

**SERVICES CONTRACT**  
**Digester Gas Compressor Dryer Replacements at Plant No. 1 and Plant No. 2 (FE23-01)**  
**Specification No. S-2023-1432BD**

This SERVICES CONTRACT (hereinafter referred to as “Contract”), is made and entered into as of the date fully executed below, by and between Orange County Sanitation District (hereinafter referred to as “OC San”) and Innovative Construction Solutions (hereinafter referred to as “Contractor”), and collectively referred to herein as the “Parties.”

**RECITALS**

WHEREAS, OC San desires to obtain the services of Contractor for the Digester Gas Compressor Dryer Replacements at Plant No. 1 and Plant No. 2 (“Services”) as described in Exhibit “A” attached hereto and incorporated herein by this reference; and

WHEREAS, Contractor is qualified to perform the Services by virtue of experience, training, education, and expertise; and

WHEREAS, OC San desires to engage Contractor to provide the Services; and

WHEREAS, OC San selected Contractor to provide the Services in accordance with OC San’s current Purchasing Ordinance; and

WHEREAS, on April 24, 2024, OC San’s Board of Directors, by minute order, authorized execution of this Contract.

NOW, THEREFORE, in consideration of the above recitals and the mutual promises and benefits specified below, the Parties agree as follows:

**1. General.**

1.1 This Contract and all exhibits hereto are made by OC San and the Contractor.

1.2 The following exhibits are incorporated by reference and made part of this Contract.

Exhibit “A” – Scope of Work  
Exhibit “B” – Bid  
Exhibit “C” – Determined Insurance Requirement Form  
Exhibit “D” – Contractor Safety Standards  
Exhibit “E” – Human Resources Policies  
Exhibit “F” – General Conditions  
Exhibit “G” – Bonds

1.3 In the event of any conflict or inconsistency between the provisions of the Contract and any of the provisions of the exhibits hereto, the provisions in the document highest in precedence shall be controlling. The order of precedence of the applicable documents is set forth below:

- a. Addenda issued prior to the deadline for submitting the bids – the last addendum issued will have the highest precedence
- b. Services Contract

- c. Exhibit "A" – Scope of Work
  - d. Permits and other regulatory requirements
  - e. Exhibit "C" – Determined Insurance Requirement Form
  - f. Exhibit "F" – General Conditions
  - g. Exhibit "D" – Contractor Safety Standards
  - h. Notice Inviting Bids
  - i. Exhibit "B" – Bid
- 1.4 Except as expressly provided otherwise, OC San accepts no liability for any expenses, losses, or actions incurred or undertaken by Contractor as a result of work performed in anticipation of providing the Services to OC San.

Work Hours: All work shall be scheduled Monday through Friday, between the hours of 7:30 a.m. and 4:30 p.m.

- 1.5 Days: Shall mean calendar days, unless otherwise noted.
- 1.6 OC San holidays (non-working days) are as follows: New Year's Day, Martin Luther King, Jr. Day, Presidents' Day, Memorial Day, Independence Day, Labor Day, Veterans Day, Thanksgiving Day, Day after Thanksgiving, Christmas Eve, and Christmas Day.
- 1.7 Work: Shall mean all work, labor, and materials necessary to provide the Services.
- 1.8 The provisions of this Contract may be amended or waived only by an amendment executed by authorized representatives of both Parties.
- 1.9 The various headings in this Contract are inserted for convenience only and shall not affect the meaning or interpretation of this Contract or any paragraph or provision hereof.

## 2. **Scope of Work.**

- 2.1 Contractor shall provide the Services identified in Exhibit "A" in accordance with generally accepted industry and professional standards.
- 2.2 Modifications to Scope of Work. OC San shall have the right to modify the Scope of Work at any time. All modifications must be made by an amendment signed by both Parties and consistent with Exhibit "F" - General Conditions (General Conditions), including the sections entitled REQUEST FOR CHANGE (CHANGES AT CONTRACTOR'S REQUEST) and OWNER INITIATED CHANGES.
- 2.3 Familiarity with Work. By executing this Contract, Contractor warrants that: (a) it has investigated the work to be performed; (b) it understands the facilities, difficulties, and restrictions of the work under this Contract; and (c) it has examined the site of the work and is aware of all conditions at the site. Should Contractor discover any latent or unknown condition materially differing from those inherent in the work or as represented by OC San, it shall immediately inform OC San of this and shall not proceed, except at Contractor's risk, until written instructions are received from OC San.
- 2.4 Performance. Time is of the essence in the performance of the provisions hereof.

**3. Contract Term.**

3.1 The Services shall be completed within four hundred thirty-four (434) calendar days from the effective date of the Notice to Proceed.

3.2 Extensions. The term of this Contract may be extended only by an amendment signed by both Parties and consistent with the General Conditions, including the section entitled EXTENSION OF TIME FOR DELAY.

**4. Compensation.**

4.1 As compensation for the Services provided under this Contract, OC San shall pay Contractor a total amount not to exceed Five Million Nine Hundred Forty-Two Thousand Five Hundred Dollars (\$5,942,500.00).

4.2 Contractor shall provide OC San with all required premiums and/or overtime work at no charge beyond the amount specified above.

**5. Payments and Invoicing.**

5.1 OC San shall pay itemized invoices for work completed in accordance with Exhibit "A" thirty (30) days from receipt of the invoice and after approval by OC San's Project Manager or designee. OC San shall be the determining party, in its sole discretion, as to whether the Services have been satisfactorily completed.

5.2 Contractor shall submit its invoices to OC San Accounts Payable by electronic mail to [APStaff@OCSan.gov](mailto:APStaff@OCSan.gov). In the subject line, include "INVOICE" and the Purchase Order Number.

5.3 The invoices shall be consistent with the General Conditions, including the section entitled PAYMENT FOR WORK.

**6. California Department of Industrial Relations Registration and Record of Wages.**

6.1 To the extent Contractor's employees and/or its subcontractors perform work related to this Contract for which Prevailing Wage Determinations have been issued by the California Department of Industrial Relations (DIR) as more specifically defined under Labor Code section 1720 et seq., prevailing wages are required to be paid for applicable work under this Contract. It is Contractor's responsibility to interpret and implement any prevailing wage requirements and Contractor agrees to pay any penalty or civil damages resulting from a violation of the prevailing wage laws.

6.2 Contractor and its subcontractors shall comply with the registration requirements of Labor Code section 1725.5. Pursuant to Labor Code section 1771.4(a)(1), the work is subject to compliance monitoring and enforcement by the California Department of Industrial Relations (DIR).

6.3 Pursuant to Labor Code section 1773.2, a copy of the prevailing rate of per diem wages is available upon request at OC San's principal office. The prevailing rate of per diem wages may also be found at the DIR website for prevailing wage determinations at <http://www.dir.ca.gov/DLSR/PWD>.

