static pressure in inches wg.
 - e. Duct size in inches.
 - f. Duct area in sq. ft.
 - g. Indicated airflow rate in cfm.
 - h. Indicated velocity in fpm.
 - i. Actual airflow rate in cfm.
 - j. Actual average velocity in fpm.
 - k. Barometric pressure in psig.
- I. Air-Terminal-Device Reports:
 - 1. Unit Data:
 - a. System and air-handling unit identification.
 - b. Location and zone.
 - c. Apparatus used for test.
 - d. Area served.
 - e. Make.
 - f. Number from system diagram.
 - g. Type and model number.
 - h. Size.
 - 2. Test Data (Indicated and Actual Values):
 - a. Airflow rate in cfm.
 - b. Preliminary airflow rate as needed in cfm.
 - c. Preliminary velocity as needed in fpm.
 - d. Final airflow rate in cfm.
 - e. Space temperature in deg F.
- J. Instrument Calibration Reports:
 - 1. Report Data:
 - a. Instrument type and make.
 - b. Serial number.
 - c. Application.
 - d. Dates of use.
 - e. Dates of calibration.

END OF SECTION 23 05 93

SECTION 23 07 13
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.

1.2 SUMMARY

- A. Section includes insulating the following duct services:

- 1. Indoor, concealed supply and outdoor air.
- 2. Outdoor, exposed supply and return.

- B. Related Sections:

- 1. Section 23 07 16 "HVAC Equipment Insulation."
- 2. Section 23 07 19 "HVAC Piping Insulation."
- 3. Section 23 31 13 "Metal Ducts" for duct liners.

1.3 ACTION SUBMITTALS

- A. Product Data: For each type of product indicated. Include thermal conductivity, water-vapor permeance thickness, and jackets (both factory- and field-applied if any).

1.4 QUALITY ASSURANCE

- A. Installer Qualifications: Skilled mechanics who have successfully completed an apprenticeship program or another craft training program.

- 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.

1.5 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.

1.6 COORDINATION

- A. Coordinate sizes and locations of supports, hangers, and insulation shields specified in Section 23 05 29 "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.

1.7 SCHEDULING

- A. Schedule insulation application after pressure testing systems and, where required, after installing and testing heat tracing. 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".
- 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. Factory-applied jacket requirements are specified in "Factory-Applied Jackets" Article.

- G. Mineral-Fiber Board Insulation: Mineral or glass fibers bonded with a thermosetting resin. Comply with ASTM C 612, Type IA or Type IB. For duct and plenum applications, provide insulation with factory-applied FSK jacket. Factory-applied jacket requirements are specified in "Factory-Applied Jackets" Article.

2.2 ADHESIVES

- A. Materials shall be compatible with insulation materials, jackets, and substrates and for bonding insulation to itself and to surfaces to be insulated unless otherwise indicated.
- B. Mineral-Fiber Adhesive: Comply with MIL-A-3316C, Class 2, Grade A.
 - 1. Adhesive shall comply with the testing and product requirements of San Diego Air Pollution Control District Rule 67.0 "Architectural Coatings" and Rule 67.21 "Adhesive Material Application Operations."
- C. FSK Jacket Adhesive: Comply with MIL-A-3316C, Class 2, Grade A for bonding insulation jacket lap seams and joints.
 - 1. Adhesive shall comply with the testing and product requirements of San Diego Air Pollution Control District Rule 67.0 "Architectural Coatings" and Rule 67.21 "Adhesive Material Application Operations."

2.3 MASTICS

- A. Materials shall be compatible with insulation materials, jackets, and substrates; comply with MIL-PRF-19565C, Type II.
 - 1. Mastics shall comply with the testing and product requirements of San Diego Air Pollution Control District Rule 67.0 "Architectural Coatings" and Rule 67.21 "Adhesive Material Application Operations."
- B. Vapor-Barrier Mastic: Water based; suitable for indoor use on below ambient services.
 - 1. Water-Vapor Permeance: ASTM E 96/E 96M, Procedure B, 0.013 perm at 43-mil dry film thickness.
 - 2. Service Temperature Range: Minus 20 to plus 180 deg F.
 - 3. Solids Content: ASTM D 1644, 58 percent by volume and 70 percent by weight.
 - 4. Color: White.
- C. Vapor-Barrier Mastic: Solvent based; suitable for indoor use on below ambient services.
 - 1. Water-Vapor Permeance: ASTM F 1249, 0.05 perm at 35-mil dry film thickness.
 - 2. Service Temperature Range: 0 to 180 deg F.
 - 3. Solids Content: ASTM D 1644, 44 percent by volume and 62 percent by weight.
 - 4. Color: White.
- D. Vapor-Barrier Mastic: Solvent based; suitable for outdoor use on below ambient

services.

1. Water-Vapor Permeance: ASTM F 1249, 0.05 perm at 30-mil dry film thickness.
2. Service Temperature Range: Minus 50 to plus 220 deg F.
3. Solids Content: ASTM D 1644, 33 percent by volume and 46 percent by weight.
4. Color: White.

E. Breather Mastic: Water based; suitable for indoor and outdoor use on above ambient services.

1. Water-Vapor Permeance: ASTM F 1249, 1.8 perms at 0.0625-inch dry film thickness.
2. Service Temperature Range: Minus 20 to plus 180 deg F.
3. Solids Content: 60 percent by volume and 66 percent by weight.
4. Color: White.

2.4 LAGGING ADHESIVES

A. Description: Comply with MIL-A-3316C, Class I, Grade A and shall be compatible with insulation materials, jackets, and substrates.

1. Lagging adhesives shall comply with the testing and product requirements of San Diego Air Pollution Control District Rule 67.0 "Architectural Coatings" and Rule 67.21 "Adhesive Material Application Operations."
2. Fire-resistant, water-based lagging adhesive and coating for use indoors to adhere fire-resistant lagging cloths over duct insulation.
3. Service Temperature Range: 0 to plus 180 deg F.
4. Color: White.

2.5 SEALANTS

A. FSK and Metal Jacket Flashing Sealants:

1. Materials shall be compatible with insulation materials, jackets, and substrates.
2. Fire- and water-resistant, flexible, elastomeric sealant.
3. Service Temperature Range: Minus 40 to plus 250 deg F.
4. Color: Aluminum.
5. Sealants shall comply with the testing and product requirements of San Diego Air Pollution Control District Rule 67.0 "Architectural Coatings."

2.6 FACTORY-APPLIED JACKETS

A. Insulation system schedules indicate factory-applied jackets on various applications. When factory-applied jackets are indicated, comply with the following:

1. FSK Jacket: Aluminum-foil, fiberglass-reinforced scrim with kraft-paper backing; complying with ASTM C 1136, Type II.

2.7 FIELD-APPLIED JACKETS

- A. Field-applied jackets shall comply with ASTM C 921, Type I, unless otherwise indicated.
- B. Metal Jacket:
 - 1. Aluminum Jacket: Comply with ASTM B 209, Alloy 3003, 3005, 3105, or 5005, Temper H-14.
 - a. Factory cut and rolled to size.
 - b. Finish and thickness are indicated in field-applied jacket schedules.
 - c. Moisture Barrier for Outdoor Applications: 3-mil-thick, heat-bonded polyethylene and kraft paper.
 - 2. Stainless-Steel Jacket: ASTM A 167 or ASTM A 240/A 240M.
 - a. Factory cut and rolled to size.
 - b. Finish and thickness are indicated in field-applied jacket schedules.
 - c. Moisture Barrier for Outdoor Applications: 3-mil-thick, heat-bonded polyethylene and kraft paper.

2.8 TAPES

- A. FSK Tape: Foil-face, vapor-retarder tape matching factory-applied jacket with acrylic adhesive; complying with ASTM C 1136.
 - 1. Width: 3 inches.
 - 2. Thickness: 6.5 mils.
 - 3. Adhesion: 90 ounces force/inch in width.
 - 4. Elongation: 2 percent.
 - 5. Tensile Strength: 40 lbf/inch in width.
 - 6. FSK Tape Disks and Squares: Precut disks or squares of FSK tape.
- B. Aluminum-Foil Tape: Vapor-retarder tape with acrylic adhesive.
 - 1. Width: 2 inches.
 - 2. Thickness: 3.7 mils.
 - 3. Adhesion: 100 ounces force/inch in width.
 - 4. Elongation: 5 percent.
 - 5. Tensile Strength: 34 lbf/inch in width.

2.9 SECUREMENTS

- A. Bands:
 - 1. Stainless Steel: ASTM A 167 or ASTM A 240/A 240M, Type 304 ; 0.015 inch thick, 3/4 inch wide with wing seal or closed seal.
 - 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.
- B. Insulation Pins and Hangers:
1. 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.
 2. 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.
 3. Insulation-Retaining Washers: Self-locking washers formed from 0.016-inch-thick, aluminum sheet, with beveled edge sized as required to hold insulation securely in place but not less than 1-1/2 inches in diameter.
 - a. Protect ends with capped self-locking washers incorporating a spring steel insert to ensure permanent retention of cap in exposed locations.
- C. Staples: Outward-clinching insulation staples, nominal 3/4-inch-wide, stainless steel or Monel.
- D. Wire: 0.080-inch nickel-copper alloy.

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 4 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 07 84 13 "Penetration Firestopping" and fire-resistive joint sealers.
- 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 07 84 13 "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 100 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 overcompress 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 unfaced 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.
- B. Board 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 100 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, space 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 overcompress insulation during installation.
 - e. 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. Install insulation on rectangular duct elbows and transitions with a full insulation section for each surface. Groove and score insulation to fit as closely as possible to outside and inside radius of elbows. Install insulation on round and flat-oval

- duct elbows with individually mitered gores cut to fit the elbow.
6. 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.

3.6 FIELD-APPLIED JACKET INSTALLATION

- A. 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 FIRE-RATED INSULATION SYSTEM INSTALLATION

- A. Where fire-rated insulation system is indicated, secure system to ducts and duct hangers and supports to maintain a continuous fire rating.
- B. Insulate duct access panels and doors to achieve same fire rating as duct.
- C. Install firestopping at penetrations through fire-rated assemblies. Fire-stop systems are specified in Section 07 84 13 "Penetration Firestopping."

3.8 FIELD QUALITY CONTROL

- A. Testing Agency: Engage a qualified testing agency to perform tests and inspections.
- B. Perform tests and inspections.
- C. Tests and Inspections:
 1. Inspect ductwork by removing field-applied jacket and insulation in layers in reverse order of their installation.
- D. All insulation applications will be considered defective Work if sample inspection reveals noncompliance with requirements.

3.9 DUCT INSULATION SCHEDULE, GENERAL

- A. Plenums and Ducts Requiring Insulation:
 1. Indoor, concealed supply.
 2. Outdoor, exposed supply.
- B. Items Not Insulated:
 1. Fibrous-glass ducts.

2. Metal ducts with duct liner of sufficient thickness to comply with energy code and ASHRAE/IESNA 90.1.
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.
8. Indoor, exposed supply and return in conditioned spaces.

3.10 INDOOR DUCT AND PLENUM INSULATION SCHEDULE

- A. Concealed, round and flat-oval, supply- and return air duct insulation shall be the following:
 1. Mineral-Fiber Blanket: Combination of density and thickness to provide an R-value of 4.2.
- B. Concealed, rectangular, supply and return -air duct insulation shall be one of the following:
 1. Mineral-Fiber Blanket: Combination of density and thickness to provide an R-value of 4.2.

3.11 OUTDOOR DUCT AND PLENUM INSULATION SCHEDULE

- A. Insulation materials and thicknesses are identified below. If more than one material is listed for a duct system, selection from materials listed is Contractor's option.
- B. Round and flat-oval, supply-air duct insulation shall be the following:
 1. Mineral-Fiber Blanket: Combination of density and thickness to provide an R-value of 8.0.
- C. Rectangular, supply and return -air duct insulation shall be one of the following:
 1. Mineral-Fiber Blanket or Board: Combination of density and thickness to provide an R-value of 8.0.

3.12 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. If more than one material is listed, selection from materials listed is Contractor's option.
- C. Ducts and Plenums, up to 48 Inches in Diameter or with Flat Surfaces up to 72 Inches:
 1. Aluminum, Smooth: 0.024 inch thick.

2. Stainless Steel, Type 304 Smooth: 0.024 inch thick.

D. Ducts and Plenums, Larger Than 48 Inches in Diameter or with Flat Surfaces Larger Than 72 Inches:

1. Aluminum, Smooth: 0.024 inch thick.

2. Stainless Steel, Type 304 Smooth: 0.024 inch thick.

END OF SECTION 23 07 13

SECTION 23 11 23
FACILITY NATURAL-GAS PIPING

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. Pipes, tubes, and fittings.
 - 2. Piping specialties.
 - 3. Piping and tubing joining materials.
 - 4. Valves.

1.3 DEFINITIONS

- A. Finished Spaces: Spaces other than mechanical and electrical equipment rooms, furred spaces, pipe and duct shafts, unheated spaces immediately below roof, spaces above ceilings, unexcavated spaces, crawlspaces, and tunnels.
- B. Exposed, Interior Installations: Exposed to view indoors. Examples include finished occupied spaces and mechanical equipment rooms.
- C. Exposed, Exterior Installations: Exposed to view outdoors or subject to outdoor ambient temperatures and weather conditions. Examples include rooftop locations.

1.4 PERFORMANCE REQUIREMENTS

- A. Minimum Operating-Pressure Ratings:
 - 1. Piping and Valves: 100 psig minimum unless otherwise indicated.
 - 2. Service Regulators: 100 psig minimum unless otherwise indicated.
- B. Natural-Gas System Pressure within Buildings: 0.5 psig or less.

1.5 ACTION SUBMITTALS

- A. Product Data: For each type of the following:

1. Piping specialties.
2. Valves. Include pressure rating, capacity, settings, and electrical connection data of selected models.
3. Pressure regulators. Indicate pressure ratings and capacities.
4. Dielectric fittings.

1.6 INFORMATIONAL SUBMITTALS

- A. Coordination Drawings: Plans and details, drawn to scale, on which natural-gas piping is shown and coordinated with other installations, using input from installers of the items involved.
- B. Site Survey: Plans, drawn to scale, on which natural-gas piping is shown and coordinated with other services and utilities.
- C. Welding certificates.
- D. Field quality-control reports.

1.7 CLOSEOUT SUBMITTALS

- A. Operation and Maintenance Data: For pressure regulators to include in emergency, operation, and maintenance manuals.

1.8 QUALITY ASSURANCE

- A. Steel Support Welding Qualifications: Qualify procedures and personnel according to AWS D1.1/D1.1M, "Structural Welding Code - Steel."
- B. Pipe Welding Qualifications: Qualify procedures and operators according to ASME Boiler and Pressure Vessel Code.
- C. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

1.9 DELIVERY, STORAGE, AND HANDLING

- A. Handling Flammable Liquids: Remove and dispose of liquids from existing natural-gas piping according to requirements of authorities having jurisdiction.
- B. Deliver pipes and tubes with factory-applied end caps. Maintain end caps through shipping, storage, and handling to prevent pipe end damage and to prevent entrance of dirt, debris, and moisture.
- C. Store and handle pipes and tubes having factory-applied protective coatings to avoid damaging coating, and protect from direct sunlight.

- D. Protect stored PE pipes and valves from direct sunlight.

1.10 PROJECT CONDITIONS

- A. Perform site survey, research public utility records, and verify existing utility locations. Contact utility-locating service for area where Project is located.
- B. Interruption of Existing Natural-Gas Service: Do not interrupt natural-gas service to facilities occupied unless permitted under the following conditions and then only after arranging to provide purging and startup of natural-gas supply according to requirements indicated:
 - 1. Notify Owner no fewer than five days in advance of proposed interruption of natural-gas service.
 - 2. Do not proceed with interruption of natural-gas service without Owner's written permission.

PART 2 - PRODUCTS

2.1 PIPES, TUBES, AND FITTINGS

- A. Steel Pipe: ASTM A 53/A 53M, black steel, Schedule 40, Type E or S, Grade B.
 - 1. Malleable-Iron Threaded Fittings: ASME B16.3, Class 150, standard pattern.
 - 2. Wrought-Steel Welding Fittings: ASTM A 234/A 234M for butt welding and socket welding.
 - 3. Unions: ASME B16.39, Class 150, malleable iron with brass-to-iron seat, ground joint, and threaded ends.
 - 4. Forged-Steel Flanges and Flanged Fittings: ASME B16.5, minimum Class 150, including bolts, nuts, and gaskets of the following material group, end connections, and facings:
 - a. Material Group: 1.1.
 - b. End Connections: Threaded or butt welding to match pipe.
 - c. Lapped Face: Not permitted underground.
 - d. Gasket Materials: ASME B16.20, metallic, flat, asbestos free, aluminum o-rings, and spiral-wound metal gaskets.
 - e. Bolts and Nuts: ASME B18.2.1, carbon steel aboveground and stainless steel underground.
 - 5. Protective Coating for Underground Piping: Factory-applied, three-layer coating of epoxy, adhesive, and PE.
 - a. Joint Cover Kits: Epoxy paint, adhesive, and heat-shrink PE sleeves.
 - 6. Mechanical Couplings:
 - a. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

- 1) Dresser Piping Specialties.
 - 2) Smith-Blair, Inc.
 - 3) Victaulic Company.
 - 4) Or equal.
- b. Steel flanges and tube with epoxy finish.
 - c. Buna-nitrile seals.
 - d. Stainless-steel bolts, washers, and nuts.
 - e. Coupling shall be capable of joining PE pipe to PE pipe, steel pipe to PE pipe, or steel pipe to steel pipe.
 - f. Steel body couplings installed underground on plastic pipe shall be factory equipped with anode.

2.2 PIPING SPECIALTIES

A. Appliance Flexible Connectors:

1. Indoor, Fixed-Appliance Flexible Connectors: Comply with ANSI Z21.24.
2. Indoor, Movable-Appliance Flexible Connectors: Comply with ANSI Z21.69.
3. Outdoor, Appliance Flexible Connectors: Comply with ANSI Z21.75.
4. Corrugated stainless-steel tubing with polymer coating.
5. Operating-Pressure Rating: 0.5 psig.
6. End Fittings: Zinc-coated steel.
7. Threaded Ends: Comply with ASME B1.20.1.
8. Maximum Length: 72 inches

B. Quick-Disconnect Devices: Comply with ANSI Z21.41.

1. Copper-alloy convenience outlet and matching plug connector.
2. Nitrile seals.
3. Hand operated with automatic shutoff when disconnected.
4. For indoor or outdoor applications.
5. Adjustable, retractable restraining cable.

C. Y-Pattern Strainers:

1. Body: ASTM A 126, Class B, cast iron with bolted cover and bottom drain connection.
2. End Connections: Threaded ends for NPS 2 and smaller; flanged ends for NPS 2-1/2 and larger.
3. Strainer Screen: 60-mesh startup strainer, and perforated stainless-steel basket with 50 percent free area.
4. CWP Rating: 125 psig.

D. Weatherproof Vent Cap: Cast- or malleable-iron increaser fitting with corrosion-resistant wire screen, with free area at least equal to cross-sectional area of connecting pipe and threaded-end connection.

E. Protective PVC Tape: 20 mil, stabilized, plasticized PVC film with adhesive backing.

2.3 JOINING MATERIALS

- A. Joint Compound and Tape: Suitable for natural gas.
- B. Welding Filler Metals: Comply with AWS D10.12/D10.12M for welding materials appropriate for wall thickness and chemical analysis of steel pipe being welded.

2.4 MANUAL GAS SHUTOFF VALVES

- A. General Requirements for Metallic Valves, NPS 2 and Smaller: Comply with ASME B16.33.
 - 1. CWP Rating: 125 psig
 - 2. Threaded Ends: Comply with ASME B1.20.1.
 - 3. Dryseal Threads on Flare Ends: Comply with ASME B1.20.3.
 - 4. Tamperproof Feature: Locking feature for valves indicated in "Underground Manual Gas Shutoff Valve Schedule" and "Aboveground Manual Gas Shutoff Valve Schedule" Articles.
 - 5. Listing: Listed and labeled by an NRTL acceptable to authorities having jurisdiction for valves 1 inch and smaller.
 - 6. Service Mark: Valves 1-1/4 inches to NPS 2 shall have initials "WOG" permanently marked on valve body.
- B. General Requirements for Metallic Valves, NPS 2-1/2 and Larger: Comply with ASME B16.38.
 - 1. CWP Rating: 125 psig
 - 2. Flanged Ends: Comply with ASME B16.5 for steel flanges.
 - 3. Tamperproof Feature: Locking feature for valves indicated in "Underground Manual Gas Shutoff Valve Schedule" and "Aboveground Manual Gas Shutoff Valve Schedule" Articles.
 - 4. Service Mark: Initials "WOG" shall be permanently marked on valve body.
- C. Two-Piece, Full-Port, Bronze Ball Valves with Bronze Trim: MSS SP-110.
 - 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. BrassCraft Manufacturing Co.; a Masco company.
 - b. Conbraco Industries, Inc.
 - c. Lyall, R. W. & Company, Inc.
 - d. Or equal.
 - 2. Body: Bronze, complying with ASTM B 584.
 - 3. Ball: Chrome-plated bronze.
 - 4. Stem: Bronze; blowout proof.
 - 5. Seats: Reinforced TFE; blowout proof.
 - 6. Packing: Threaded-body packnut design with adjustable-stem packing.

7. Ends: Threaded, flared, or socket as indicated in "Underground Manual Gas Shutoff Valve Schedule" and "Aboveground Manual Gas Shutoff Valve Schedule" Articles.
8. CWP Rating: 600 psig.
9. Listing: Valves NPS 1 and smaller shall be listed and labeled by an NRTL acceptable to authorities having jurisdiction.
10. Service: Suitable for natural-gas service with "WOG" indicated on valve body.

D. Bronze Plug Valves: MSS SP-78.

1. Body: Bronze, complying with ASTM B 584.
2. Plug: Bronze.
3. Ends: Threaded, socket, or flanged as indicated in "Underground Manual Gas Shutoff Valve Schedule" and "Aboveground Manual Gas Shutoff Valve Schedule" Articles.
4. Operator: Square head or lug type with tamperproof feature where indicated.
5. Pressure Class: 125 psig.
6. Listing: Valves NPS 1 and smaller shall be listed and labeled by an NRTL acceptable to authorities having jurisdiction.
7. Service: Suitable for natural-gas service with "WOG" indicated on valve body.

E. Cast-Iron, Lubricated Plug Valves: MSS SP-78.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. A.Y. McDonald Mfg. Co.
 - b. Flowserve Corporation.
 - c. Mueller Co.
 - d. Or equal.
2. Body: Cast iron, complying with ASTM A 126, Class B.
3. Plug: Bronze or nickel-plated cast iron.
4. Seat: Coated with thermoplastic.
5. Stem Seal: Compatible with natural gas.
6. Ends: Threaded or flanged as indicated in "Underground Manual Gas Shutoff Valve Schedule" and "Aboveground Manual Gas Shutoff Valve Schedule" Articles.
7. Operator: Square head or lug type with tamperproof feature where indicated.
8. Pressure Class: 125 psig.
9. Listing: Valves NPS 1 and smaller shall be listed and labeled by an NRTL acceptable to authorities having jurisdiction.
10. Service: Suitable for natural-gas service with "WOG" indicated on valve body.

2.5 DIELECTRIC FITTINGS

- A. General Requirements: Assembly of copper alloy and ferrous materials with separating nonconductive insulating material. Include end connections compatible with pipes to be joined.

B. Dielectric Unions:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. A.Y. McDonald Mfg. Co.
 - b. Watts; a Watts Water Technologies company.
 - c. Wilkins.
 - d. Or equal.
2. Description:
 - a. Standard: ASSE 1079.
 - b. Pressure Rating: 125 psig minimum at 180 deg F.
 - c. End Connections: Solder-joint copper alloy and threaded ferrous.

C. Dielectric Flanges:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. Matco-Norca.
 - b. Watts; a Watts Water Technologies company.
 - c. Wilkins.
 - d. Or equal.
2. Description:
 - a. Standard: ASSE 1079.
 - b. Factory-fabricated, bolted, companion-flange assembly.
 - c. Pressure Rating: 125 psig minimum at 180 deg F.
 - d. End Connections: Solder-joint copper alloy and threaded ferrous; threaded solder-joint copper alloy and threaded ferrous.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine roughing-in for natural-gas piping system to verify actual locations of piping connections before equipment installation.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Close equipment shutoff valves before turning off natural gas to premises or piping section.

- B. Inspect natural-gas piping according to NFPA 54 and the California Plumbing Code to determine that natural-gas utilization devices are turned off in piping section affected.
- C. Comply with NFPA 54 and the California Plumbing Code requirements for prevention of accidental ignition.

3.3 OUTDOOR PIPING INSTALLATION

- A. Comply with NFPA 54 and the California Plumbing Code for installation and purging of natural-gas piping.
- B. Steel Piping with Protective Coating:
 - 1. Apply joint cover kits to pipe after joining to cover, seal, and protect joints.
 - 2. Where coated steel pipe or transition fittings penetrate a concrete slab, install two wrappings of 20 mil PVC tape extending six inches above and below penetration
 - 3. Repair damage to PE coating on pipe as recommended in writing by protective coating manufacturer.
 - 4. Replace pipe having damaged PE coating with new pipe.
- C. Install fittings for changes in direction and branch connections.
- D. Install pressure gage upstream and downstream from each building regulator.

3.4 VALVE INSTALLATION

- A. Install manual gas shutoff valve for each gas appliance ahead of corrugated stainless-steel tubing, aluminum, or copper connector.
- B. Install regulators and overpressure protection devices with maintenance access space adequate for servicing and testing.
- C. Install anode for metallic valves in underground PE piping.

3.5 PIPING JOINT CONSTRUCTION

- A. Ream ends of pipes and tubes and remove burrs.
- B. Remove scale, slag, dirt, and debris from inside and outside of pipe and fittings before assembly.
- C. Threaded Joints:
 - 1. Thread pipe with tapered pipe threads complying with ASME B1.20.1.
 - 2. Cut threads full and clean using sharp dies.
 - 3. Ream threaded pipe ends to remove burrs and restore full inside diameter of pipe.
 - 4. Apply appropriate tape or thread compound to external pipe threads unless dryseal threading is specified.

5. Damaged Threads: Do not use pipe or pipe fittings with threads that are corroded or damaged. Do not use pipe sections that have cracked or open welds.
- D. Welded Joints:
1. Construct joints according to AWS D10.12/D10.12M, using qualified processes and welding operators.
 2. Bevel plain ends of steel pipe.
 3. Patch factory-applied protective coating as recommended by manufacturer at field welds and where damage to coating occurs during construction.
- E. Flanged Joints: Install gasket material, size, type, and thickness appropriate for natural-gas service. Install gasket concentrically positioned.
- F. PE Piping Heat-Fusion Joints: Clean and dry joining surfaces by wiping with clean cloth or paper towels. Join according to ASTM D 2657.
1. Plain-End Pipe and Fittings: Use butt fusion.
 2. Plain-End Pipe and Socket Fittings: Use socket fusion.

3.6 HANGER AND SUPPORT INSTALLATION

- A. Install seismic restraints on piping. Comply with requirements for seismic-restraint devices specified in Section 23 05 48 "Vibration and Seismic Controls for HVAC."
- B. Comply with requirements for pipe hangers and supports specified in Section 23 05 29 "Hangers and Supports for HVAC Piping and Equipment."
- C. Install hangers for horizontal steel piping with the following maximum spacing and minimum rod sizes:
1. NPS 1 and Smaller: Maximum span, 96 inches; minimum rod size, 3/8 inch.
 2. NPS 1-1/4: Maximum span, 108 inches; minimum rod size, 3/8 inch.
 3. NPS 1-1/2 and NPS 2: Maximum span, 108 inches; minimum rod size, 3/8 inch.
 4. NPS 2-1/2 to NPS 3-1/2: Maximum span, 10 feet; minimum rod size, 1/2 inch.

3.7 CONNECTIONS

- A. Connect to gas main according to utility's procedures and requirements.
- B. Install natural-gas piping electrically continuous, and bonded to gas appliance equipment grounding conductor of the circuit powering the appliance according to NFPA 70.
- C. Install piping adjacent to appliances to allow service and maintenance of appliances.
- D. Connect piping to appliances using manual gas shutoff valves and unions. Install valve within 72 inches of each gas-fired appliance and equipment. Install union between valve and appliances or equipment.

- E. Sediment Traps: Install tee fitting with capped nipple in bottom to form drip, as close as practical to inlet of each appliance.

3.8 PAINTING

- A. Comply with requirements in Section 09 91 13 "Exterior Painting" and Section 09 91 23 "Interior Painting" for painting interior and exterior natural-gas piping.
- B. Paint exposed, exterior metal piping, valves, service regulators, service meters and meter bars, and piping specialties, except components, with factory-applied paint or protective coating.
 - 1. Alkyd System: MPI EXT 5.1D.
 - a. Prime Coat: Alkyd anticorrosive metal primer.
 - b. Intermediate Coat: Exterior alkyd enamel matching topcoat.
 - c. Topcoat: Exterior alkyd enamel semigloss
 - d. Color: Gray

3.9 FIELD QUALITY CONTROL

- A. Perform tests and inspections.
- B. Tests and Inspections:
 - 1. Test, inspect, and purge natural gas according to NFPA 54 and the California Plumbing Code.
- C. Natural-gas piping will be considered defective if it does not pass tests and inspections.
- D. Prepare test and inspection reports.

3.10 OUTDOOR PIPING SCHEDULE

- A. Aboveground natural-gas piping shall be the following:
 - 1. Pipe NPS 2 and Smaller: Steel with malleable-iron fittings and threaded joints.
 - 2. Pipe NPS 2-1/2" and Larger: Steel pipe with wrought-steel fittings and welded joints.
- B. Containment Conduit: Steel pipe with wrought-steel fittings and welded joints. Coat pipe and fittings with protective coating for steel piping.

3.11 PIPING SCHEDULE FOR SYSTEM PRESSURES LESS THAN 0.5 PSIG

- A. Aboveground, branch and distribution piping NPS 2 and smaller shall be the following:
 - 1. Steel pipe with malleable-iron fittings and threaded joints.

- B. Aboveground, branch and distribution piping NPS 2-1/2 and larger shall be the following:
 - 1. Steel pipe with wrought-steel fittings and welded joints.
 - 2. .

3.12 ABOVEGROUND MANUAL GAS SHUTOFF VALVE SCHEDULE

- A. Distribution piping valves for pipe sizes NPS 2 and smaller shall be the following:
 - 1. Two-piece, bronze ball valve with bronze trim.
- B. Distribution piping valves for pipe sizes NPS 2-1/2 and larger shall be one of the following:
 - 1. Two-piece, full-port, bronze ball valves with bronze trim.
 - 2. Bronze plug valve.
 - 3. Cast-iron, lubricated plug valve.
- C. Valves in branch piping for single appliance shall the following:
 - 1. Two-piece, full-port, bronze ball valves with bronze trim.

END OF SECTION 23 11 23

SECTION 23 31 13
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. Double-wall rectangular ducts and fittings.
3. Single-wall round ducts and fittings.
4. Double-wall round ducts and fittings.
5. Sheet metal materials.
6. Duct liner.
7. Sealants and gaskets.
8. Hangers and supports.

B. Related Sections:

1. Section 23 05 93 "Testing, Adjusting, and Balancing for HVAC" for testing, adjusting, and balancing requirements for metal ducts.
2. Section 23 33 00 "Air Duct Accessories" for dampers, sound-control devices, duct-mounting access doors and panels, turning vanes, and flexible ducts.

1.3 ACTION SUBMITTALS

A. Product Data: For each type of the following products:

1. Liners and adhesives.
2. Sealants and gaskets.
3. Seismic-restraint devices.

B. 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 and sheet metal material.

4. classes.
5. Elevation of top of ducts.
6. Fittings.
7. Reinforcement and spacing.
8. Seam and joint construction.
9. Locations for duct accessories, including dampers, turning vanes, and access doors and panels.
10. Hangers and supports, including methods for duct and building attachment, seismic restraints, and vibration isolation.

1.4 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.

1.5 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.