6.4 Contractor and its subcontractors shall comply with the job site notices posting requirements established by the Labor Commissioner per Title 8, California Code of

Regulations section 16461(e). Pursuant to Labor Code sections 1773.2 and 1771.4(a)(2), Contractor shall post a copy of the prevailing rate of per diem wages at the job site.

- 6.5 Contractor and its subcontractors shall maintain accurate payroll records and shall comply with all the provisions of Labor Code section 1776. Contractor and its subcontractors shall submit payroll records to the Labor Commissioner pursuant to Labor Code section 1771.4(a)(3). Pursuant to Labor Code section 1776, the Contractor and its subcontractors shall furnish a copy of all certified payroll records to OC San and/or the general public upon request, provided the public request is made through OC San, the Division of Apprenticeship Standards, or the Division of Labor Standards Enforcement of the Department of Industrial Relations. Pursuant to Labor Code section 1776(h), penalties for non-compliance with a request for payroll records may be deducted from progress payments.
  - 6.5.1 As a condition to receiving payments, Contractor agrees to present to OC San, along with any request for payment, all applicable and necessary certified payrolls and other required documents for the period covering such payment request. Pursuant to Title 8, California Code of Regulations section 16463, OC San shall withhold any portion of a payment, up to and including the entire payment amount, until certified payroll forms and any other required documents are properly submitted. In the event certified payroll forms do not comply with the requirements of Labor Code section 1776, OC San may continue to withhold sufficient funds to cover estimated wages and penalties under the Contract.
- 6.6 The Contractor and its subcontractors shall comply with Labor Code section 1774 and section 1775. Pursuant to Labor Code section 1775, the Contractor and any of its subcontractors shall forfeit to OC San a penalty of not more than two hundred dollars (\$200) for each calendar day, or portion thereof, for each worker paid less than the prevailing rates as determined by the DIR for the work or craft in which the worker is employed for any work.
  - 6.6.1 In addition to the penalty and pursuant to Labor Code section 1775, the difference between the prevailing wage rates and the amount paid to each worker for each calendar day or portion thereof for which each worker was paid less than the prevailing wage rate shall be paid to each worker by the Contractor or its subcontractor.
- 6.7 Contractor and its subcontractors shall comply with Labor Code sections 1810 through 1815. Contractor and its subcontractors shall restrict working hours to eight (8) hours per day and forty (40) hours per week, except that work performed in excess of those limits shall be permitted upon compensation for all excess hours worked at not less than one and one-half (1.5) times the basic rate of pay, as provided in Labor Code section 1815. The Contractor shall forfeit, as a penalty to OC San, twenty-five dollars (\$25) per worker per calendar day during which such worker is required or permitted to work more than eight (8) hours in any one calendar day and forty (40) hours in any one calendar week in violation of Labor Code sections 1810 through 1815.

- 6.8 Contractor and its subcontractors shall comply with Labor Code sections 1777.5, 1777.6, and 1777.7 concerning the employment of apprentices by Contractor or any subcontractor.
- 6.9 Contractor shall include, at a minimum, a copy of the following provisions in any contract it enters into with any subcontractor: Labor Code sections 1771, 1771.1, 1775, 1776, 1777.5, 1810, 1813, 1815, 1860, and 1861.
- 6.10 Pursuant to Labor Code sections 1860 and 3700, the Contractor and its subcontractors will be required to secure the payment of compensation to employees. Pursuant to Labor Code section 1861, Contractor, by accepting this contract, certifies that:

“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.”

Contractor shall ensure that all its contracts with its subcontractors provide the provision above.

- 6.11 Contractor shall comply with the provisions specified in the General Conditions section entitled LAWS TO BE OBSERVED.
7. **Damage to OC San’s Property.** Any of OC San’s property damaged by Contractor, any subcontractor, or by the personnel of either will be subject to repair or replacement by Contractor at no cost to OC San and consistent with the General Conditions, including the section entitled PRESERVATION OF PROPERTY.
8. **Freight (F.O.B. Destination).** Contractor assumes full responsibility for all transportation, transportation scheduling, packing, handling, insurance, and other services associated with delivery of all products deemed necessary under this Contract.
9. **Audit Rights.** Contractor agrees that, during the term of this Contract and for a period of three (3) years after its expiration or termination, OC San shall have access to and the right to examine any directly pertinent books, documents, and records of Contractor relating to the invoices submitted by Contractor pursuant to this Contract.
10. **Contractor Safety Standards and Human Resources Policies.** OC San requires Contractor and its subcontractor(s) to follow and ensure their employees follow all Federal, State, and local regulations as well as the Contractor Safety Standards while working at OC San locations. If, during the course of the Contract, it is discovered that the Contractor Safety Standards do not comply with Federal, State, or local regulations, the Contractor is required to follow the most stringent regulatory requirement at no additional cost to OC San. Contractor, its subcontractors, and all of their employees shall adhere to the safety requirements in Exhibit “A,” all applicable Contractor Safety Standards in Exhibit “D,” and the Human Resources Policies in Exhibit “E.”
11. **Insurance.** Contractor and all its subcontractors shall purchase and maintain, throughout the term of this Contract and any periods of warranty or extensions, insurance in amounts equal to the requirements set forth in the signed Exhibit “C” – Determined Insurance

Requirement Form. Contractor shall not commence work under this Contract until all required insurance is obtained in a form acceptable to OC San, nor shall Contractor allow any subcontractor to commence service pursuant to a subcontract until all insurance required of the subcontractor has been obtained. Failure to obtain and maintain the required insurance coverage shall result in termination of this Contract.

12. **Bonds.** Prior to entering into the Contract, Contractor shall furnish bonds (attached hereto in Exhibit "G"), consistent with the requirements specified in the General Conditions, and which shall be approved by OC San's General Counsel. The bonds shall be one in the amount of one hundred percent (100%) of the total Contract price bid, to guarantee the faithful performance of the work, and the other in the amount of one hundred percent (100%) of the total Contract price bid, to guarantee payment of all claims for labor and materials furnished. This Contract shall not become effective until such bonds are supplied to and accepted by OC San. Bonds must be issued by a California admitted surety and must be maintained throughout the life of the Contract and during the warranty period.
13. **Indemnification and Hold Harmless Provision.** Contractor shall assume all responsibility for damages to property and/or injuries to persons, including accidental death, which may arise out of or may be caused by Contractor's equipment and/or Services under this Contract, or by its subcontractor(s), or by anyone directly or indirectly employed by Contractor, and whether such damage or injury shall accrue or be discovered before or after the termination of the Contract. Except as to the sole active negligence of or willful misconduct of OC San, Contractor shall indemnify, protect, defend, and hold harmless OC San, its elected and appointed officials, officers, agents, and employees from and against any and all claims, liabilities, damages, or expenses of any nature, including attorneys' fees: (a) for injury to or death of any person, or damage to property, or interference with the use of property arising out of or in connection with Contractor's performance under the Contract, and/or (b) on account of use of any copyrighted or uncopyrighted material, composition, or process; or any patented or unpatented invention, article, or appliance furnished or used under the Contract, and/or (c) on account of any goods and services provided under this Contract. This indemnification provision shall apply to any acts or omissions, willful misconduct, or negligent misconduct, whether active or passive, on the part of Contractor or anyone employed by or working under Contractor. To the maximum extent permitted by law, Contractor's duty to defend shall apply whether or not such claims, allegations, lawsuits, or proceedings have merit or are meritless; or which involve claims or allegations that any of the parties to be defended were actively, passively, or concurrently negligent; or which otherwise assert that the parties to be defended are responsible, in whole or in part, for any loss, damage, or injury. Contractor agrees to provide this defense immediately upon written notice from OC San, and with well qualified, adequately insured, and experienced legal counsel acceptable to OC San. This section shall survive the expiration or early termination of the Contract.
14. **Independent Contractor.** The relationship between the Parties hereto is that of an independent contractor and nothing herein shall be deemed to make Contractor an OC San employee. During the performance of this Contract, Contractor and its officers, employees, and agents shall act in an independent capacity and shall not act as OC San's officers, employees, or agents. Contractor and its officers, employees, and agents shall obtain no rights to any benefits which accrue to OC San's employees.