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 DOUBLE-WALL RECTANGULAR DUCTS AND FITTINGS

- A. Rectangular Ducts: Fabricate ducts with indicated dimensions for the inner duct.
- B. Outer Duct: Comply with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible" based on indicated static-pressure class unless otherwise indicated.
- C. 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."
- D. 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."
- E. Interstitial Insulation: Fibrous-glass liner complying with ASTM C 1071, NFPA 90A, or NFPA 90B; and with NAIMA AH124, "Fibrous Glass Duct Liner Standard."
 - 1. Install spacers that position the inner duct at uniform distance from outer duct without compressing insulation.
 - 2. Coat insulation with antimicrobial coating.
 - 3. Cover insulation with polyester film complying with UL 181, Class 1.
- F. Interstitial Insulation: Flexible elastomeric duct liner complying with ASTM C 534, Type II for sheet materials, and with NFPA 90A or NFPA 90B.
- G. Inner Duct: Minimum 0.028-inch [perforated galvanized sheet steel having 3/32-inch-

diameter perforations, with overall open area of 23 percent] [solid sheet steel].

- H. Formed-on Transverse Joints (Flanges): 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."
- I. 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."

2.3 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.
- 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).
- 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. 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."

2.4 DOUBLE-WALL ROUND AND FLAT-OVAL DUCTS AND FITTINGS

- A. 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) of the inner duct.
- B. Outer Duct: Comply with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible," Chapter 3, "Round, Oval, and Flexible Duct," based on static-pressure class unless otherwise indicated.
 - 1. 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."
 - a. Transverse Joints in Ducts Larger Than [60 Inches] <Insert dimension> in Diameter: Flanged.
 - 2. 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."
 - a. Fabricate round ducts larger than 90 inches in diameter with butt-welded longitudinal seams.
 - b. Fabricate flat-oval ducts larger than 72 inches in width (major dimension) with butt-welded longitudinal seams.
 - 3. 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."
- C. Inner Duct: Minimum 0.028-inch [perforated galvanized sheet steel having 3/32-inch-diameter perforations, with overall open area of 23 percent] [solid sheet steel].
- D. Interstitial Insulation: Fibrous-glass liner complying with ASTM C 1071, NFPA 90A, or NFPA 90B; and with NAIMA AH124, "Fibrous Glass Duct Liner Standard."
 - 1. Install spacers that position the inner duct at uniform distance from outer duct without compressing insulation.
 - 2. Coat insulation with antimicrobial coating.
 - 3. Cover insulation with polyester film complying with UL 181, Class 1.
- E. Interstitial Insulation: Flexible elastomeric duct liner complying with ASTM C 534, Type II for sheet materials, and with NFPA 90A or NFPA 90B.

2.5 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. Galvanized Coating Designation: G90.
 - 2. Finishes for Surfaces Exposed to View: Mill phosphatized.
- C. 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
 - 6. Antimicrobial coating on sheet metal is not required for duct containing liner treated with antimicrobial coating.
- D. 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.
- E. 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.

2.6 DUCT LINER

- A. 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. 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.
 - 2. Liner Adhesive: As recommended by insulation manufacturer and complying with NFPA 90A or NFPA 90B.
- B. 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.
- C. 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.
 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.

2.7 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: 4 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.

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.
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. 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.

E. Flange Gaskets: Butyl rubber, neoprene, or EPDM polymer with polyisobutylene plasticizer.

F. Round Duct Joint O-Ring Seals:

1. Seal shall provide maximum 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.

2.8 HANGERS AND SUPPORTS

- A. Hanger Rods for Noncorrosive Environments: Cadmium-plated steel rods and nuts.
- B. 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."
- C. Steel Cables for Galvanized-Steel Ducts: Galvanized steel complying with ASTM A 603.

- D. 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.
- E. Duct Attachments: Sheet metal screws, blind rivets, or self-tapping metal screws; compatible with duct materials.
- F. Trapeze and Riser Supports:
 - 1. Supports for Galvanized-Steel Ducts: Galvanized-steel shapes and plates.
 - 2. Supports for Aluminum Ducts: Aluminum or galvanized steel coated with zinc chromate.

2.9 SEISMIC-RESTRAINT DEVICES

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - 1. B-line, an Eaton business.
 - 2. Hilti, Inc.
 - 3. Mason Industries, Inc.
 - 4. Or equal.
- B. General Requirements for Restraint Components: Rated strengths, features, and applications shall be as defined in reports by an agency acceptable to authorities having jurisdiction.
 - 1. Structural Safety Factor: Allowable strength in tension, shear, and pullout force of components shall be at least four times the maximum seismic forces to which they will be subjected.
- 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 492, stainless-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: Steel tube or steel slotted-support-system sleeve with internally bolted connections 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.

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 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. Comply with requirements in Section 23 31 00 "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.

- 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 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. Conditioned Space, Supply-Air Ducts in Pressure Classes 2-Inch wg and Lower: Seal Class C.
 - 4. Conditioned Space, Supply-Air Ducts in Pressure Classes Higher Than 2-Inch wg: Seal Class B.

3.4 HANGER AND SUPPORT INSTALLATION

- A. Comply with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible," Chapter 5, "Hangers and Supports."
- 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. 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.

3.5 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."
 - 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 agency acceptable to authorities having jurisdiction.
- 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 Construction Manager 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.

3.6 CONNECTIONS

- A. Make connections to equipment with flexible connectors complying with Section 23 33 00 "Air Duct Accessories."
- B. Comply with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible" for branch, outlet and inlet, and terminal unit connections.

3.7 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.

3.8 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. Supply Ducts with a Pressure Class of 2-Inch wg or Higher: Test representative duct sections totaling no less than 100 percent of total installed duct area for each designated pressure class.
 - b. Return Ducts with a Pressure Class of 2-Inch wg or Higher: Test representative duct sections totaling no less than 100 percent of total installed duct area for each designated pressure class.
 - c. Exhaust Ducts with a Pressure Class of 2-Inch wg or Higher: Test representative duct sections totaling no less than 100 percent of total installed duct area for each designated pressure class.
 - d. Outdoor Air Ducts with a Pressure Class of 2-Inch wg or Higher: Test representative duct sections totaling no less than 100 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.
 - 2. Test sections of metal duct system, chosen randomly by Construction Manager,

for cleanliness according to "Vacuum Test" in NADCA ACR, "Assessment, Cleaning and Restoration of HVAC Systems."

- a. Acceptable Cleanliness Level: Net weight of debris collected on the filter media shall not exceed 0.75 mg/100 sq. cm.
- D. Duct system will be considered defective if it does not pass tests and inspections.
- E. Prepare test and inspection reports.

3.9 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 23 33 00 "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.
 - 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.

3.10 START UP

- A. Air Balance: Comply with requirements in Section 23 05 93 "Testing, Adjusting, and Balancing for HVAC."

3.11 DUCT SCHEDULE

- A. Fabricate ducts with galvanized sheet steel except as otherwise indicated and as follows:
- B. Supply Ducts:
 1. Ducts Connected to Air-Handling Units:
 - a. Pressure Class: Positive 3-inch wg.
 - b. Minimum SMACNA Seal Class: B.
 - c. SMACNA Leakage Class for Rectangular: 12.
 - d. SMACNA Leakage Class for Round and Flat Oval: 6.
- C. Double-Wall Duct Interstitial Insulation:
 1. Supply Air Ducts: 2 inches.
- D. Elbow Configuration:
 1. 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 two

- vanes.
 - c. Mitered Type RE 2 with 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. 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: 0.5 radius-to-diameter ratio and three segments for 90-degree elbow.
 - 2) Velocity 1000 to 1500 fpm: 1.0 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, 12 Inches and Smaller in Diameter: Stamped or pleated.
 - c. Round Elbows, 14 Inches and Larger in Diameter: Welded
- E. 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. 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 1000 fpm or Lower: 90-degree tap.
 - b. Velocity 1000 to 1500 fpm: Conical tap.
 - c. Velocity 1500 fpm or Higher: 45-degree lateral.

END OF SECTION 23 31 13

SECTION 23 33 00
AIR DUCT ACCESSORIES

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. Backdraft dampers.
 - 2. Manual volume dampers.
 - 3. Combination fire and smoke dampers.
 - 4. Corridor dampers.
 - 5. Duct silencers.
 - 6. Turning vanes.
 - 7. Remote damper operators.
 - 8. Duct-mounted access doors.
 - 9. Flexible connectors.
 - 10. Flexible ducts.
 - 11. Duct accessory hardware.

1.3 ACTION SUBMITTALS

- A. Product Data: For each type of product.

1.4 CLOSEOUT SUBMITTALS

- A. Operation and Maintenance Data: For air duct accessories to include in operation and maintenance manuals.

PART 2 - PRODUCTS

2.1 ASSEMBLY DESCRIPTION

- A. Comply with NFPA 90A, "Installation of Air Conditioning and Ventilating Systems," and with NFPA 90B, "Installation of Warm Air Heating and Air Conditioning Systems."

- B. 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.
- C. Comply with AMCA 500-D testing for damper rating.

2.2 MATERIALS

- A. Galvanized Sheet Steel: Comply with ASTM A 653/A 653M.
 - 1. Galvanized Coating Designation: G90.
 - 2. Exposed-Surface Finish: Mill phosphatized.
- B. Stainless-Steel Sheets: Comply with ASTM A 480/A 480M, Type 304, and having a No. 2 finish for concealed ducts and exposed ducts.
- C. Aluminum Sheets: Comply with ASTM B 209, Alloy 3003, Temper H14; with mill finish for concealed ducts and standard, 1-side bright finish for exposed ducts.
- D. Extruded Aluminum: Comply with ASTM B 221, Alloy 6063, Temper T6.
- E. Reinforcement Shapes and Plates: Galvanized-steel reinforcement where installed on galvanized sheet metal ducts; compatible materials for aluminum and stainless-steel ducts.
- F. 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.

2.3 BACKDRAFT DAMPERS

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - 1. Greenheck Fan Corporation.
 - 2. Nailor Industries, Inc.
 - 3. Ruskin Company.
 - 4. Or equal.
- B. Description: Gravity balanced.
- C. Maximum Air Velocity: 2000 fpm
- D. Maximum System Pressure: 2-inch wg
- E. Frame: Hat-shaped, 18 gauge, galvanized sheet steel.
- F. Blades: Multiple single-piece blades, center pivoted, maximum 6-inch width, 0.032-inch-thick aluminum sheet with sealed edges.

- G. Blade Action: Parallel.
- H. Blade Seals: Vinyl or neoprene
- I. Blade Axles:
 - 1. Material: Galvanized steel.
 - 2. Diameter: 0.20 inch.
- J. Tie Bars and Brackets: Galvanized steel.
- K. Return Spring: Adjustable tension.
- L. Bearings: Stainless steel.
- M. Accessories:
 - 1. Adjustment device to permit setting for varying differential static pressure.

2.4 MANUAL VOLUME DAMPERS

- A. Standard, Steel, Manual Volume Dampers:
 - 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. McGill AirFlow LLC.
 - b. Nailor Industries, Inc.
 - c. Ruskin Company.
 - d. Or equal.
 - 2. Standard leakage rating, with linkage outside airstream.
 - 3. Suitable for horizontal or vertical applications.
 - 4. Frames:
 - a. Frame: Hat-shaped galvanized or stainless-steel channels, 0.064 minimum thickness suitable for application.
 - b. Mitered and welded corners.
 - c. Flanges for attaching to walls and flangeless frames for installing in ducts.
 - 5. Blades:
 - a. Multiple or single blade.
 - b. Opposed-blade design.
 - c. Stiffen damper blades for stability.
 - d. Galvanized or stainless steel, 0.064-inch-thick suitable for application.
 - 6. Blade Axles: Galvanized steel.
 - 7. Bearings:
 - a. Molded synthetic.

- b. Dampers in ducts with pressure classes of 3-inch wg or less shall have axles full length of damper blades and bearings at both ends of operating shaft.
- 8. Tie Bars and Brackets: Galvanized steel.
- B. Low-Leakage, Steel, Manual Volume Dampers:
 - 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. McGill AirFlow LLC.
 - b. Nailor Industries, Inc.
 - c. Ruskin Company.
 - d. Or equal
 - 2. Comply with AMCA 500-D testing for damper rating.
 - 3. Low-leakage rating, with linkage outside airstream, and bearing AMCA's Certified Ratings Seal for both air performance and air leakage.
 - 4. Suitable for horizontal or vertical applications.
 - 5. Frames:
 - a. Hat shaped.
 - b. 0.094-inch-thick, galvanized sheet steel.
 - c. Mitered and welded corners.
 - d. Flanges for attaching to walls and flangeless frames for installing in ducts.
 - 6. Blades:
 - a. Multiple or single blade.
 - b. Opposed-blade design.
 - c. Stiffen damper blades for stability.
 - d. Galvanized, roll-formed steel, 0.064 inch thick.
 - 7. Blade Axles: Galvanized steel.
 - 8. Bearings:
 - a. Oil impregnated bronze or Molded synthetic or Stainless-steel sleeve suitable for application.
 - b. Dampers in ducts with pressure classes of 3-inch wg or less shall have axles full length of damper blades and bearings at both ends of operating shaft.
 - 9. Blade Seals: Neoprene.
 - 10. Jamb Seals: Cambered stainless steel.
 - 11. Tie Bars and Brackets: Galvanized steel.
 - 12. Accessories:
 - a. Include locking device to hold single-blade dampers in a fixed position without vibration.

2.5 COMBINATION FIRE AND SMOKE DAMPERS

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - 1. Greenheck Fan Corporation.
 - 2. Nailor Industries, Inc.
 - 3. Ruskin Company.
 - 4. Or equal.
- B. Type: Dynamic; rated and labeled according to UL 555 and UL 555S by an NRTL.
- C. Closing rating in ducts up to 4-inch wg static pressure class and minimum 2000-fpm velocity.
 - 1. Ducts up 2000 fpm velocity 2000 fpm rated.
- D. Fire Rating: 1-1/2 hours or 3 hours as required by code for the rating of the construction penetrated.
- E. Frame: Multiple-blade type; fabricated with roll-formed, 0.034-inch- thick galvanized steel; with mitered and interlocking corners.
 - 1. Provide stainless steel type construction for applications when connected to stainless steel duct.
- F. Heat-Responsive Device and Override Control (Smoke Control System): Electric resettable link and switch package, factory installed, rated, for combination fire and smoke dampers in engineered smoke control, a primary electric temperature sensor (165 deg F) and a secondary fusible link (350 deg F). Electric sensor shall be factory installed and wired to terminal point, ready for field wiring of remote override control switch.
- G. Heat-Responsive Device (Standard): Electric resettable link and switch package, factory installed.
- H. Smoke Detector: Integral, factory wired for single-point connection.
- I. Blades: Roll-formed, horizontal, interlocking 0.034-inch-thick, galvanized sheet steel.
- J. Leakage: Class I for engineered smoke control and/or evacuation systems, Class II for smoke isolation of air handling units and smoke barrier duct penetrations.
- K. Rated pressure and velocity to exceed design airflow conditions.
- L. Mounting Sleeve: Factory-installed, 0.052-inch- thick, galvanized sheet steel; length to suit wall or floor application.
- M. Damper Motors: Two-position action.
- A. Comply with NEMA designation, temperature rating, service factor and enclosure type for application.

1. Motor Sizes: Large enough so driven load will not require motor to operate in service factor range above 1.0.
2. Actuator: Energized hold open and spring return (fail) closed.
3. Electrical Connection: 115 V, single phase, 60 Hz.

B. Accessories:

1. Auxiliary switches for position indication.
2. Damper Test Switch.

2.6 FLANGE CONNECTORS

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1. Ductmate Industries, Inc.
2. Nexus PDQ.
3. Ward Industries; a brand of Hart & Cooley, Inc.
4. Or equal.

B. Description: Add-on or roll-formed, factory-fabricated, slide-on transverse flange connectors, gaskets, and components.

C. Material: Galvanized steel.

D. Gage and Shape: Match connecting ductwork.

2.7 TURNING VANES

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1. Ductmate Industries, Inc.
2. METALAIRE, Inc.
3. SEMCO Incorporated.
4. Or equal.

B. Manufactured Turning Vanes for Metal Ducts: Curved blades of galvanized sheet steel; support with bars perpendicular to blades set; set into vane runners suitable for duct mounting.

1. Acoustic Turning Vanes: Fabricate airfoil-shaped aluminum extrusions with perforated faces and fibrous-glass fill.

C. General Requirements: Comply with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible"; Figures 4-3, "Vanes and Vane Runners," and 4-4, "Vane Support in Elbows."