15. **Subcontracting and Assignment.** Any subcontracting or assignment shall be governed by the provisions of the General Conditions including the sections entitled SUBCONTRACTING and ASSIGNMENT.
16. **Disclosure.** Contractor agrees not to disclose, to any third party, data or information generated from this Contract without the prior written consent from OC San.
17. **Non-Liability of OC San Officers and Employees.** No officer or employee of OC San shall be personally liable to Contractor, or any successor-in-interest, in the event of any default or breach by OC San, or for any amount which may become due to Contractor or to its successor, or for breach of any obligation under the terms of this Contract.
18. **Third-Party Rights.** Nothing in this Contract shall be construed to give any rights or benefits to anyone other than OC San and Contractor.
19. **Applicable Laws and Regulations.** Contractor shall comply with all applicable Federal, State, and local laws, rules, and regulations. Contractor also agrees to indemnify and hold OC San harmless from any and all damages and liabilities assessed against OC San as a result of Contractor's noncompliance therewith. Any provision required by law to be included herein shall be deemed included as a part of this Contract whether or not specifically included or referenced.
20. **Licenses, Permits, Ordinances, and Regulations.** Contractor represents and warrants to OC San that it has obtained all licenses, permits, qualifications, and approvals of whatever nature that are legally required to provide the Services. Any and all fees required by Federal, State, County, City, and/or municipal laws, codes, and/or tariffs that pertain to the work performed under this Contract will be paid by Contractor.
21. **Regulatory Requirements.** Contractor shall perform all work under this Contract consistent with the General Conditions, including the section entitled STORMWATER REQUIREMENTS, and in strict conformance with applicable Federal, State, and local regulatory requirements including, but not limited to, 40 CFR 122, 123, 124, 257, 258, 260, 261, and 503, Title 22, 23, and Water Codes Division 2.
22. **Environmental Compliance.** Contractor shall, at its own cost and expense, comply with all Federal, State, and local environmental laws, regulations, and policies which apply to the Contractor, its subcontractors, and the Services, including, but not limited to, all applicable Federal, State, and local air pollution control laws and regulations.
23. **South Coast Air Quality Management District's Requirements.** It is Contractor's responsibility to ensure that all equipment furnished and installed be in accordance with the latest rules and regulations of the South Coast Air Quality Management District (SCAQMD). All Contract work practices, which may have associated emissions such as sandblasting, open field spray painting, or demolition of asbestos containing components or structures shall comply with the appropriate rules and regulations of SCAQMD.
24. **Warranties.** Contractor shall provide the warranties required in the Scope of Work and in the General Conditions, including the section entitled WARRANTY (CONTRACTOR'S GUARANTEE).

25. **Dispute Resolution.** Any disputes between the Parties shall be resolved as specified in the General Conditions, including the section entitled DISPUTES.
26. **Liquidated Damages.** In the event the Contractor fails to achieve completion of the work within the term of this Contract or achievement of any designated Milestones, after due allowance for extensions of time made in accordance with the Contract, if any, OC San will sustain damage which would be extremely difficult and impracticable to ascertain. The Parties therefore agree that in each such event, Contractor will pay to OC San liquidated damages (Liquidated Damages) as specified in the General Conditions, including section entitled TIME OF COMPLETION AND LIQUIDATED DAMAGES, in the sum of One Hundred Dollars (\$100.00) per day, as Liquidated Damages, and not as a penalty, for each and every calendar day during which completion of the work, as required in Exhibit "A," is so delayed. Contractor agrees to pay such Liquidated Damages and further agrees that OC San may offset the amount of Liquidated Damages from any monies due or that may become due Contractor under this Contract. Contractor also agrees that to the extent the amount of Liquidated Damages exceeds any monies due to the Contractor under this Contract, Contractor shall pay all such amounts to OC San upon demand. If this provision is found for any reason to be void, invalid, or otherwise inoperative so as to disentitle OC San from claiming Liquidated Damages, OC San is entitled to claim against the Contractor damages at law for the Contractor's failure to complete the work during the term of this Contract.
27. **Remedies.** In addition to other remedies available in law or equity, if the Contractor fails to perform the Services or repudiates its obligations under this Contract, or if OC San rejects the goods or Services or revokes acceptance of the Services, OC San may (a) cancel the Contract; (b) recover whatever amount of the purchase price OC San has paid, and/or (c) "cover" by purchasing, or contracting to purchase, substitute equipment and services for those due from Contractor. In the event OC San elects to "cover" as described in (c), OC San shall be entitled to recover from Contractor as damages the difference between the cost of the substitute equipment and services and the Contract price, together with any incidental or consequential damages.
28. **Force Majeure.** Neither party shall be liable for delays caused by accident, flood, acts of God, fire, labor trouble, war, acts of government, or any other cause beyond its control, but the affected party shall use reasonable efforts to minimize the extent of the delay. Work affected by a force majeure condition may be rescheduled by mutual consent of the Parties.
29. **Termination.**
- 29.1 OC San reserves the right to terminate this Contract for its convenience, with or without cause, in whole or in part, at any time, by written notice from OC San. Upon receipt of a termination notice, Contractor shall immediately discontinue all work under this Contract (unless the notice directs otherwise). OC San shall thereafter, within thirty (30) days, pay Contractor for work performed (cost and fee) through the date of termination. Contractor expressly waives any claim to receive anticipated profits to be earned during the uncompleted portion of this Contract. Such notice of termination shall terminate this Contract and release OC San from any further fee, cost, or claim hereunder by Contractor other than for work performed through the date of termination.
- 29.2 OC San reserves the right to terminate this Contract immediately upon OC San's determination that Contractor is not complying with the Scope of Work requirements, if the level of service is inadequate, or for any other default of this Contract.

29.3 OC San may also immediately terminate this Contract for default, in whole or in part, by written notice to Contractor:

- if Contractor becomes insolvent or files a petition under the Bankruptcy Act; or
- if Contractor sells its business; or
- if Contractor breaches any of the terms of this Contract; or
- if the total amount of compensation exceeds the amount authorized under this Contract.

29.4 All OC San's property in the possession or control of Contractor shall be returned by Contractor to OC San on demand or at the expiration or early termination of this Contract, whichever occurs first.

30. **Attorney's Fees.** If any action at law or in equity or if any proceeding in the form of an Alternative Dispute Resolution (ADR) is necessary to enforce or interpret the terms of this Contract, the prevailing party shall be entitled to reasonable attorney's fees, costs, and necessary disbursements in addition to any other relief to which the prevailing party may be entitled and as specified in the General Conditions, including in the section entitled CLAIMS.
31. **Waiver.** The waiver by either party of any breach or violation of, or default under, any provision of this Contract shall not be deemed a continuing waiver by such party of any other provision or of any subsequent breach or violation of this Contract or default thereunder. Any breach by Contractor to which OC San does not object shall not operate as a waiver of OC San's rights to seek remedies available to it for any subsequent breach.
32. **Severability.** If any section, subsection, or provision of this Contract; or any agreement or instrument contemplated hereby; or the application of such section, subsection, or provision is held invalid, the remainder of this Contract or instrument in the application of such section, subsection, or provision to persons or circumstances other than those to which it is held invalid, shall not be affected thereby, unless the effect of such invalidity shall be to substantially frustrate the expectations of the Parties.
33. **Survival.** The provisions of this Contract dealing with payment, warranty, indemnity, and forum for enforcement shall survive expiration or early termination of this Contract.
34. **Governing Law.** This Contract shall be governed by and interpreted under the laws of the State of California and the Parties submit to jurisdiction in the County of Orange in the event any action is brought in connection with this Contract or the performance thereof.
35. **Notices.**  
35.1 All notices under this Contract must be in writing. Written notice shall be delivered by personal service, by electronic telecommunication, or sent by registered or certified mail, postage prepaid, return receipt requested, or by any other overnight delivery service which delivers to the noticed destination and provides proof of delivery to the sender. Rejection or other refusal to accept or the inability to deliver because of changed address for which no notice was given as provided hereunder shall be deemed to be receipt of the notice, demand, or request sent. All notices shall be effective when first received at the following addresses:

OC San: Donald Herrera  
Senior Buyer  
Orange County Sanitation District  
10844 Ellis Avenue  
Fountain Valley, CA 92708  
[dherrera@ocsan.gov](mailto:dherrera@ocsan.gov)

Contractor: Hiram Emadi  
President  
Innovative Construction Solutions  
575 Anton Boulevard, Suite 850  
Costa Mesa, CA 92626  
[hemadi@icsinc.tv](mailto:hemadi@icsinc.tv)

35.2 Each party shall provide the other party written notice of any change in address as soon as practicable.

36. **Read and Understood.** By signing this Contract, Contractor represents that it has read and understood the terms and conditions of the Contract.
37. **Authority to Execute.** The persons executing this Contract on behalf of the Parties warrant that they are duly authorized to execute this Contract and that by executing this Contract, the Parties are formally bound.
38. **Entire Agreement.** This Contract constitutes the entire agreement of the Parties and supersedes all prior written or oral communications and all contemporaneous oral agreements, understandings, and negotiations between the Parties with respect to the subject matter hereof.

Intentionally left blank. Signatures follow on the next page.

IN WITNESS WHEREOF, intending to be legally bound, the Parties hereto have caused this Contract to be signed by their duly authorized representatives.

**ORANGE COUNTY SANITATION DISTRICT**

Dated: \_\_\_\_\_

By: \_\_\_\_\_  
Chad P. Wanke  
Chair, Board of Directors

Dated: \_\_\_\_\_

By: \_\_\_\_\_  
Kelly A. Lore  
Clerk of the Board

Dated: \_\_\_\_\_

By: \_\_\_\_\_  
Ruth Zintzun  
Finance & Procurement Manager

**INNOVATIVE CONSTRUCTION SOLUTIONS**

Dated: \_\_\_\_\_

By: \_\_\_\_\_  
\_\_\_\_\_  
Print Name and Title of Officer

LL:IG

## **Exhibit “A”**

### **SCOPE OF WORK**

**EXHIBIT A  
SCOPE OF WORK  
DIGESTER GAS COMPRESSOR DRYER REPLACEMENTS AT PLANT NO. 1  
AND PLANT NO. 2 (FE23-01)  
SPECIFICATION NO. S-2023-1432BD**

**EXECUTIVE SUMMARY/OVERVIEW**

The Orange County Sanitation District (“OC San” or the “Sanitation District”) operates the third largest wastewater agency west of the Mississippi River. Since 1954, we have safely collected, treated, and disposed of and/or reclaimed the wastewater generated by 2.6 million people living and working in central and northwestern Orange County, California.

Each day we treat approximately 185 million gallons of wastewater, enough water to fill Anaheim stadium over two and a quarter times. About 80 percent of the wastewater comes from homes – sinks, toilets, showers, laundry, and dishwashers. The remaining come from businesses – retail stores, restaurants, manufacturers, hotels, offices, and other industries.

A professional staff of more than 600 employees manages the day-to-day activities of OC San. Our facilities include 396 miles of sewer pipes, located throughout the county, and two (2) treatment plants – one (1) in Fountain Valley, CA and the other in Huntington Beach, CA – where wastewater is treated in accordance with strict state and federal standards.

Our employees are on duty protecting health and the environment by ensuring the sewer system efficiently operates 24 hours a day, 7 days a week and 365 days a year. We are very proud of the job we do and take pride in providing our customers with quality service.

**SCOPE OF WORK**

**1 Location of Work**

The work covered under this Contract will take place at the Orange County Sanitation District’s:

*Plant No. 1 Digester Gas Facilities– 10844 Ellis Avenue Fountain Valley, CA 92708*

*Plant No. 2 Digester Gas Facilities– 22212 Brookhurst Street, Huntington Beach, CA 92648*

**2 General**

This Scope of Work (SOW) defines the requirements for the work at the Orange County Sanitation Districts Digester Gas Drying Systems, Plant No.1 and Plant No. 2, to replace and rehabilitate the legacy Digester Gas Drying Systems and related appurtenances. This work includes the removal and demolition of the three (3) Gas Drying Systems and installation of new in-kind replacement Gas Drying Systems including associated piping, valves, instruments, controls, appurtenances, and testing, commissioning, and training requirements as defined herein. The replacement work shall only occur on one system at a time to keep the respective digester gas drying system online.