D. Vane Construction: Double wall.

2.8 REMOTE DAMPER OPERATORS

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - 1. Pottorff.
 - 2. Ventfabrics, Inc.
 - 3. Young Regulator Company.
 - 4. Or Equal.
- B. Description: Cable system designed for remote manual damper adjustment.
- C. Tubing: Brass.
- D. Cable: Stainless steel.
- E. Wall-Box Mounting: Recessed
- F. Wall-Box Cover-Plate Material: Stainless steel.

2.9 DUCT-MOUNTED ACCESS DOORS

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - 1. Greenheck Fan Corporation.
 - 2. McGill AirFlow LLC.
 - 3. Nailor Industries Inc.
 - 4. Or Equal.
- B. Duct-Mounted Access Doors: Fabricate access panels according to SMACNA's "HVAC Duct Construction Standards - Metal and Flexible"; Figures 7-2, "Duct Access Doors and Panels," and 7-3, "Access Doors - Round Duct."
 - 1. Door:
 - a. Double wall, rectangular.
 - b. Galvanized sheet metal with insulation fill and thickness as indicated for duct pressure class.
 - c. Vision panel.
 - d. Hinges and Latches: 1-by-1-inch butt or piano hinge and cam latches.
 - e. Fabricate doors airtight and suitable for duct pressure class.
 - 2. Frame: Galvanized sheet steel, with bend-over tabs and foam gaskets.
 - 3. Number of Hinges and Locks:
 - a. Access Doors Less Than 12 Inches Square: No hinges and two sash locks.
 - b. Access Doors up to 18 Inches Square: Two hinges and two sash locks.
 - c. Access Doors up to 24 by 48 Inches: Three hinges and two compression latches with outside and inside handles.

- d. Access Doors Larger Than 24 by 48 Inches: Four hinges and two compression latches with outside and inside handles.

2.10 FLEXIBLE CONNECTORS

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - 1. Ductmate Industries, Inc.
 - 2. Ventfabrics, Inc.
 - 3. Ward Industries; a brand of Hart & Cooley, Inc.
 - 4. Or Equal.
- B. Materials: Flame-retardant or noncombustible fabrics.
- C. Coatings and Adhesives: Comply with UL 181, Class 1.
- D. Metal-Edged Connectors: Factory fabricated with a fabric strip 3-1/2 inches or 5-3/4 inches wide attached to two strips of 2-3/4-inch-wide, 0.028-inch-thick, galvanized sheet steel or 0.032-inch-thick aluminum sheets. Provide metal compatible with connected ducts.
- E. Indoor System, Flexible Connector Fabric: Glass fabric double coated with neoprene.
 - 1. Minimum Weight: 26 oz./sq. yd..
 - 2. Tensile Strength: 480 lbf/inch in the warp and 360 lbf/inch in the filling.
 - 3. Service Temperature: Minus 40 to plus 200 deg F.
- F. Outdoor System, Flexible Connector Fabric: Glass fabric double coated with weatherproof, synthetic rubber resistant to UV rays and ozone.
 - 1. Minimum Weight: 24 oz./sq. yd..
 - 2. Tensile Strength: 530 lbf/inch in the warp and 440 lbf/inch in the filling.
 - 3. Service Temperature: Minus 50 to plus 250 deg F.

2.11 FLEXIBLE DUCTS

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - 1. Flexmaster U.S.A., Inc.
 - 2. McGill AirFlow LLC.
 - 3. Ward Industries; a brand of Hart & Cooley, Inc.
 - 4. Or equal.
- B. Noninsulated, Flexible Duct: UL 181, Class 0, interlocking spiral of aluminum foil.
 - 1. Pressure Rating: 8-inch wg positive or negative.
 - 2. Maximum Air Velocity: 5000 fpm.
 - 3. Temperature Range: Minus 100 to plus 435 deg F.

- C. Insulated, Flexible Duct: UL 181, Class 1, multiple layers of aluminum laminate, aluminum laminate and polyester film with latex adhesive, vinyl-coated fiberglass cloth, or similar material, supported by helically wound, spring-steel wire; fibrous-glass insulation; polyethylene or aluminized vapor-barrier film.
 - 1. Pressure Rating: 10-inch wg positive and 1.0-inch wg negative.
 - 2. Maximum Air Velocity: 4000 fpm.
 - 3. Temperature Range: Minus 20 to plus 210 deg F.
 - 4. Insulation R-value: Comply with California Energy Code.
- D. Flexible Duct Connectors:
 - 1. Clamps: Stainless-steel band with cadmium-plated hex screw to tighten band with a worm-gear action in sizes 3 through 18 inches, to suit duct size.

2.12 DUCT ACCESSORY HARDWARE

- A. Instrument Test Holes: Cast iron or cast aluminum to suit duct material, including screw cap and gasket. Size to allow insertion of pitot tube and other testing instruments and of length to suit duct-insulation thickness.
- B. Adhesives: High strength, quick setting, neoprene based, waterproof, and resistant to gasoline and grease.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Install duct accessories according to applicable details in SMACNA's "HVAC Duct Construction Standards - Metal and Flexible" for metal ducts and in NAIMA AH116, "Fibrous Glass Duct Construction Standards," for fibrous-glass ducts.
- B. Install duct accessories of materials suited to duct materials; use galvanized-steel accessories in galvanized-steel and fibrous-glass ducts, stainless-steel accessories in stainless-steel ducts, and aluminum accessories in aluminum ducts.
- C. Install backdraft dampers at inlet of exhaust fans or exhaust ducts as close as possible to exhaust fan unless otherwise indicated.
- D. Install volume dampers at points on supply, return, and exhaust systems where branches extend from larger ducts. Where dampers are installed in ducts having duct liner, install dampers with hat channels of same depth as liner, and terminate liner with nosing at hat channel.
 - 1. Install steel volume dampers in steel ducts.
 - 2. Install aluminum volume dampers in aluminum ducts.
- E. Set dampers to fully open position before testing, adjusting, and balancing.

- F. Install test holes at fan inlets and outlets and elsewhere as indicated.
- G. Install fire and smoke dampers according to UL listing.
- H. Install remote damper actuators for inaccessible dampers above hard-lid ceilings:
 - 1. Install cable assembly in concealed ceiling space with the control housing end flush and square to the finished ceiling line.
 - 2. Properly support cable sleeve to prevent twisting or bending.
 - 3. Do not cover damper operator with insulation or other material that may interfere with the proper operation of the assembly.
 - 4. Install dampers round and free from racking. Do not compress or stretch damper sleeve or frame into the duct or opening.
 - 5. Where possible, group multiple damper operator above lay-in ceilings.
 - 6. Label operators logically and reference to plans.
- I. Install duct access doors on sides of ducts to allow for inspecting, adjusting, and maintaining accessories and equipment at the following locations:
 - 1. On both sides of duct coils.
 - 2. At outdoor-air intakes and mixed-air plenums.
 - 3. Downstream from manual volume dampers, control dampers, backdraft dampers, and equipment.
 - 4. Adjacent to and close enough to fire or smoke dampers, to reset or reinstall fusible links. Access doors for access to fire or smoke dampers having fusible links shall be pressure relief access doors and shall be outward operation for access doors installed upstream from dampers and inward operation for access doors installed downstream from dampers.
 - 5. At each change in direction and at maximum 50-foot spacing.
 - 6. Upstream and downstream from turning vanes.
 - 7. Upstream or downstream from duct silencers.
 - 8. Control devices requiring inspection.
 - 9. Elsewhere as indicated.
- J. Install access doors with swing against duct static pressure.
- K. Access Door Sizes:
 - 1. One-Hand or Inspection Access: 8 by 5 inches.
 - 2. Two-Hand Access: 12 by 6 inches.
 - 3. Head and Hand Access: 18 by 10 inches.
 - 4. Head and Shoulders Access: 21 by 14 inches.
 - 5. Body Access: 25 by 14 inches.
 - 6. Body plus Ladder Access: 25 by 17 inches.
- L. Install flexible connectors to connect ducts to equipment as follows:
 - 1. Use 3-1/2 inch metal edge connectors on systems below 10,000 cfm.
 - 2. Use 5-3/4 inch metal edge connectors on systems above 10,000 cfm.
 - 3. Use indoor type connectors for all systems located indoors.

- 4. Use outdoor type connectors for all system located outdoors.
- M. For fans developing static pressures of 5-inch wg and more, cover flexible connectors with loaded vinyl sheet held in place with metal straps.
- N. Connect terminal units to supply ducts directly.
- O. Do not use flexible ducts to change directions.
- P. Connect diffusers to low pressure ducts directly or with maximum 60-inch lengths of flexible duct clamped in place.
- Q. Connect flexible ducts to metal ducts with adhesive plus sheet metal screws.
- R. Install duct test holes where required for testing and balancing purposes.

3.2 FIELD QUALITY CONTROL

- A. Tests and Inspections:
 - 1. Operate dampers to verify full range of movement.
 - 2. Inspect locations of access doors and verify that purpose of access door can be performed.
 - 3. Operate combination fire and smoke dampers to verify full range of movement and verify that proper heat-response device is installed.
 - 4. Inspect turning vanes for proper and secure installation.
 - 5. Operate remote damper operators to verify full range of movement of operator and damper.

END OF SECTION 23 33 00

SECTION 23 74 13
PACKAGED OUTDOOR, CENTRAL-STATION AIR-HANDLING 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. This Section includes packaged, outdoor, central-station air-handling units (rooftop units) with the following components and accessories:
 - 1. Direct-expansion cooling.
 - 2. Gas furnace.
 - 3. Economizer outdoor- and return-air damper section.
 - 4. Integral, space temperature controls.
 - 5. Roof curbs.

1.3 DEFINITIONS

- A. DDC: Direct-digital controls.
- B. ECM: Electrically 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. Outdoor-Air Refrigerant-Coil Fan: The outdoor-air refrigerant-coil fan in RTUs. "Outdoor air" is defined as the air outside the building or taken from outdoors and not previously circulated through the system.
- E. RTU: Rooftop unit. As used in this Section, this abbreviation means packaged, outdoor, central-station air-handling units. This abbreviation is used regardless of whether the unit is mounted on the roof or on a concrete base on ground.
- F. 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.
- G. 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.

1.4 ACTION SUBMITTALS

- A. Product Data: Include manufacturer's technical data for each RTU, including rated capacities, dimensions, required clearances, characteristics, furnished specialties, and accessories.
- B. Shop Drawings: Detail equipment assemblies and indicate dimensions, weights, loads, required clearances, method of field assembly, components, and location and size of each field connection.
 - 1. Wiring Diagrams: Power, signal, and control wiring.

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. Roof openings
 - 3. Roof curbs and flashing.
- B. Field quality-control test reports.
- C. Warranty: Special warranty specified in this Section.

1.6 CLOSEOUT SUBMITTALS

- A. Operation and Maintenance Data: For RTUs to include in emergency, operation, and maintenance manuals.

1.7 QUALITY ASSURANCE

- A. ARI Compliance:
 - 1. Comply with ARI 210/240 and ARI 340/360 for testing and rating energy efficiencies for RTUs.
- B. ASHRAE Compliance:
 - 1. Refrigeration coils shall be selected, constructed, and tested in accordance with ARI Standard 410
- C. UL Compliance: Rooftop units shall be designed, manufactured, and tested in accordance with UL requirements.

- D. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.
- E. CA Energy Standard Compliance: Rooftop units shall be compliant with latest edition of the California Building Energy Efficiency Standards

1.8 WARRANTY

- 1. See Product cutsheet at the end of this section.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Subject to compliance with requirements, provide products from one of the following:
 - 1. Carrier Corporation, a unit of United Technologies Corp.
 - 2. Or approved equal.

2.2 GENERAL

- A. See Product cutsheet at the end of this section.

2.3 ELECTRICAL POWER CONNECTION

- A. Provide for single connection of power to unit.

2.4 CONTROLS

- A. All DDC controls shall be by unit manufacturer. Unit controller shall be factory installed inside unit.

2.5 ACCESSORIES

- A. Hail Guards: Louvered metal guards to help protect the condenser coil from hail and debris.

2.6 ROOF CURBS

- A. Materials: Galvanized steel with corrosion-protection coating, watertight gaskets, and factory-installed wood nailer; complying with NRCA standards.

- B. Wind and Seismic Restraints: Metal brackets compatible with the curb and casing, painted to match RTU, used to anchor unit to the curb, and designed for loads at Project site.

2.7 CAPACITIES AND CHARACTERISTICS

- A. See Equipment Schedules on Drawings.

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. Secure RTUs to upper curb rail, and secure curb base to roof framing.

3.3 CONNECTIONS

- A. Install condensate drain, minimum connection size, with trap and indirect connection to roof receptor as indicated.
- B. Install piping adjacent to RTUs to allow service and maintenance.
 - 1. Gas Piping: Comply with applicable requirements in Section 23 11 23 "Facility Natural-Gas Piping." Connect gas piping to burner, full size of gas train inlet, and connect with union and shutoff valve with sufficient clearance for burner removal and service.
- C. 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 23 33 00 "Air Duct Accessories."

3.4 FIELD QUALITY CONTROL

- A. Manufacturer's Field Service: Engage a factory-authorized service representative to inspect, test, and adjust components, economizers, assemblies, and equipment installations, including connections Report results in writing.
- B. Perform tests and inspections and prepare test reports.
 1. Manufacturer's Field Service: Engage a factory-authorized service representative to inspect components, assemblies, economizer and equipment installations, including connections, and to assist in testing. Report results in writing.
- C. Remove and replace malfunctioning units and retest as specified above.

3.5 STARTUP SERVICE

- A. Engage a factory-authorized service representative to perform startup service according to manufacturer's written instructions.

3.6 CLEANING AND ADJUSTING

- A. 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.



Submittal

Trane U.S. Inc.

Prepared For:

Date: 10/28/2024

Customer P.O. Number:

Customer Project Number:

Sold To:

Job Number:

Job Name: Imperial County Health Dept

Trane is pleased to provide the enclosed submittal for your review and approval.

Product Summary

Qty	Model Description
-----	-------------------

1	Horizon™ (OAD/N Rev6 - OADG/OANG) - Horizon™ - Outdoor Air Unit (Revision 6)
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The attached information describes the equipment we propose to furnish for this project and is submitted for your approval.