The Contractor shall furnish all labor, equipment, materials, machinery, tools, supplies, insurance, bonds, permits, licenses, transportation, and other incidentals necessary to complete all tasks and items of work described within the attachments and other portions of the Contract Documents and Drawings and as more specifically described below.

The Contractor shall perform and/or submit the following tasks: product submittals, work plan incorporating all OC San comments, project schedule, demolition of the legacy compressor system, prepare drawings and fabricate the new gas dryer skids, repair / rehabilitate the equipment concrete foundation and anchor bolt system, install anchor bolts, install the new gas dryers on existing foundations as required, perform factory and field testing on the new gas dryer system and appurtenances, test and commission the complete system onsite, provide training of OC San staff on system operation and maintenance, and complete other tasks as specified.

### 3 Definitions

- a. API – American Petroleum Institute
- b. As Found – shall mean the state the item is provided to the Vendor.
- c. As Left – shall mean the state the item is provided by the Vendor.
- d. ASME – The American Society of Mechanical Engineers
- e. ASTM – The American Society for Testing and Materials
- f. BPVC – Boiler and Pressure Vessel Code
- g. Cen Gen – Central Generation
- h. CML – Condition Monitoring Location
- i. Contractor – The Contractor is the company performing the work detailed in this SOW, and may be separate and distinct from the Vendor or manufacturer of the equipment. The Contractor is responsible for coordination between the Vendor and Manufacturer as necessary, in order to satisfy the requirements detailed in this SOW.
- j. Days – Calendar days unless otherwise noted.
- k. Engineer – A professional engineer licensed in the State of California according to the Board for Professional Engineers, Land Surveyors, and Geologists.
- l. ETC – Etcetera
- m. Existing – Currently exists and or installed onsite. This term usually refers to the equipment needing to be removed and replaced with new.
- n. Fitness – refers to every aspect of the item that defines its physical, chemical, or electrical nature, size, makeup, etc.
- o. Fit up – pertaining to the interaction, fitness, clearance, proximity, etc. between faying surfaces, conjoining, mating, and/or related parts.
- p. FPT – Female National Pipe Thread
- q. Genset – Engine Generator Set
- r. GWP – Global Warming Potential
- s. HEX – Heat Exchanger
- t. Hydro – Hydrostatic Pressure Test
- u. in – inch (unit of measure)
- v. In service – A state of equipment being in operation.
- w. lb – Pound (unit of measure)
- x. LOTO – Lock-Out / Tag-Out (denoting applicable safety protocol)
- y. MAWP – Maximum Allowable Working Pressure
- z. MDT – Minimum Design Temperature
- aa. Manufacturer (MFR) – The manufacturer(s) manufactures the equipment being necessary to complete this SOW. The MFR may be separate and distinct from the Vendor or Contractor.
- bb. NB – National Board
- cc. NDE – Non-Destructive Examination
- dd. NEW – shall mean virgin materials only, unused, unrecycled, unopened, and

- unadulterated.
- ee. OC San –Orange County Sanitation District
- ff. OEM— Original Equipment Manufacturer
- gg. O&M – Operations and Maintenance
- hh. On Stream – a condition where the pressure vessel has not been prepared for an internal inspection, and the vessel is still in operation.
- ii. P&ID – Piping and Instrumentation Diagram
- jj. Plant No. 1 – The Wastewater Treatment Plant located at 10844 Ellis Ave, Fountain Valley, CA 92708
- kk. Plant No. 2 – The Wastewater Treatment Plant located at 22212 Brookhurst St, Huntington Beach, CA 92646
- ll. ppm – parts per million
- mm. PSIG – pound(s) per square inch gauge (typically denoting pressure)
- nn. Ra—Roughness Average (measured in units of microinches or  $1 \times 10^{-6}$  inch)
- oo. Safety Device – Pressure Safety/Relief Valve, etc.
- pp. Shutdown – When a piece of equipment is taken out of service.
- qq. SOW – Scope of Work
- rr. STBY – Standby
- ss. TBD – To be determined
- tt. Useful Life – The useful life of a component, assembly, etc. is defined as the limit by which said device would fail before its next regularly scheduled overhaul.
- uu. Vendor – The Vendor provides the equipment necessary to fulfill this SOW. The Vendor of the equipment being installed by this SOW may be separate and distinct from the manufacturer and Contractor.

#### 4 Attachments

- A. **Appendix A-1 Work Site Plan-Plant No. 1**-shows the project locations in the Plant No. 1 Digester Gas Compressor Building.
- B. **Appendix A-2 Work Site Plan-Plant No. 2**-shows the project locations in the Plant No. 2 Digester Gas Compressor Building.
- C. **Appendix A-3 Legacy Project Equipment Service Manual-Plant No. 1**-documentation from the projects that installed the equipment being rehabilitated by this project.
- D. **Appendix A-4 Legacy Project Equipment Service Manual-Plant No. 2**-documentation from the projects that installed the equipment being rehabilitated by this project.
- E. **Appendix A-5 Legacy Project Engineering Drawings-Plant No. 1**-drawings from the projects that installed the equipment being rehabilitated by this project.
- F. **Appendix A-6 Legacy Project Engineering Drawings-Plant No. 2**-drawings from the projects that installed the equipment being rehabilitated by this project.
- G. **Appendix A-7 Project P&ID-Plant No. 1**- scope and limits of the project, including the necessary required changes.
- H. **Appendix A-8 Project P&ID-Plant No. 2**- scope and limits of the project, including the necessary required changes.
- I. **Appendix A-9 Equipment Layout-Plant No. 1**- show the layout and location of the project equipment and various appurtenances with tag numbers corresponding to the P&ID tag numbers.
- J. **Appendix A-10 Equipment Layout-Plant No. 2**- show the layout and location of the project equipment and various appurtenances with tag numbers corresponding to the P&ID tag numbers.
- K. **Appendix A-11 Gas Composition and Flow**- reference for sizing of the Gas Compression System

- L. **Appendix A-12 Electrical Diagram-Plant No. 1**-detail the electrical aspects of the systems at each of the plants.
- M. **Appendix A-13 Electrical Plan and Diagram-Plant No. 2**-detail the electrical aspects of the systems at each of the plants.

## 5 Overview of the Work

The work outlined herein entails the rehabilitation of the Existing Gas Compressor Refrigerated Gas Dryer Systems and related Appurtenances as noted. The work includes the major items listed below for convenience; however, the Contractor shall abide by all portions of the contract documents, attachments, details, and requirements detailed herein:

- A. Demolition and removal of one (1) existing Zurn refrigerated gas dryer chiller skid at Plant No. 1; and two (2) parallel existing Pneumatech refrigerated gas dryer chiller systems at Plant No. 2, while preserving the inlet and outlet piping connections, and electrical tie-in locations.
- B. Preparation of the process areas for subsequent reinstallation of the new equipment, such as: concrete foundations, anchors, grouting, piping connections within the system being installed, electrical & instrumentation connections, junction boxes, and other related areas or appurtenances as detailed in this SOW.
- C. Furnish new materials and labor; and install three (3) new refrigerated gas dryer chillers with integral control panels (3), one (1) at Plant No. 1 and two (2) at Plant No. 2, in accordance with the contract drawings and specifications. Control panels to conform to existing controls and instrumentation, as shown on the project P&ID's and/or legacy equipment drawings and documentation.
- D. Creation and submission of as-built gas dryer chiller P&ID drawings showing all system components such as instrumentation, valves, gauges, controls, heat exchangers, and drivers.