Product Data - Horizon™ - Outdoor Air Unit (Revision 6)

Size	Qty	Description	Model Number
D015	1	Horizon™ - Outdoor Air Unit (Revision 6)	OADG015B1-DAB1GBG00-C1AE00000-21B000010-A00C00A00-A00A00000-01AL00000

Tag(s): DOAS-1

Unit Voltage: 208-3-60

Warranty: 1-Year Parts Only (manufacturer warranty)

Warranty: 5-Year Digital/Variable Speed/Standard Scroll Compressor / 25-Year Heat Exchanger

Airflow Configuration: Horizontal Discharge/No Return

Indoor Coil Type: DX 6-Row

Reheat: Fin & Tube Modulating HGRH

Compressor: Digital Scroll-1st Circuit Only

Outdoor Coil Type: Air Cooled Fin & Tube

Capacity Control: R-454B - Low GWP Refrigerant & No RCC Valve

Heat Type - Primary: Indirect Fired NG (IF) - High Efficiency (81%)

Heat Capacity - Primary: 250 MBH, (10:1 Turndown NG, 8:1 Turndown LP)

Supply Fan Motor Type: Direct Drive w/VFD

Unit Controls: Discharge Air Control - UC600

Building Interface: BACnet

Filter Options: MERV-13, 80%

Damper Options: 100% OA 2-Position Damper

Electrical Options: Non-Fused Disconnect "Circuit Breaker"

Condenser Fan Options: Active (VFD) Head Pressure Low Ambient Control

Hailguards: Hailguards

Installation: Outdoor

Cooling Controls: Reliatel

Damper Leakage Classification: Class 1A

Supply Discharge Air Sensor (FLD)

2 inch Double Wall Construction

Stainless Steel Drip Pan

Blower HP - 1.5

Blower RPM - 1646

Supply Fan - ANPA 16

Unit Amps - FLA: 64.3 Amps

Min Circuit Ampacity - MCA: 70.7 Amps

Maximum Fuse Size - MFS: 90 Amps



Project Name: imperial County Health Dept

Tag: DOAS-1

Comments:

Unit Information

Model: Horizon™ (OAD/N Rev6 - OADG/OANG)	Unit Length: 117 in	Weight Operating: 3097 lb*
Size: D015	Unit Width: 95 in	Note: Weight does not include CURB weight. See CURB submittal for actual
Quantity: 1	Unit Height: 68 in	Refrigerant Charge - R-454B
Supply Airflow: 2,600 CFM	Elevation: 0 ft	Circuit 1: 28.4 lbs
Outside Airflow: 2,600 CFM	Ambient Air DB: 115 F	
Minimum Airflow: 2,333 CFM		

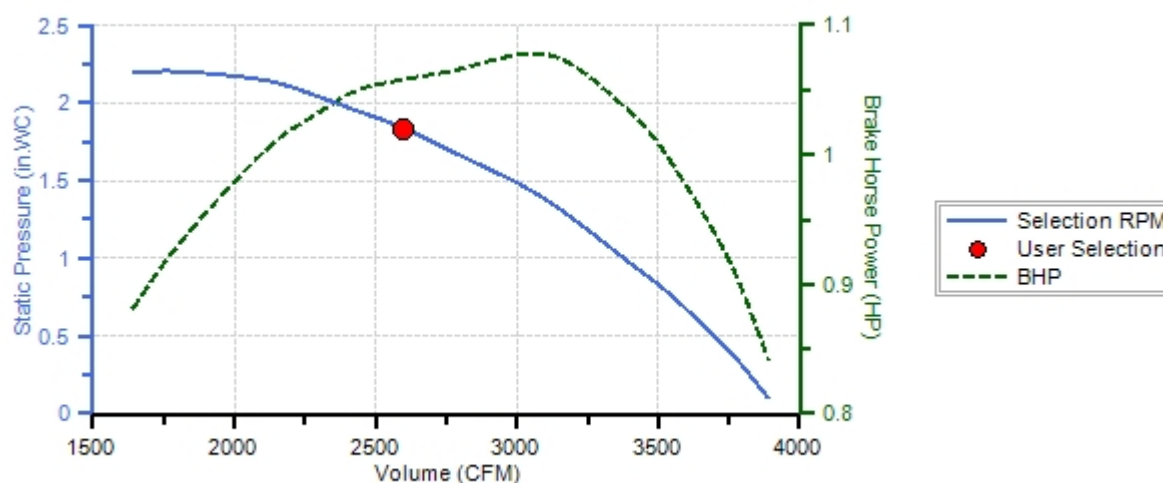
Cooling Performance

Gross Total Capacity: 165.5 MBh	Evaporator Face Area: 12.15 sq ft
Gross Sensible Capacity: 159.6 MBh	Evaporator Rows / FPI: 6 / 14
Net Total Capacity: 162.8 MBh	Condenser Face Area: 30 sq ft
Net Sensible Capacity: 156.9 MBh	Condenser Rows / FPI: 5 / 13
Entering Air DB / WB (Coil): 115 / 75 F	Air Velocity: 213 fpm
Leaving Air DB / WB (Coil): 54.0 / 54.0 F	Coil Air PD: 0.10 in H2O
Leaving Air DB / WB (Reheat): 99.6 / 69.99 F	EER: 8.8
Leaving Air DB / WB (Unit): 100.7 / 70.3 F	Watts: 18495
Leaving DP: 53.8 F	MRE: 0.33 lb/kWh
MRC: 6.04 lb/h	

Heating Performance

Heat Type: Gas Furnace	Entering Air DB: 20 F
Input Capacity: 250 MBh	Leaving Air DB: 91.8 F
Output Capacity: 202.5 MBh	Coil Air PD: 0.13 in H2O
Calculated Capacity: 244.9 MBh	

Supply Fan ANPA 16

**Supply Pressure Drop Summary**

External Static Pressure:	1.50 in H ₂ O
Cooling Coil:	0.1 in H ₂ O
Filter:	0.06 in H ₂ O
Primary Heat:	0.13 in H ₂ O
HGRH:	0.01 in H ₂ O
Outdoor:	0.03 in H ₂ O
Total Static Pressure:	1.83 in H ₂ O

Supply Fan Conditions

Fan Motor BHP:	1.06 BHP
Operating RPM:	1646 RPM
Minimum RPM:	1477 RPM

Standard Radiated Sound Power Level (dBA)

<u>63</u>	<u>125</u>	<u>250</u>	<u>500</u>	<u>1000</u>	<u>2000</u>	<u>4000</u>	<u>8000</u>	<u>Total dBA</u>
59.7	69.7	76.7	81.7	81.7	81.7	82.7	78.7	88.7

Sound power levels are listed for informational purposes only and are not guaranteed.

Unit Electrical Data

Unit Voltage-Ph-Hz:	208-3-60	Min Circuit Ampacity - MCA:	70.7 Amps
Unit Amps - FLA:	64.3 Amps	Maximum Fuse Size - MFS:	90.0 Amps

Electrical Summary

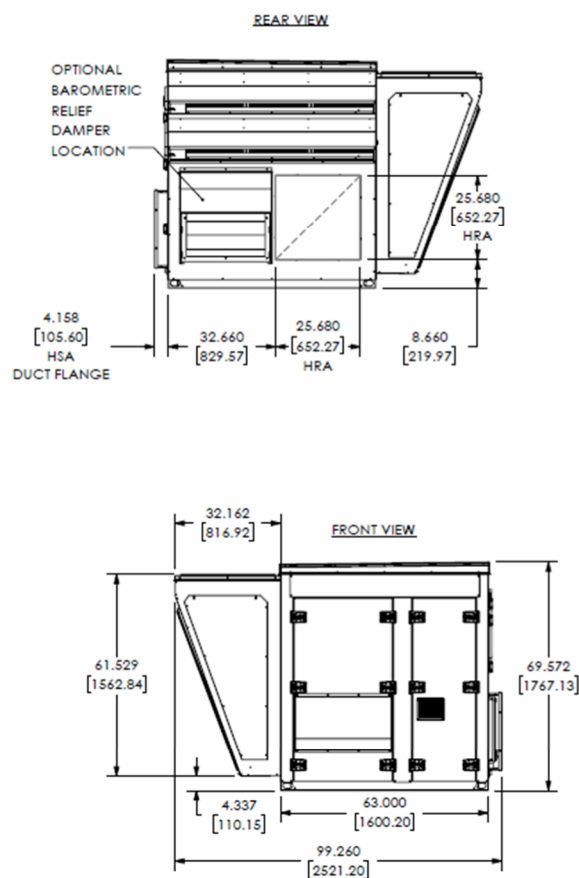
<u>Component</u>	<u>Fan Service</u>	<u>Qty</u>	<u>HP (ea.)</u>	<u>FLA (ea.)</u>	<u>RLA (ea.)</u>	<u>LRA (ea.)</u>
Digital Scroll		1			25.6	186.6
	Supply	1	1.5	4.8		
	Condenser	2	1	4.2		
Controls		1		2.4		
Gas Heater		1		6.25		
Scroll		1			23.1	188.7

Notes

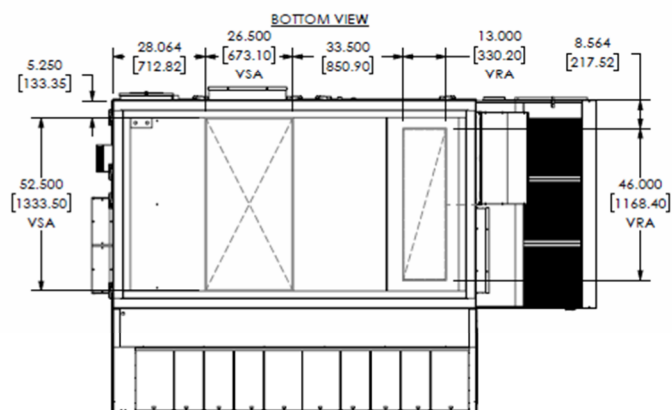
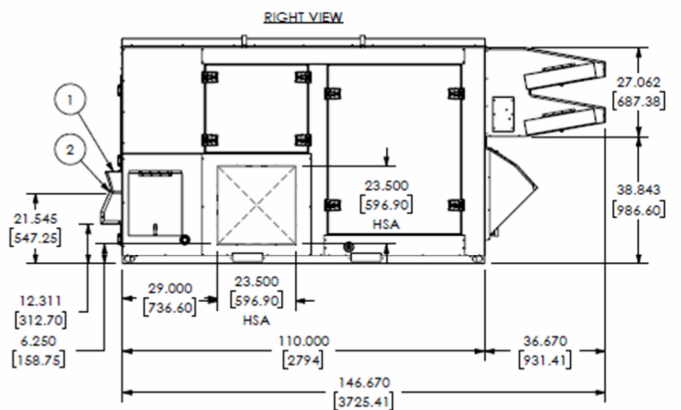
- Unit Electrical amps include the greater of compressor or electrical heat amps.
- Unit's electrical as shown above are for single point power.

Drawing Accurate for OAD DX and OAD ASHP

Qty: 1 Tag(s): DOAS-1

**GENERAL NOTES:**

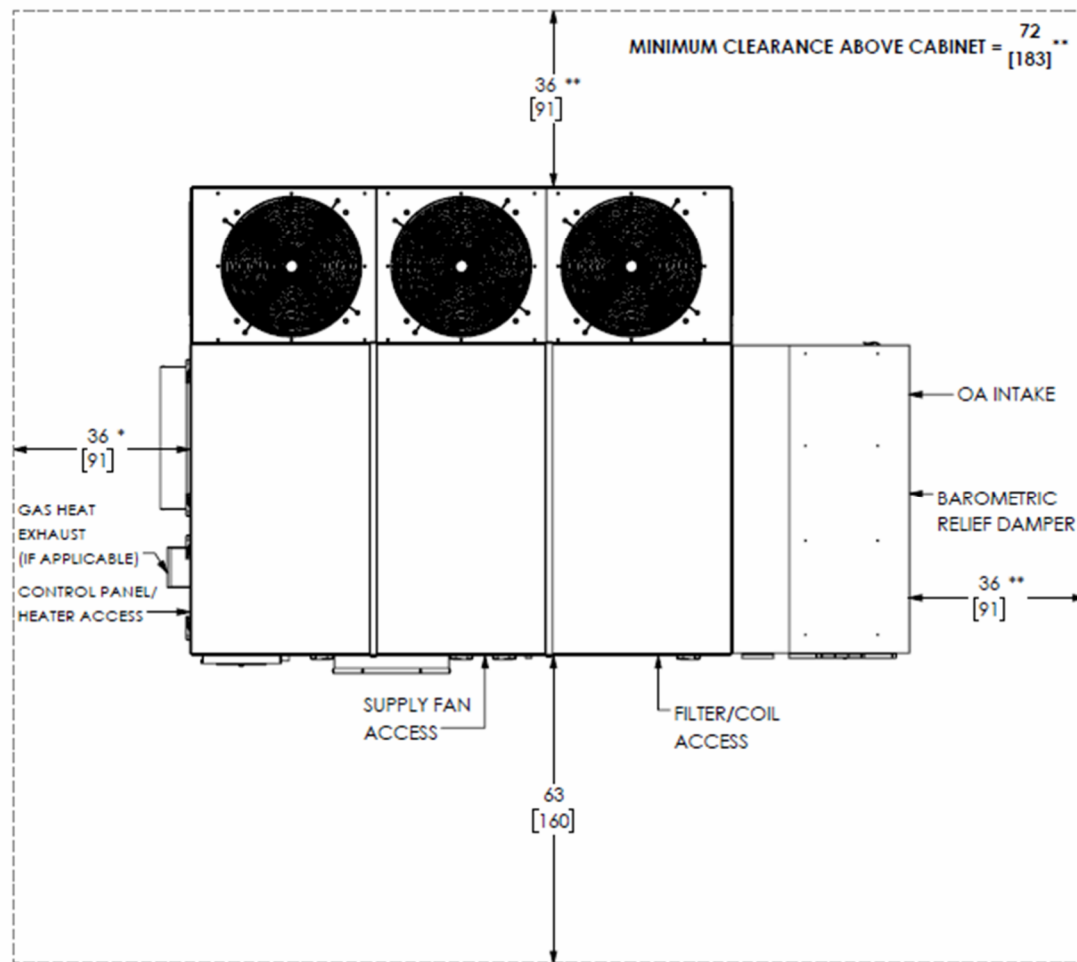
- IN.
- A. DUAL DIMENSIONS: [CM.]
- B. UNIT SHOWN REPRESENTS MULTIPLE AIRFLOW CONFIGURATIONS

**CONFIGURATION SPECIFIC NOTES:**

1. FLUE HOOD: INCLUDED WITH GAS HEAT
2. COMBUSTION AIR INTAKE: INCLUDED WITH GAS HEAT

Drawing Accurate for OAD DX and OAD ASHP

Qty: 1 Tag(s): DOAS-1



GENERAL NOTES:
A. DUAL DIMENSIONS IN.
[CM.]

DIMENSIONS DISPLAYED ARE REQUIRED FOR BASIC UNIT SERVICEABILITY UNLESS OTHERWISE NOTED

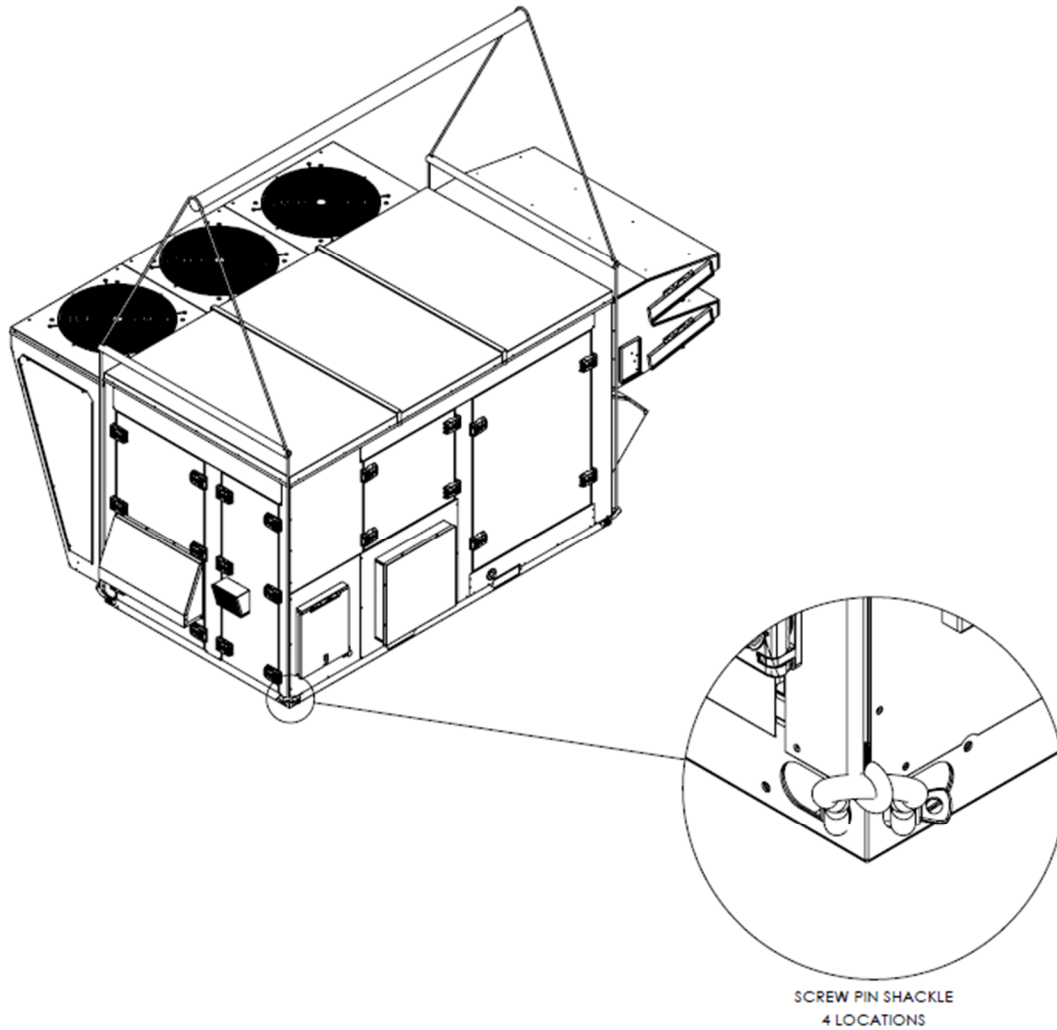
*MINIMUM REQUIRED CLEARANCE TO ENSURE UNIT PERFORMANCE FOR GAS HEAT OPTION

**MINIMUM REQUIRED CLEARANCE TO ENSURE UNIT PERFORMANCE

REFER TO LOCAL BUILDING CODES TO ENSURE INSTALLATION MEETS ALL NECESSARY REQUIREMENTS

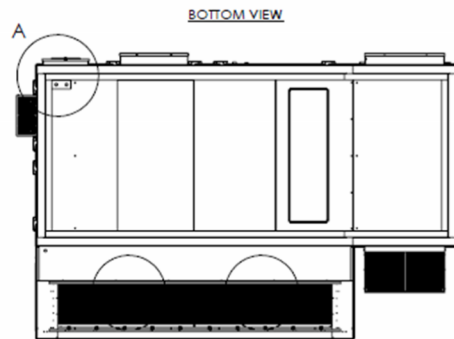
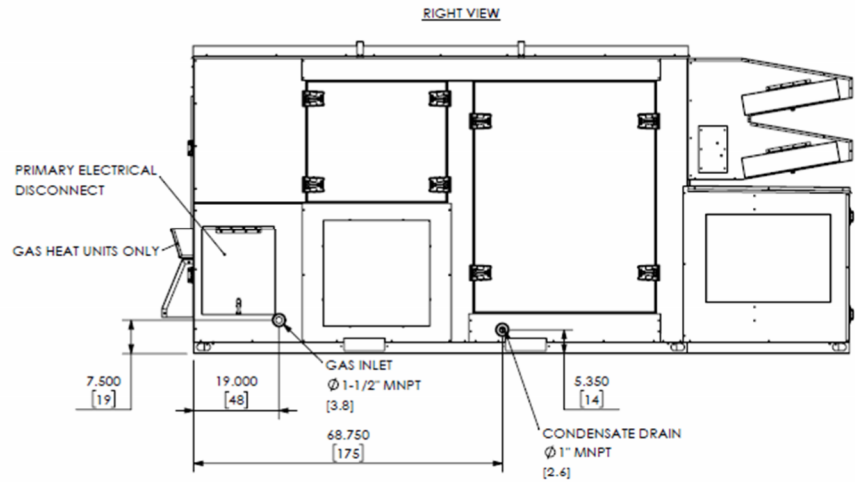
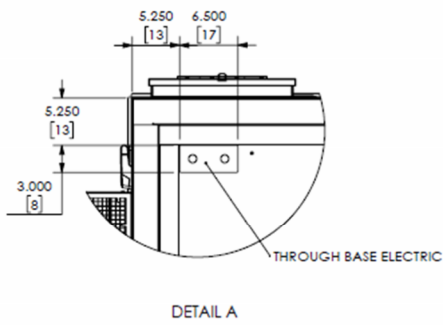
Drawing Accurate for OAD DX and OAD ASHP

Qty: 1 Tag(s): DOAS-1



Drawing Accurate for OAD DX and OAD IDX and OAD ASHP

Qty: 1 Tag(s): DOAS-1



NOTES:
1. DUAL DIMENSIONS: IN.
[CM.]

Mechanical Specifications - Tag(s): DOAS-1**Casing**

Unit casing shall be constructed of zinc coated, heavy gauge, galvanized steel. Exterior surfaces shall be cleaned, phosphatized, and finished with a weather-resistant baked enamel finish. Unit's surface shall be tested 672 hours in a salt spray test in compliance with ASTM B117. Unit shall have 2 inch thick Antimicrobial two component rigid polyurethane foam insulation, metal encapsulated with no exposed edges. Initial R value of 6.7 per inch of thickness. The unit's base pan shall have no penetrations within the perimeter of the curb other than the raised downflow supply/return openings to provide an added water integrity precaution, if the condensate drain backs up.

Unit Top

The top cover shall be one piece construction or, where seams exist, it shall be double-hemmed and gasket-sealed. The ribbed top adds extra strength and enhances water removal from unit top

Sensors

A factory installed combination outdoor air sensor located in the outdoor air hood is designed to sense both outdoor air temperature and relative humidity for use by the microprocessor controller to make required ventilation, cooling, dehumidification and heating decisions. Refer to the Sequence of Operations section of the Installation, Operation and Maintenance manual for detailed unit control and operational modes. A factory installed sensing tube is designed to sense the supply air temperature downstream of the indoor fan section.

Indoor Coil Type: DX 6-Row

Internally finned, inch copper tubes mechanically bonded to a configured aluminum plate fin shall be standard. Coils shall be leak tested at the factory to ensure the pressure integrity. The evaporator coil shall be leak tested to 500 psig and pressure tested to 500 psig. A Stainless Steel double-sloped condensate drain pan with provision for through the unit wall condensate drain is standard. Evaporator coil will have 6 interlaced rows for superior sensible and latent cooling.

Reheat: Fin & Tube Modulating HGRH

This option shall consist of a modulating hot-gas reheat coil located on the leaving air side of the evaporator coil pre-piped and circuited with a low pressure switch. Refer to the Sequence of Operations section of the Installation, Operation and Maintenance manual for detailed unit control and operational modes.

Compressor: Digital Scroll-1st Circuit Only

All units shall have direct-drive, hermetic, digital scroll type compressors with centrifugal type oil pumps. Motor shall be suction gas-cooled and shall have a voltage utilization range of plus or minus 10 percent of unit nameplate voltage. Internal overloads shall be provided with the scroll compressors. Crankcase heaters shall be included. Compressor shall be able to fully modulate from 20%-100%.

Outdoor Coil Type: Air Cooled Fin & Tube

(Fin and Tube Coil) - Internally finned, copper tubes mechanically bonded to a configured aluminum plate fin shall be standard. Coils shall be leak tested at the factory to ensure the pressure integrity. The condenser coil shall be leak tested to 500 psig and pressure tested to 500 psig. The condenser coil shall have a fin design with slight gaps for ease of cleaning.

Outdoor Fans: Shall be direct drive vertical discharge design with low-noise corrosion resistant glass reinforced polypropylene props, powder coated wire discharge guards and electro-plated motor mounting brackets. Fans shall be statically and dynamically balanced.

Capacity Control: R-454B - Low GWP Refrigerant & No RCC Valve

All units shall be fully charged with R-454B. Units shall be ETL listed and labeled, classified in accordance to UL 60335-2-40/CSA C22.2 No. 60335-2-40 for Central Cooling Air Conditioners. Canadian units shall be CSA Certified.

Heat Capacity - Primary: 250 MBH, (10:1 Turndown NG, 8:1 Turndown LP)

Primary heat is supplied using indirect fired gas heating. The heating section shall have a progressive tubular heat exchanger design using Stainless Steel burners and type 439 Stainless Steel tubes. An induced draft combustion blower shall be used to pull the combustion products through the firing tubes. The heater shall use a direct spark ignition (DS) system. On initial call for heat, the combustion blower shall purge the heat exchanger for 20 seconds before ignition. After three unsuccessful ignition attempts, the entire heating system shall be locked out until manually reset at the thermostat/zone sensor. Units shall be comply with the California requirement for low NOx emissions. Unit shall be suitable for use with Natural Gas. Minimum incoming gas pressure of 7" W.C. and Maximum pressure of

14" W.C. required. Factory provided 25 year heat exchanger warranty.

Supply Fan Motor Type: Direct Drive w/VFD

Supply Fan motor shall be direct drive type with factory installed Variable Frequency Drive (unless no controls option is selected, VFD can be provided by others). All motors shall be thermally protected. All indoor fan motors meet the U.S. Energy Policy Act of 2005 (EPACT). All Fans shall be mounted on rubber vibration isolators, to reduce the transmission of noise.

Unit Controls: Discharge Air Control - UC600

Unit is completely factory wired with necessary controls and contactor pressure lugs for power wiring. Units will provide an external location for mounting fused disconnect device. PLC controls are provided for all 24 volt control functions. The resident control algorithms will make all heating, cooling and/or ventilating decisions in response to electronic signals from sensors measuring outdoor temperature and humidity. The control algorithm maintains accurate temperature control, minimizes drift from set point and provides better building comfort. A centralized PLC (UC600) will provide anti-short cycle timing for a higher level of machine protection. Terminals are provided for a field installed dry contact or switch closure to put the unit in the Occupied or Unoccupied modes.

Filter Options: MERV-13, 80%

Aluminum Mesh Filters (D, K and N Cabinets) and Galvanized Mesh Bird Screen (B and G Cabinets) shall be installed on the intake of the unit. In addition, one row of 2 inch MERV-13 rated filters (80 percent) shall be installed prior to the evaporator coil. Unit shall be equipped with a 6" filter rack upstream of the evaporator. Frame shall be field-adjustable to match any filter combination specified in the attached selection.

Damper Options: 100% OA 2-Position Damper

The unit shall have a factory installed and integrated 100% outdoor air hood with damper controlled by direct coupled actuator and 2 inch permanent and washable aluminum mesh filters accessible through a hinged access panel. The return air damper tray is blocked off to allow 100% outdoor airflow.

Electrical Options: Non-Fused Disconnect "Circuit Breaker"

A 3-pole, molded case, HACR circuit breaker with provisions for through the base electrical connections shall be factory installed. Wiring will be provided from the circuit breaker to the unit high voltage terminal block. The switch will be UL/CSA agency recognized. The circuit breaker will be sized per NEC and UL guidelines.

Factory wired Voltage/Phase monitor shall be included as standard. In the event of any of the following, the units will be shut down and upon correction of the fault condition the unit will reset and restart automatically.

1. Phase Unbalance Protection: Factory set 2%
2. Over/Under/Brown Out Voltage Protection: +/-10% of nameplate voltage
3. Phase Loss/Reversal

Hailguards: Hailguards

Hail guards shall be installed on the outside of the condenser coil. The guards shall consist of perforated metal, of the same gauge and color as the unit itself. Airflow through the hail guards shall not be restricted due to location or size of the perforations. Guards shall be removable to accommodate coil cleaning.

END OF SECTION 27 74 13

SECTION 260519 - LOW-VOLTAGE ELECTRICAL POWER CONDUCTORS AND CABLES

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Copper building wire.
2. Connectors and splices.

1.2 ACTION SUBMITTALS

A. Product Data:

1. Copper building wire.
2. Connectors and splices.

1.3 INFORMATIONAL SUBMITTALS

A. Field quality-control reports.

PART 2 - PRODUCTS

2.1 COPPER BUILDING WIRE

- A. Description: Flexible, insulated and uninsulated, drawn copper current-carrying conductor with an overall insulation layer or jacket, or both, rated 600 V or less.
- B. Manufacturers: Subject to compliance with requirements, provide products by one of the following manufacturers or equal:
1. [Southwire Incorporated.](#)
 2. [General Cable Technologies Corporation.](#)
 3. [Alpha Wire.](#)
 4. [Belden Inc.](#)
 5. [Encore Wire Corporation.](#)
- C. Standards:
1. Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and use.
 2. Conductor and Cable Marking: Comply with wire and cable marking according to UL's "Wire and Cable Marking and Application Guide."

- D. Conductors: Copper, complying with ASTM B3 for bare annealed copper and with **ASTM B8** for stranded conductors.
- E. Conductor Insulation:
 - 1. **Type THHN and Type THWN-2.** Comply with UL 83

2.2 CONNECTORS AND SPLICES

- A. Description: Factory-fabricated connectors, splices, and lugs of size, ampacity rating, material, type, and class for application and service indicated; listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and use.
- B. Jacketed Cable Connectors: For steel and aluminum jacketed cables, zinc die-cast with set screws, designed to connect conductors specified in this Section.
- C. Lugs: One piece, seamless, designed to terminate conductors specified in this Section.
 - 1. Material: **Copper.**
 - 2. Type: **Two** hole with **standard** barrels.
 - 3. Termination: **Compression.**

PART 3 - EXECUTION

3.1 CONDUCTOR MATERIAL APPLICATIONS

- A. Feeders:
 - 1. Copper; solid for No. 10 AWG and smaller; stranded for No. 8 AWG and larger.
 - 2. Copper for feeders smaller than No. 4 AWG; copper or aluminum for feeders No. 4 AWG and larger. Conductors must be solid for No. 10 AWG and smaller; stranded for No. 8 AWG and larger.
- B. Branch Circuits:
 - 1. Copper. Solid for No. 12 AWG and smaller; stranded for No. 10 AWG and larger.

3.2 CONDUCTOR INSULATION AND MULTICONDUCTOR CABLE APPLICATIONS AND WIRING METHODS

3.3 INSTALLATION, GENERAL

- A. Conceal cables in finished walls, ceilings, and floors unless otherwise indicated.
- B. Complete raceway installation between conductor and cable termination points in accordance with Section 260533.13 "Conduits for Electrical Systems" prior to pulling conductors and cables.

- C. 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.
- D. Use pulling means, including fish tape, cable, rope, and basket-weave wire/cable grips, that will not damage cables or raceway.
- E. Install exposed cables parallel and perpendicular to surfaces of exposed structural members, and follow surface contours where possible.
- F. Support cables according to Section 260529 "Hangers and Supports for Electrical Systems."
- G. Complete cable tray systems installation according to Section 260536 "Cable Trays for Electrical Systems" prior to installing conductors and cables.

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.
- C. Wiring at Outlets: Install conductor at each outlet, with at least **6 inch** of slack.

3.5 IDENTIFICATION

- A. 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. Tests and Inspections:
 - 1. After installing conductors and cables and before electrical circuitry has been energized, test service entrance and feeder conductors for compliance with requirements.
 - 2. Perform each of the following visual and electrical tests:
 - a. Inspect exposed sections of conductor and cable for physical damage and correct connection according to the single-line diagram.
- B. Cables will be considered defective if they do not pass tests and inspections.
- C. Prepare test and inspection reports to record the following:

1. Procedures used.
2. Results that comply with requirements.
3. Results that do not comply with requirements, and corrective action taken to achieve compliance with requirements.

END OF SECTION 260519

SECTION 260526 - GROUNDING AND BONDING FOR ELECTRICAL SYSTEMS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Grounding and bonding conductors.

1.2 ACTION SUBMITTALS

A. Product Data:

1. For each type of product indicated.

B. Field Quality-Control Submittals:

1. Field quality-control reports.

1.3 CLOSEOUT SUBMITTALS

PART 2 - PRODUCTS

2.1 GROUNDING AND BONDING CONDUCTORS

A. Equipment Grounding Conductor:

1. General Characteristics: 600 V, **THHN/THWN-2** wire or cable, green color, in accordance with Section 260519 "Low-Voltage Electrical Power Conductors and Cables."

PART 3 - EXECUTION

3.1 EXAMINATION

- ##### A.
1. Examine facility's grounding electrode system and equipment grounding for compliance with requirements for maximum ground-resistance level and other conditions affecting performance of grounding and bonding of electrical system.

- B. Inspect test results of grounding system measured at point of electrical service equipment connection.
- C. Prepare written report, endorsed by Installer, listing conditions detrimental to performance of the Work.
- D. Proceed with connection of electrical service equipment only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

- A. Comply with manufacturer's published instructions.
- B. Reference Standards:
 - 1. Ground Bonding Common with Lightning Protection System: Comply with NFPA 780 and UL 96 when interconnecting with lightning protection system. Bond electrical power system ground directly to lightning protection system grounding conductor at closest point to electrical service grounding electrode. Use bonding conductor sized same as system grounding electrode conductor, and install in conduit.
 - 2. Consult Architect for resolution of conflicting requirements.
- C. Special Techniques:
 - 1. Conductors:
 - a. 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.
 - 2. Connections: Make connections so possibility of galvanic action or electrolysis is minimized. Select connectors, connection hardware, conductors, and connection methods so metals in direct contact are galvanically compatible.
 - a. Use electroplated or hot-tin-coated materials to ensure high conductivity and to make contact points closer in order of galvanic series.
 - b. Make connections with clean, bare metal at points of contact.
 - c. Make aluminum-to-steel connections with stainless steel separators and mechanical clamps.
 - d. Make aluminum-to-galvanized-steel connections with tin-plated copper jumpers and mechanical clamps.
 - e. Coat and seal connections having dissimilar metals with inert material to prevent future penetration of moisture to contact surfaces.
 - f. 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 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 disconnect-type connection is required, use bolted clamp.
- g. Install insulated equipment grounding conductors with feeders and branch circuits.
- h. Install insulated equipment grounding conductors with the following items, in addition to those required by NFPA 70:
- 1) Feeders and branch circuits.
 - 2) Single-phase motor and appliance branch circuits.
 - 3) Three-phase motor and appliance branch circuits.
 - 4) Flexible raceway runs.