## 6 Project/Work Elements

### 6.1 Scope of Work

The Contractor shall provide all required work and support services, including any Demolition, Design, Procurement, Installation, Modification, and Commissioning required for the satisfactory execution of this scope of work. The Contractor shall include in these services the evaluation of the system functionality, while addressing such factors as gas quality and composition, electrical integrity, pressure range, operating conditions, vibration, chemical compatibility, environmental considerations, maintenance and reliability, longevity, tagging requirements, equipment foundations and anchoring, training, and commissioning.

The existing Gas Compressor Refrigerated Gas Dryer Systems include those items shown in this SOW. However, only the "clouded" items on **Appendix A-7 Project P&ID-Plant No. 1** and **Appendix A-8 Project P&ID-Plant No. 2** shall be demolished and replaced by the Contractor, retaining the "tie-in" portions at the clouded interfaces for beneficial reuse and reattachment accordingly. The Contractor may install additional valves or instrumentation to aid in the installation, tie-in, cutover of the Dryer Systems, as approved by the OC San ENGINEER. Those portions of

interconnect piping, electrical conduits, junction boxes that are demolished or that reside inside the “clouded” portions must be replaced in-kind according to this SOW.

The listed specifications shall represent the minimum required performance characteristics for each of the Dryer Skids. Determination as to the acceptability of any proposed equipment or system(s) will be reviewed and accepted during the submittal process by the OC San ENGINEER.

**6.1.1 Refrigerated Gas Dryer Chillers**

Provide new in-kind Refrigerated Gas Dryer Chiller Skid Systems in accordance with the Attachments, Design Requirements, and this SOW. Comply with reference standards and design codes. Provide all labor and materials and tasks to deliver a complete operating system. Provide all the same functions as the existing Dryer Systems at a minimum, or as approved by ENGINEER in writing. Equipment Datasheets shall be provided by the Vendor for all equipment prior to delivery, for acceptance by the ENGINEER. All supplied piping and appurtenances that have the propensity to condense water from the surrounding air on its external surfaces, shall be fully insulated and of adequate thickness to ensure maximum system performance.

**6.1.2 Process Design Conditions**

	<u>Plant No. 1</u>	<u>Plant No. 2</u>
a. System Quantity	1	2
b. Hazardous Area Classification	Class 1 Division 1	See Section 6.1.5
c. Ambient & Air Temperature		
Minimum	30F	30F
Maximum	100F	100F
a. Permissible Space		
Indoors	See Section 6.1.4.2	See Section 6.1.4.2
Outdoors	NA	See Section 6.1.4.2
d. Process Gas Composition (H2O Saturated)	65% Methane / 35% CO2 + H2O	65% Methane / 35% CO2 + H2O
e. Process Gas Flow (Min.)	5300 SCFM	3500 SCFM
f. Process Gas Temp	100 F	100 F
g. Process Gas Pressure (Dryer Inlet)		
Minimum	50 psig	50 psig
Maximum	80 psig	80 psig

**6.1.3 Dryer Chiller Design Considerations**

	<u>Plant No. 1</u>	<u>Plant No. 2</u>
a. System Configuration	1	Parallel-1 Duty/1 Stby
b. No. of Skids (Maximum)	1	4
c. Refrigerant	ANY < 300 GWP	ANY < 300 GWP
d. Process Gas Outlet Temperature	75 F Dry Bulb	75 F Dry Bulb
e. Process Gas Outlet Dewpoint	40 F (+/- 2)	40 F (+/- 2)
f. Gas System Design Pressure	200 psig	200 psig
g. Total Allowable Gas Pressure Drop Maximum (Inlet to Outlet)	5 psig	5 psig
h. Cooling Water Supply Temp. (Max.)	85 F	85 F

i. Condenser Location	Indoor	Outdoor
j. Condenser Type	Water-cooled	Air-cooled
k. Compressor Type	Semi-Hermetic	Semi-Hermetic
l. Compressor Capacity Control	Single (1) Step	Single (1) Step
m. Process Gas Wetted Parts	Stainless Steel	Stainless Steel
n. Digester Gas Heat Transfer Media Precooler/Reheater Process Heat Exchanger	N/A Refrigerant	Process Gas Glycol
o. Permissible Moisture/Oil Carryover	<10 ppm	<10 ppm
p. Electrical	See Section 6.1.5	See Section 6.1.5
q. Seismic Zone	IV	IV

#### 6.1.4 Mechanical

##### 6.1.4.1 Tie-in Connections

	Plant No. 1	Plant No. 2
a. Gas Connections Dryer Skid Inlet Dryer Skid Outlet	8 in. 150 lb. Flange 8 in. 150 lb. Flange	6 in. 150 lb. Flange 6 in. 150 lb. Flange
b. Water Connections Water Inlet Water Outlet	2 in. 150 lb. Flange 2 in. (FPT)	NA NA

##### 6.1.4.2 Envelope and Foundation Size

	Plant No. 1	Plant No. 2
a. Permissible Envelope Size Indoors (L x W x H) Outdoors (L x W x H)	122" x 77" x 120" NA	168" x 133" x 126" 187" x 187" x 126"
b. Foundation Size Indoors (L x W x H) Outdoors (L x W x H)	122" x 77" x 4" NA	168" x 133" x 4" 187" x 187" x 4"

#### 6.1.5 Electrical

	Plant No. 1	Plant No. 2
a. Main Driver (nominal)	30 HP	30 HP
b. Service Factor	1.15	1.15
c. Breaker Size	80A	100A / 100A
d. Voltage	480 V	480 V
e. Phase	3	3
f. Frequency	60 Hz	60 Hz
g. Site Classification Indoor Outdoor	Class 1 Div. 1, Group D NA	Class 1 Div. 1, Group D Unclassified
h. Enclosure Rating Indoor Outdoor	NEMA-7 NA	NEMA-7 NEMA-4X

#### 6.1.6 Instrumentation & Control

The following instrumentation shall be included on each skid as shown on the P&ID's, at a minimum, or as approved by the OC San ENGINEER in writing:

- a. Gas Inlet Temperature Gauge & Indicator
- b. Gas Outlet Temperature Gauge & Indicator
- c. Refrigerant Low-Pressure Gauge
- d. Refrigerant High-Pressure Gauge
- e. Compressor Low Oil Pressure Gauge
- f. Power On Light
- g. Compressor Running Light
- h. Refrigeration System Pumpdown Switch
- i. Auto-drain Timer on-off switch
- j. Emergency Off Pushbutton
- k. High Dewpoint Light
- l. Alarm Silence Pushbutton
- m. Elapsed Time Meter
- n. Alarm Horn

#### **6.1.7 Material Requirements**

The Contractor shall supply all major equipment according to this SOW and the following requirements:

##### **A. Pressure Vessels & Heat Exchangers**

ASME Section 8 Div. 1 of the Boiler and Pressure Vessel Code shall be employed in the design of all heat exchangers and pressure vessels, unless specifically exempt from them by the code, including National Board Registration. The Contractor shall provide a digital copy of all ASME calculations and shall also include a unique U-1 Mfr. Datasheets for each applicable vessel to the OC San ENGINEER as a submittal.

All process gas pressure vessels, heat exchangers, and wetted parts shall be constructed of 304 stainless steel at a minimum and designed accordingly. All refrigeration system piping and appurtenances shall employ materials designed according to the conditions and the refrigerant media and conditions detailed herein.

##### **B. Digester Gas Composition and Flow**

The Vendor shall be responsible to provide all Dryer Chiller equipment and appurtenances adequately sized to accommodate the flow conditions as detailed herein. The Vendor shall also provide detailed equipment sizing reports and/or datasheets, including records of all engineering calculations and assumptions.

##### **C. Piping**

The Contractor shall provide new piping, control valves, shut-off valves, pipe supports, and insulation as required. Piping shall be as required to reconnect the dryer system (s) to the existing piping network and tie-in points. Piping and valving shall be replaced with the same size, type, function, and material of construction as the existing piping to match the P&ID. All metallic components and elements in direct contact with the process gas and/or condensate shall be 304 stainless steel material or better, unless otherwise specified.

Connections shall be flanged, welded, threaded, or as otherwise acceptable to the OC San ENGINEER. Pickling and passivation applies to factory or shop

welds. Custom flanges with elbows and short pipe links can be pre-made and field attached as necessary.

#### **D. System Appurtenances**

The Contractor shall replace all appurtenances, separators, heat exchangers, components, valves, control devices, and instrumentation as detailed in the project P&ID's.

#### **6.1.8 Electrical and Instrumentation**

The Contractor shall be responsible for disconnecting existing system and reconnecting all new electrical equipment, including power feed, control panels, control valves, and instrumentation; and to replace all conduits, flex conduits, and wiring as needed to accommodate new installation. Contractor shall install new power and control cables from existing Motor Control Center and control panels to the new systems as needed to avoid splicing of cables. Provide additional conduit, supports, and equipment / instrument stands as necessary for a finished installation in accordance with this SOW or as approved by the ENGINEER. Installations shall be confined to within the provided permitted equipment area restrictions. Provide all components required to reconnect new items to existing systems. Supply and replace in-kind all the required instrumentation including properly sized relief valves, control valves, temperature elements, pressure gauges, and flow instruments as identified in this SOW or as necessary to provide a complete operational system.

#### **6.1.9 Equipment Foundation Survey, Anchor Bolt Assessment**

The existing concrete equipment foundations shall be re-used, and equipment system designed to fit on them and within the bounds detailed herein. Based on recent limited visual inspection of the anchor bolts, there is varying degrees of corrosion, some anchor bolt nuts do not have a full grip on the bolt threads due to shimming plates, and the condition of the anchor bolts below the anchor nut is not visible, therefore the Contractor shall assess the condition of the anchor bolts after the equipment is removed and determine if they can be salvaged and reused. Assume for bidding purposes that all the anchor bolts shall be replaced. Submit anchor bolt calculations prepared by a Professional Engineer licensed in the State of California.

#### **6.1.10 Equipment Cutover**

The Contractor shall be responsible for completing the operational cutover of each of the new Gas Dryer Chiller Skids within seven (7) calendar day duration of disconnecting the legacy dryer that it will be replacing. No more than one (1) refrigerated dryer can be non-operational at any one time, combined at either plant. The Contractor shall be responsible for the proper staging and coordination of the system cutovers, as well as providing a system purge plan and schedule of planned activities for coordination purposes.

Purging of the Digester gas shall be done in a safe manner, and through charcoal canisters to eliminate the release of hydrocarbons directly to the atmosphere. Purging of the refrigerants shall also be done in a similar manner. Proper disposal of all liquids and heat transfer fluids shall also be required.

**6.1.11 LOTO**

The Contractor shall assist as needed to properly isolate and render the system safe, while utilizing the lock and key method that is normally performed. OC San LOTO procedures shall be followed at all times.

**6.1.12 Labor**

All work shall be performed, and all components and materials shall be provided by the Contractor in accordance with this SOW. Provide all labor, elements, accessories, and appurtenances for a complete and fully operating system per the P&ID.

**6.1.13 Essential facility**

The new Dryer Chiller systems shall be designed as Essential Facilities with a Seismic Category of IV. The work shall be completed in accordance with the latest applicable codes and regulations.

**6.1.14 Certificate of proper installation**

Installation shall be in accordance with the applicable component or equipment manufacturer's requirements. The Dryer Chiller manufacturer shall provide Certification of Proper Installation prior to operation and Certification of Proper Operation prior to substantial completion.

**6.1.15 Disposal**

The Contractor shall be responsible for the removal of all debris and demolished items from the site(s) associated with this SOW. However, OC San reserves the right to keep all used, unused, and replaced parts. No materials or equipment shall be taken off the site, without OC San's written authorization.

**6.1.16 Laydown area**

OC San will provide limited space at Plant No. 1 and Plant No. 2 for a laydown and staging area as necessary, on premises to be determined. The Contractor shall include all expenses and costs related to accessing the laydown and staging area provided by OC San or for an offsite storage and laydown area if required.

**6.1.17 Inspectors**

OC San may assign inspectors and other staff to witness the Contractor's activities, including, but not limited to, installation, all readings taken, and all tests performed by the Contractor. The presence or lack of presence of OC San or OC San's representative does not relieve the Contractor from the requirements to perform all testing, all quality control and quality assurance, and other tasks required for the work. Submit test equipment and calibration certifications prior to taking readings and tests for OC San approval.

**6.1.18 Hazardous substances**

OC San has sampled various miscellaneous components in the surrounding area of the existing Dryer Chiller System, including paint on the plant air pipe, air compressor, air flasks, and has not detected any surface lead. If the

Contractor encounters any suspected hazardous waste or substances in the course of the Work, they shall notify OC San immediately.

#### **6.1.19 Protection**

The Contractor shall be solely responsible for protecting in place the equipment and area surrounding the existing Dryer Chiller systems, appurtenances, and associated components and to prevent damage to it. The Gas Compressor facilities shall be maintained in operation during the execution of the work. The Contractor shall coordinate the work to avoid any interference with normal operations of plant equipment and processes. Always maintain access to the system for OC San Operations and Maintenance staff.