3.3 FIELD QUALITY CONTROL

A. Tests and Inspections:

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 calibrated torque wrench in accordance with manufacturer's published instructions.

B. Nonconforming Work:

1. Grounding system will be considered defective if it does not pass tests and inspections.
2. Remove and replace defective components and retest.

3.4 PROTECTION

- A. After installation, protect grounding and bonding cables and equipment from construction activities. Remove and replace items that are contaminated, defaced, damaged, or otherwise caused to be unfit for use prior to acceptance by Owner.

END OF SECTION 260526

SECTION 260533.13 - CONDUITS FOR ELECTRICAL SYSTEMS

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Type ERM-C-S duct raceways, elbows, couplings, and nipples.
 - 2. Type LFMC duct raceways.

1.2 DEFINITIONS

- A. Conduit: A structure containing one or more duct raceways.

1.3 ACTION SUBMITTALS

- A. Product Data:
 - 1. Type ERM-C-S duct raceways, elbows, couplings, and nipples. Type LFMC duct raceways.

PART 2 - PRODUCTS

2.1 TYPE ERM-C-S DUCT RACEWAYS, ELBOWS, COUPLINGS, AND NIPPLES

- A. Performance Criteria:
 - 1. Regulatory Requirements: Listed and labeled in accordance with NFPA 70, by qualified electrical testing laboratory recognized by authorities having jurisdiction, and marked for intended location and application.
- B. Source Quality Control:
 - 1. Product Data: Prepare and submit catalog cuts, brochures, and performance data illustrating size, physical appearance, and other characteristics of product.
- C. UL DYIX - Galvanized-Steel Electrical Rigid Metal Conduit (ERM-C-S-G), Elbows, Couplings, and Nipples:
 - 1. Exterior Coating: Zinc.
 - 2. Options:
 - a. Interior Coating: **Zinc with organic top coating.**
 - b. Minimum Trade Size: **Metric designator 21 (trade size 3/4).**

2.2 TYPE LFMC DUCT RACEWAYS

A. Performance Criteria:

1. Regulatory Requirements: Listed and labeled in accordance with NFPA 70, by qualified electrical testing laboratory recognized by authorities having jurisdiction, and marked for intended location and application.

B. Source Quality Control:

1. Product Data: Prepare and submit catalog cuts, brochures, and performance data illustrating size, physical appearance, and other characteristics of product.

C. UL DXHR - Steel Liquidtight Flexible Metal Conduit (LFMC-S):

1. Material: Steel.
2. Options:
 - a. Minimum Trade Size: **Metric designator 21 (trade size 3/4).**

PART 3 - EXECUTION

3.1 SELECTION OF CONDUITS FOR ELECTRICAL SYSTEMS

A. Outdoors:

1. Exposed and Not Subject to Physical Damage: **ERMC**.
2. Connection to Vibrating Equipment (Including Transformers and Hydraulic, Pneumatic, Electric Solenoid, or Motor-Driven Equipment): **LFMC**.

3.2 INSTALLATION OF CONDUITS FOR ELECTRICAL SYSTEMS

A. Comply with manufacturer's published instructions.

- a. Install no more than equivalent of three 90-degree bends in conduit run[**except for control wiring conduits, for which no more than equivalent of two 90-degree fewer bends are permitted**]. Support within **12 inch (300 mm)** of changes in direction.
- b. Support conduit within **12 inch (300 mm)** of enclosures to which attached.
- c. Do not install duct raceways or electrical items on "explosion-relief" walls or rotating equipment.
- d. Do not install conduits within **2 inch (50 mm)** of the bottom side of a metal deck roof.
- e. Keep duct raceways at least **6 inch (150 mm)** away from parallel runs of flues and steam or hot-water pipes. Install horizontal duct raceway runs above water and steam piping.

- f. Cut conduit perpendicular to the length. For conduits metric designator 53 (trade size 2) and larger, use roll cutter or a guide to make cut straight and perpendicular to the length. Ream inside of conduit to remove burrs.
- g. Install pull wires in empty duct raceways. Provide polypropylene or monofilament plastic line with not less than 200 lb (90 kg) tensile strength. Leave at least 12 inch (300 mm) of slack at both ends of pull wire. Cap underground duct raceways designated as spare above grade alongside duct raceways in use.
- h. Install duct raceways square to the enclosure and terminate at enclosures without hubs with locknuts on both sides of enclosure wall. Install locknuts hand tight, plus one-quarter turn more.
 - 1) Termination fittings with shoulders do not require two locknuts.
- i. Terminate threaded conduits into threaded hubs or with locknuts on inside and outside of boxes or cabinets. Install bushings on conduits up to metric designator 35 (trade size 1-1/4) and insulated throat metal bushings on metric designator 41 (trade size 1-1/2) and larger conduits terminated with locknuts
- 2. Types ERM and IMC:
 - a. Threaded Conduit Joints, Exposed to Wet, Damp, Corrosive, or Outdoor Conditions: Apply listed compound that maintains electrical conductivity to threads of duct raceway and fittings before making up joints. Follow compound manufacturer's published instructions.
- 3. Types FMC, LFMC, and LFNC:
 - a. Provide a maximum of [72 inch (1830 mm)] of flexible conduit for equipment subject to vibration, noise transmission, or movement; and for transformers and motors.

3.3 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 260533.13

SECTION 262816 - ENCLOSED SWITCHES AND CIRCUIT BREAKERS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Fusible switches.
2. Nonfusible switches.
3. Enclosures.

1.2 DEFINITIONS

A. SPDT: Single pole, double throw.

1.3 ACTION SUBMITTALS

A. Product Data:

1. For each type of enclosed switch, circuit breaker, accessory, and component indicated. Include nameplate ratings, dimensioned elevations, sections, weights, and manufacturers' technical data on features, performance, electrical characteristics, ratings, accessories, and finishes.
2. Enclosure types and details for types other than UL 50E, Type 1.
3. Current and voltage ratings.
4. Short-circuit current ratings (interrupting and withstand, as appropriate).

B. Shop Drawings: For enclosed switches and circuit breakers.

1. Include plans, elevations, sections, details, and attachments to other work.
2. Include wiring diagrams for power, signal, and control wiring.

C. Field Quality-Control Submittals:

1. Field quality-control reports.

1.4 INFORMATIONAL SUBMITTALS

A. Sample warranties.

1.5 CLOSEOUT SUBMITTALS

A. Warranty documentation.

1.6 WARRANTY

- A. Special Installer Extended Warranty: Installer warrants that fabricated and installed enclosed switches and circuit breakers perform in accordance with specified requirements and agrees to repair or replace components or products that fail to perform as specified within extended-warranty period.
 - 1. Extended-Warranty Period: **Two** years from date of Substantial Completion; full coverage for labor, materials, and equipment.

PART 2 - PRODUCTS

2.1 GENERAL REQUIREMENTS

- A. Source Limitations: Obtain products from single manufacturer.
- B. Electrical Components, Devices, and Accessories: Listed and labeled in accordance with NFPA 70, by qualified electrical testing laboratory recognized by authorities having jurisdiction, and marked for intended location and application.

2.2 FUSIBLE SWITCHES

- A. Type HD, Heavy Duty:
 - 1. **Single** throw.
 - 2. **240 V(ac)**.
 - 3. **1200 A and smaller**.
 - 4. UL 98 and NEMA KS 1, horsepower rated, with clips or bolt pads to accommodate **indicated** fuses.
 - 5. Lockable handle with capability to accept three padlocks, and interlocked with cover in closed position.
- B. Accessories:
 - 1. Equipment Ground Kit: Internally mounted and labeled for copper and aluminum ground conductors.
 - 2. Class R Fuse Kit: Provides rejection of other fuse types when Class R fuses are specified.
 - 3. Lugs: **Mechanical** type, suitable for number, size, and conductor material.

2.3 ENCLOSURES

- A. Enclosed Switches and Circuit Breakers: UL 489, NEMA KS 1, UL 50E, and UL 50, to comply with environmental conditions at installed location.
- B. Enclosure Finish: Enclosure must be **gray baked enamel paint, electrodeposited on cleaned, phosphatized galvanized steel (UL 50E Types 3R, 12)**.

- C. Conduit Entry: UL 50E Types 4, 4X, and 12 enclosures may not contain knockouts. UL 50E Types 7 and 9 enclosures must be provided with threaded conduit openings in both endwalls.
- D. Enclosures designated as UL 50E Type 4, 4X stainless steel, 12, or 12K must have dual cover interlock mechanism to prevent unintentional opening of enclosure cover when circuit breaker is ON and to prevent turning circuit breaker ON when enclosure cover is open.
- E. UL 50E Type 7/9 enclosures must be furnished with breather and drain kit to allow their use in outdoor and wet location applications.

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.
 - 1. Commencement of work will indicate Installer's acceptance of areas and conditions as satisfactory.

3.2 SELECTION OF ENCLOSURES

- A. Outdoor Locations: UL 50E, **Type 3R**.

3.3 INSTALLATION

- A. Comply with manufacturer's published instructions.
- B. Special Techniques:
 - 1. 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.

3.4 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.

3.5 FIELD QUALITY CONTROL

A. Tests and Inspections for Switches:

1. Visual and Mechanical Inspection:

- a. Inspect physical and mechanical condition.
- b. Inspect anchorage, alignment, grounding, and clearances.
- c. Verify that unit is clean.
- d. Verify blade alignment, blade penetration, travel stops, and mechanical operation.
- e. Verify that fuse sizes and types match the Specifications and Drawings.
- f. Verify that each fuse has adequate mechanical support and contact integrity.
- g. Inspect bolted electrical connections for high resistance using one of the following methods:

1) Use low-resistance ohmmeter.

- a) Compare bolted connection resistance values to values of similar connections. Investigate values that deviate from those of similar bolted connections by more than 50 percent of lowest value.

2) Verify tightness of accessible bolted electrical connections by calibrated torque-wrench method in accordance with manufacturer's published data or NETA ATS Table 100.12.

- a) Bolt-torque levels must be in accordance with manufacturer's published data. In absence of manufacturer's published data, use NETA ATS Table 100.12.

2. Electrical Tests:

- a. Perform resistance measurements through bolted connections with low-resistance ohmmeter. Compare bolted connection resistance values to values of similar connections. Investigate values that deviate from adjacent poles or similar switches by more than 50 percent of lowest value.

3.6 PROTECTION

- #### A.
- After installation, protect enclosed switches and circuit breakers from construction activities. Remove and replace items that are contaminated, defaced, damaged, or otherwise caused to be unfit for use prior to acceptance by Owner.

END OF SECTION 262816

EXHIBIT G

T-24 REPORT

**COUNTY OF IMPERIAL PUBLIC HEALTH LAB
OSA AIR CONDITIONER REPLACEMENT PROJECT
LOCATED AT
935 BROADWAY, EL CENTRO, CA 92243

COUNTY PROJECT NO. SR6983HTH**

BUILDING ENERGY ANALYSIS REPORT

PROJECT:

Imperial County Health Clinic
935 Broadway Street
El Centro , CA 92243

Report Prepared by:

Scott Johnson
J&R Engineering & Consulting, Inc.
16769 Bernardo Center Dr. Suite 1#768
San Diego, CA 92128
619-823-2909

Job Number:

24-021

Date:

4/13/2025

The EnergyPro computer program has been used to perform the calculations summarized in this compliance report. This program has approval and is authorized by the California Energy Commission for use with both the Residential and Nonresidential 2022 Building Energy Efficiency Standards.

This program developed by EnergySoft, LLC – www.energysoft.com.

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Mechanical Systems

CERTIFICATE OF COMPLIANCE		NRCC-MCH-E	
This document is used to demonstrate compliance for mechanical systems that are within the scope of the permit application and are demonstrating compliance using the prescriptive path outlined in 140.4, or 141.0(b)2 for alterations.			
Project Name: Imperial County Health Clinic		Report Page: (Page 1 of 10)	
Project Address: 935 Broadway Street		Date Prepared: 4/13/2025	

A. GENERAL INFORMATION					
01	Project Location (city)	El Centro	04	Total Conditioned Floor Area	350
02	Climate Zone	15	05	Total Unconditioned Floor Area	0
03	Occupancy Types Within Project:		06	# of Stories (Habitable Above Grade)	1
● All Other Occupancies					

B. PROJECT SCOPE					
This table Includes mechanical systems or components that are within the scope of the permit application and are demonstrating compliance using the prescriptive path outlined in 140.4, 170.2(b) or 141.0(b)2 and 180.2(b)2 for alterations.					
01		02		03	
Air System(s)		Wet System Components		Dry System Components	
<input checked="" type="checkbox"/>	Heating Air System	<input type="checkbox"/>	Water Economizer	<input type="checkbox"/>	Air Economizer
<input checked="" type="checkbox"/>	Cooling Air System	<input type="checkbox"/>	Pumps	<input type="checkbox"/>	Electric Resistance Heat
Mechanical Controls		<input type="checkbox"/>	System Piping	<input checked="" type="checkbox"/>	Fan Systems
<input checked="" type="checkbox"/>	Mechanical Controls (existing to remain, altered or new)	<input type="checkbox"/>	Cooling Towers	<input checked="" type="checkbox"/>	Ductwork (existing to remain, altered or new)
		<input type="checkbox"/>	Chillers	<input checked="" type="checkbox"/>	Ventilation
		<input type="checkbox"/>	Boilers	<input type="checkbox"/>	Zonal Systems/ Terminal Boxes

Mechanical Systems

CERTIFICATE OF COMPLIANCE										NRCC-MCH-E					
Project Name: Imperial County Health Clinic										Report Page: (Page 2 of 10)					
										Date Prepared: 4/13/2025					

C. COMPLIANCE RESULTS															
Table C will indicate if the project data input into the compliance document is compliant with mechanical requirements. This table is not editable by the user. If this table says "DOES NOT COMPLY" or "COMPLIES with Exceptional Conditions" refer to Table D., or the table indicated as not compliant for guidance.															
01	AND	02	AND	03	AND	04	AND	05	AND	06	AND	07	AND	08	09
System Summary 110.1, 110.2, 140.4, 170.2(c)		Pumps 140.4(k), 170.2(c)4I		Fans/ Economizers 140.4(c), 140.4(e), 170.2(c)		System Controls 110.2, 120.2, 140.4(f), 170.2(c)		Ventilation 120.1, 160.2		Terminal Box Controls 140.4(d), 170.2(c)4B		Distribution 120.3, 140.4(l), 160.2, 160.3		Cooling Towers 110.2(e)2	Compliance Results
(See Table F)		(See Table G)		(See Table H)		(See Table I)		(See Table J)		(See Table K)		(See Table L)		(See Table M)	
Yes	AND		AND	Yes	AND	Yes	AND	Yes	AND		AND	Yes	AND		COMPLIES
Mandatory Measures Compliance (See Table Q for Details)										COMPLIES					

D. EXCEPTIONAL CONDITIONS
This table is auto-filled with uneditable comments because of selections made or data entered in tables throughout the form.

E. ADDITIONAL REMARKS
This table includes remarks made by the permit applicant to the Authority Having Jurisdiction.
M0.2

F. HVAC SYSTEM SUMMARY (DRY & WET SYSTEMS)					
Space Conditioning System Information					
01	02	03	04	05	06
System Name	Quantity	System Serving	System Status	Space Type	Utilizing Recovered Heat
AC-8	1	Single zone	New/ Addition		<input type="checkbox"/>

Mechanical Systems

CERTIFICATE OF COMPLIANCE					NRCC-MCH-E				
Project Name: Imperial County Health Clinic					Report Page: (Page 3 of 10)				
					Date Prepared: 4/13/2025				

F. HVAC SYSTEM SUMMARY (DRY & WET SYSTEMS)										
Dry System Equipment Sizing (includes air conditioners, condensers, heat pumps, VRF, furnaces and unit heaters and DOAS systems)										
01	02	03	04	05	06	07	08	09	10	11
Name or Item Tag	Equipment Category per Tables 110.2, 140.4(a)2 and 170.2(c)3a ii	Equipment Type per Tables 110.2 and Title 20	Smallest Size Available ¹ 140.4(a) and 170.2(c)1	Equipment Sizing per Mechanical Schedule (kBtu/h) 140.4(a&b), 170.2(c)1 & 170.2(c)2						
				Heating Output ^{2,3}			Cooling Output ^{2,3}		Load Calculations ^{3,4}	
				Per Design (kBtu/h)	Rated (kBtu/h)	Supp. Heating Output (kBtu/h)	Sensible Per Design (kBtu/h)	Rated (kBtu/h)	Total Heating Load (kBtu/h)	Total Sensible Cooling Load (kBtu/h)
AC-8	Unitary AC/ Condensers	AC, air-cooled pkg (3 phase)	Yes	202.5	202.5	0	165.78	159.6	187.54	167.57

¹FOOTNOTES: Equipment shall be the smallest size, within the available options of the desired equipment line, necessary to meet the design heating and cooling loads of the building per 140.4(a) and 170.2(c)1. Healthcare facilities are excepted.

²It is common practice to show rated output capacity on the equipment schedule. Sensible cooling output comes from specification sheet tables.

³ If equipment is heating only, leave cooling output and load blank. If equipment is cooling only, leave heating output and load blank.

⁴ Authority Having Jurisdiction may ask for load calculations used for compliance per 140.4(b) and 170.2(c).

Dry System Equipment Efficiency (other than Package Terminal Air Conditioners (PTAC) and Package Terminal Heat Pumps (PTHP), DX-DOAS and Dual Fuel Heat Pumps)								
01	02	03	04	05	06	07	08	09
Name or Item Tag	Size Category (Btu/h)	Heating Mode				Cooling Mode		
		Rating Condition (°F)	Efficiency Unit	Minimum Efficiency Required per Tables 110.2 / Title 20	Design Efficiency	Efficiency Unit	Minimum Efficiency Required per Tables 110.2 / Title 20	Design Efficiency
AC-8	>=135,000 and <240,000		AFUE	0.8	0.81	EER IEER	10.8 14	10.8 14

G. PUMPS
This section does not apply to this project.

Mechanical Systems

CERTIFICATE OF COMPLIANCE										NRCC-MCH-E	
Project Name: Imperial County Health Clinic										Report Page: (Page 4 of 10)	
Date Prepared:										4/13/2025	

H. FAN SYSTEMS & AIR ECONOMIZERS

This table is used to demonstrate compliance with prescriptive requirements found in 140.4(c), 140.4(e), 140.4(m), 170.2(c)3, and 170.2(c)4A for fan systems. Fan systems serving only process loads are exempt from these requirements and do not need to be included in Table H.

System Name	AC-8	Quantity	1	Fan System Status	New	System Zoning	all other systems	Serving Dwelling Units	Not Serving Dwelling Units	Fan System Airflow (cfm)	2,600	Site Elevation	-59	Economizer	Differential Temperature
01	02	03	04			05		06	07	08	09			10	11
Fan Name or Item Tag	Fan Type	Qty	Component			Airflow through Component (%)		Water Gauge (w.g)	Allowance		Design				
									Component Allowance	Fan Allowance (watt/cfm) ³	Design Electrical Input Power Method		Motor Nameplate Horsepower	Design Electrical Input Power (kW)	
SF	Supply	1	Base Allowance for system serving spaces <=6 floors away			2,600			603		Manufacturer provided				0.94
			MERV 13-16 Filter upstream of thermal conditioning equipment			2,600			361						
			Gas heat			2,600			151						
			Hydronic/DX cooling coil or heat pump coil			2,600			361						
			100% outdoor air system			2,600			182						
Supply Fan Base Allowance (kW)			Exhaust/Return/Relief/Transfer Fan Base Allowance(kW)					Fan System Allowance (kW) ³				Fan System Electrical Output (kW)			

¹ FOOTNOTES: Fans serving spaces with design background noise goals below NC35

² Low-turndown single-zone VAV fan system must be capable of and configured to reduce airflow to 50 percent of design airflow and use no more than 30 percent of the design wattage at that airflow. No more than 10 percent of the design load served by the equipment shall have fixed loads.

³ Fan system allowance includes fan system base allowance.

⁴ Filter pressure loss can only be counted once per fan system.

⁵ Complex Fan System means a fan system that combines a single cabinet fan system with other supply fans, exhaust fans, or both.

Mechanical Systems

CERTIFICATE OF COMPLIANCE					NRCC-MCH-E				
Project Name: Imperial County Health Clinic					Report Page: (Page 5 of 10)				
					Date Prepared: 4/13/2025				

H. FAN SYSTEMS & AIR ECONOMIZERS

⁶ Computer room economizers must meet requirements of 140.9(a) and will be documented on the NRCC-PRC-E document..

H. EXHAUST AIR HEAT RECOVERY 140.4(q), 170.2(c)40										
01	02	03	04	05	06	07	08	09	10	11
Fan System Name	Qty	Hours of Operation per Year	Design Supply Airflow Rate	Outdoor Airflow	% Outdoor Air at Full Design Airflow	Exemptions to Exhaust Air Heat Recovery Requirement per 140.4(q) & 170.2(c)40	Exhaust Air Heat Recovery 140.4(q) & 170.2(c)40	Type Of Heat Recovery Rating	Required Recovery Ratio	Energy Recovery Bypass
Fan Energy Index (FEI)										
01				02				03		
Name or Item Tag				FEI Exception				FEI		

I. SYSTEM CONTROLS

This table is used to demonstrate compliance with mandatory controls in 110.2 and 120.2 and prescriptive controls in 140.4(f) and (n), 170.2(c)4D 170.2(c)4L or requirements in 141.0(b)2E 180.2(b)2 for altered space conditioning systems.

01	02	03	04	05	06	07	08	09
System Name	System Zoning	Conditioned Floor Area Being Served (ft ²)	Thermostats 110.2(b) & (c) ¹ , 120.2(a) 160.3(a)2A or 141.0(b)2E & 180.2(b)2	Shut-Off Controls 120.2(e) & 160.3(a)2D	Isolation Zone Controls 120.2(g) & 160.3(a)2F	Demand Response 110.12 120.2(b) & 160.3(a)2B	Supply Air Temp. Reset 140.4(f) & 170.2(c)4D	Window Interlocks per 140.4(n) & 170.2(c)4D
AC-8	Single zone	<= 25,000 ft ²	EMCS	EMCS	NA: Single Zone	EMCS	Included	NA: No operable windows

¹FOOTNOTES: Gravity gas wall heaters, gravity floor heaters, gravity room heaters, non-central electric heaters, fireplaces or decorative gas appliances, wood stoves are not required to have setback thermostats.

Mechanical Systems

CERTIFICATE OF COMPLIANCE		NRCC-MCH-E	
Project Name: Imperial County Health Clinic		Report Page:	(Page 6 of 10)
		Date Prepared:	4/13/2025

J. VENTILATION AND INDOOR AIR QUALITY

This table is used to demonstrate compliance with mandatory ventilation requirements in 120.1 120.2(e)3B 140.4(p) and 140.4(q) for all nonresidential and hotel/motel and d:t24refnolink/]160.2, 160.3(a)3D, 170.2(a)4N, 170.2(a)4O for high-rise residential occupancies. For alterations, only ventilation systems being altered within the scope of the permit application need to be documented in this table. In lieu of this table, the required outdoor ventilation rates and airflows may be shown on the plans or the calculations can be presented in a spreadsheet.

01	<input type="checkbox"/>	Check the box if the project is showing ventilation calculations on the plans, or attaching the calculations instead of completing this table.								
02	<input checked="" type="checkbox"/>	Check this box if the project included Nonresidential, Hotel/Motel Spaces or Multifamily Common Use Spaces								
	<input type="checkbox"/>									
03	<input type="checkbox"/>	Check the box if the project is using natural ventilation in any nonresidential or hotel/motel spaces to meet required ventilation rates per 120.1(c)2.								
Nonresidential and Hotel/ Motel Multifamily Common Use Ventilation Systems										
04			05		06		07			
System Name	AC-8		System Design OA CFM Airflow ¹		2600		System Design Transfer Air CFM		Air Filtration per 120.1(c) 141.0(b)2 and 160.2(c)21 ²	
									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(d)3, 120.1(d)5, and 120.1(e)3 ⁶ 160.2(c)5D 160.2(c)5E 160.2(c)5D	
	Occupancy Type ⁴		Conditioned Floor Area (ft ²)	# of Shower heads/ toilets	# of people ⁵	Required Min OA CFM	Required Min CFM	Provided per Design CFM		
TB Lab	All others		350			52.5	0	0	DCV	NA: Not required per §120.1(d)3
									Occ Sensor	NA: Not required space type
17	Total System Required Min OA CFM					52	18	Ventilation for this System Complies?		Yes

¹ FOOTNOTES: System CFM should include both mechanical and natural ventilation for the zone/system

² Air filtration requirements apply to the following three system types per 120.1(c)1A: space conditioning systems utilizing ducts to supply air to occupiable space; supply-only ventilation systems providing outside air to occupiable space; supply side of balanced ventilation systems including heat recovery and energy recovery ventilation systems providing outside air to occupiable space.

³ Uniform Mechanical Code may have more stringent ventilation requirements; the most stringent code requirement takes precedence.

⁴ See Standards Tables 120.1-A and 120.1-B.

Mechanical Systems

CERTIFICATE OF COMPLIANCE		NRCC-MCH-E	
Project Name: Imperial County Health Clinic		Report Page:	(Page 7 of 10)
		Date Prepared:	4/13/2025

J. VENTILATION AND INDOOR AIR QUALITY

⁵ For lecture halls with fixed seating, the expected number of occupants shall be determined in accordance with the California Building Code.

⁶ 120.2(e)3 requires systems serving rooms that are required by 130.1(c) to have lighting occupancy sensing controls to also have occupancy sensing zone controls for ventilation. Examples of spaces which require lighting occupancy sensors include offices 250ft² or smaller, multipurpose 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 loading and unloading zones, unless excepted by 130.1(c).

K. TERMINAL BOX CONTROLS

This section does not apply to this project.

L. DISTRIBUTION (DUCTWORK and PIPING)

This table is used to show compliance with mandatory pipe insulation requirements found in 120.3 and mandatory requirements found in 120.4(g) for duct sealing.		
01	<input type="checkbox"/>	Insulation shall be protected from damage, including that due to sunlight, moisture, equipment maintenance, and wind. Insulation exposed to weather shall be installed with a cover suitable for outdoor service. Insulation covering chilled water piping and refrigerant suction piping located outside the conditioned space 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:	AC-8	NR/ Common Use: Duct leakage testing shall not exceed 6% per NA7.5.3 required for these systems?	No

Mechanical Systems

CERTIFICATE OF COMPLIANCE		NRCC-MCH-E	
Project Name: Imperial County Health Clinic		Report Page:	(Page 8 of 10)
		Date Prepared:	4/13/2025

L. DISTRIBUTION (DUCTWORK and PIPING)

		Dwelling Units: Total duct leakage of duct system shall not exceed 12% or duct system to outside shall not exceed 6% per RA3.1.4 required for systems?	No
		Duct leakage testing per CMC Section 603.10.1 required for these systems?	Yes
11	No	The scope of the project includes only duct systems serving healthcare facilities	
12	Yes	Duct system provides conditioned air to an occupiable space for a constant volume, single zone, space-conditioning system.	
13	Yes	The space conditioning system serves less than 5,000 ft ² of conditioned floor area.	
14	No	The <u>combined</u> surface area of the ducts is more than 25% of the total surface area of the entire duct system:	
15		The scope of the project includes extending an existing duct system, which is constructed, insulated or sealed with asbestos.	
16	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.	
17		All Ductwork and plenums with pressure class ratings shall be constructed to Seal Class A	
18		All ductwork is an extension of an existing duct system	
19		Ductwork serving individual dwelling unit	
20		< 25 ft of new or replacement space conditioning ducts installed	
21	R-8	Duct Insulation R-value	
22			
23			

M. COOLING TOWERS

This section does not apply to this project.

Mechanical Systems

CERTIFICATE OF COMPLIANCE		NRCC-MCH-E	
Project Name: Imperial County Health Clinic		Report Page:	(Page 9 of 10)
		Date Prepared:	4/13/2025

N. DECLARATION OF REQUIRED CERTIFICATES OF INSTALLATION	
<i>Selections have been made based on information provided in previous tables of this document. If any selection needs to be changed, please explain why in Table E Additional Remarks. These documents must be provided to the building inspector during construction and can be found online at https://www.energy.ca.gov/title24/2019standards/2019_compliance_documents/Nonresidential_Documents/NRCI/</i>	
Form/Title	
NRCI-MCH-01-E - Must be submitted for all buildings	

O. DECLARATION OF REQUIRED CERTIFICATES OF ACCEPTANCE	
<i>Selections have been made based on information provided in previous tables of this document. If any selection needs to be changed, please explain why in Table E Additional Remarks. These documents must be provided to the building inspector during construction and can be found online at https://www.energy.ca.gov/title24/2019standards/2019_compliance_documents/Nonresidential_Documents/NRCA/</i>	
Form/Title	Systems/Spaces To Be Field Verified
NRCA-MCH-02-A - Outdoor Air must be submitted for all newly installed HVAC units. Note: MCH-02-A can be performed in conjunction with MCH-07-A Supply Fan VFD Acceptance (if applicable) since testing activities overlap.	Trane OADG015;
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".	Trane OADG015;
NRCA-MCH-11-A Automatic Demand Shed Controls	Trane OADG015;
NRCA-MCH-18-A Energy Management Control Systems	Trane OADG015;

P. DECLARATION OF REQUIRED CERTIFICATES OF VERIFICATION
<i>There are no NRCV forms required for this project.</i>

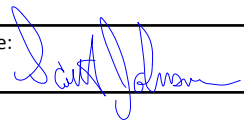
Q. MANDATORY MEASURES DOCUMENTATION LOCATION		
<i>This table is used to indicate where mandatory measures are documented in the plan set or construction documentation.</i>		
01	02	
Compliance with Mandatory Measures documented through MCH Mandatory Measures Note Block	Yes	Plan sheet or construction document location
		M-Sheets

Mechanical Systems

CERTIFICATE OF COMPLIANCE		NRCC-MCH-E
Project Name: Imperial County Health Clinic	Report Page:	(Page 10 of 10)
Project Address: 935 Broadway Street	Date Prepared:	4/13/2025

DOCUMENTATION AUTHOR'S DECLARATION STATEMENT

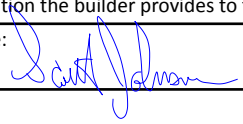
I certify that this Certificate of Compliance documentation is accurate and complete.

Documentation Author Name: Scott Johnson	Documentation Author Signature: 
Company: J&R Engineering & Consulting, Inc.	Signature Date: 2025-04-13
Address: 16769 Bernardo Center Dr. Suite 1#768	CEA/ HERS Certification Identification (if applicable): M32413
City/State/Zip: San Diego CA 92128	Phone: 858-395-6810

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 eligible under Division 3 of the Business and Professions Code to accept responsibility for the building design or system design identified on this Certificate of Compliance (responsible designer)
3. The energy features and performance specifications, materials, components, and manufactured devices for the building design or system design identified on this Certificate of Compliance conform to the requirements of Title 24, Part 1 and Part 6 of the California Code of Regulations.
4. The building design features or system design features identified on this Certificate of Compliance 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.
5. I will ensure that a completed signed copy of this Certificate of Compliance shall be made available with the building permit(s) issued for the building, and made available to the enforcement agency for all applicable inspections. I understand that a completed signed copy of this Certificate of Compliance is required to be included with the documentation the builder provides to the building owner at occupancy.

Responsible Designer Name: Scott Johnson	Responsible Designer Signature: 
Company: J&R Engineering & Consulting, Inc.	Date Signed: 2025-04-13
Address: 16769 Bernardo Center Drive, Suite 1 #768	License: M32413
City/State/Zip: San Diego CA 92128	Phone: 858-395-6810

Generated Date/Time:

Documentation Software: EnergyPro