#### **6.1.20 Downtime**

Downtime for power interruptions and other utility services requiring taps or connections shall be kept to a minimum. Interruptions are limited to a maximum of three (3) hours each occurrence, and occurrences shall be limited to one (1) per 24-hour period. Any work that blocks roadways, access to buildings or equipment, and parking lots shall require written acceptance from OC San prior to the work being done.

#### **6.1.21 Shutdown requests**

Written Shutdown requests shall be submitted to the OC San ENGINEER or other designated OC San staff. Requests shall include a detailed shutdown plan and drawings identifying the system or equipment included in the shutdown request. The Engineer's written acceptance of shutdown requests shall be obtained twenty-one (21) calendar days in advance. The Contractor shall follow OC San's LOTO procedures for requesting LOTO isolation of equipment and working under LOTO conditions. OC San will provide tags and the Contractor shall provide a lockout device for each worker. If Work on energized electrical systems is required, refer to the OC San Contractor Safety Standards April 21, 2022 (Revision 10) for additional pertinent safety requirements.

#### **6.1.22 Testing and Commissioning**

##### **A. Factory Testing**

The Contractor shall conduct factory testing to comply with applicable standards and required certifications prior to shipping of the compressors systems, or as acceptable to the ENGINEER. Submit results of the factory testing and required certification(s), if applicable, for approval prior to shipping to jobsite.

##### **B. System Pressure Testing**

The Contractor shall isolate and test all air piping, valves, nipples, instruments, gauges, connections, etc. according to industry recognized best practices, and as acceptable to the OC San ENGINEER.

##### **C. Electrical and Instrumentation Testing**

All new instruments shall be tested, and calibrated, prior to install in accordance with latest applicable International Society of Automation (ISA)

specifications and Scope of Work Appendices. Equipment tested may include some existing items to ensure a complete system test is accomplished. All new instruments, actuators, pressure gauges and/or transmitters shall be loop checked and commissioned to provide complete working system. The Contractor to perform loop checks of all above systems and OC San to witness the checks.

**D. Commissioning**

The following tests shall be required and/or complied with:

**i. Operational Readiness Test [ORT]**

Develop step-by-step procedures to systematically test every control circuit for all equipment, instruments, devices, and wiring installed or modified under this Contract where OC San has not provided a procedure. A procedure shall be submitted for each piece of equipment with a control schematic or I/O circuit. The procedure shall test equipment in LOCAL, HAND, and REMOTE MANUAL modes of operation. The Contractor shall match the format of the procedures provided by OC San, which includes a description of the action to be performed and anticipated result, the register number for the associated programmable logic controller input and output point to be verified, action to be verified with comments, and signatures for the Contractor and the OC San ENGINEER for each procedure step. Procedures shall use the appropriate testing method for instruments and devices, to verify that the circuit is operating properly and connected to the correct device.

**ii. Functional Acceptance Test [FAT]**

Develop step-by-step procedures to systematically test the functionality of all equipment and systems installed or modified under this contract where OC San has not provided a procedure. The procedure shall test equipment in local auto and remote automatic modes of operation. The procedure shall test all equipment and systems in remote automatic and auto modes to verify that the equipment and systems operate as described in the control strategies of the specifications or equipment specifications sections. The procedures shall describe the initiation of shutdowns and the expected results that are to be verified and shall test all startup and shutdown conditions for each piece of equipment and the system or process train to test the complete program functionality. The procedure shall include all testing scenarios. A procedure shall be submitted for each equipment and system. A system FAT shall be provided for all equipment that function together with programming interlocks. The Contractor shall match the format of the procedures provided by OC San.

**iii. Reliability Acceptance Test [RAT]**

During the RAT procedures, the equipment and systems will be operated under various scenarios of normal operating conditions. Failures will be simulated to test the fail-over logic, equipment

shutdown sequencing, and equipment startup sequencing. A test to check that the system can operate continuously in the intended manner for an extended period without failure. During the RAT, the system under test shall be operated within design parameters reflecting the day-to-day operation of the facilities for an uninterrupted period. The RAT shall not be performed until: (1) All FAT procedures and requirements for the commissioning package are complete; (2) All FAT punch list items have been signed off by the OC San ENGINEER; and (3) Commissioning Phase 2 OR-FAT Completion Letter has been accepted by the OC San ENGINEER.

#### **E. Training**

The Contractor shall provide a total of eight (8) hours of training maximum in accordance with the table shown below. Training shall be for the new Dryer Chiller Systems and associated equipment, valves, and instruments. Training shall cover the following, at a minimum:

1. Equipment location and operational overview, including purpose and plant function of equipment.
2. Review catalog cut sheets, parts list, drawings, and all components of approved submittals and operation manuals. Show how to use spare parts, if any, and how to order parts.
3. Installation of specific equipment, identifying piping and flow options, valves and their purpose, and instrumentation including location of primary element and location of instrument readout.
4. Review safety references and discuss proper precautions and safety procedures around equipment and process facilities, including applicable fire safety and fire codes.
5. All modes of operation and procedures for startup, shutdown, leak test, normal operation, and emergency operating procedures including discussion of system integration and electrical interlocks, if any.
6. Demonstrate the unit and perform standard operating procedures, rounds checks, startup and shutdown procedures including isolation for maintenance work and/or long-term non-use.
7. Operations troubleshooting procedures.
8. Preventative maintenance.
9. Corrective maintenance.
10. Review Equipment Service Manuals (ESM)
11. Answer questions

Submit proposed training schedule and lesson plans, including trainer qualifications, to OC San two (2) months prior to training. At least one week prior to training session submit training manuals, handouts, visual aids, and reference material to OC San. OC San will not schedule or allow training until all items are reviewed and accepted by OC San. One (1) week following training session provide one complete set of lesson plans, training manuals, handouts, visual aids, and reference material. All documents shall be submitted in electronic format acceptable to OC San.

Training schedule shall be in accordance with the following table, or as otherwise required:

<b>Session</b>	<b>Audience</b>	<b>Attendance</b>	<b>Duration (hours)</b>	<b>Day and Time</b>
1	Operations	6	2	Mon-Tue Days
2	Operations	6	2	Wed-Thurs Days
3	Maintenance	4	2	Mon-Tue Days
4	Maintenance	4	2	Wed-Thurs Days
		Total: 20	Total hrs: 8	

## 7 Contractor Responsibility

### 7.1 General

As part of the Contract and Scope of Work, the Contractor shall perform the following tasks and provide OC San with the following items:

- A. The Contractor shall complete the Scope of Work as described and provide supply all parts, tools and equipment required to complete the Scope of Work.
- B. The Contractor is responsible to provide all materials and/or equipment, and other work to provide a complete operating system, and as specified herein.
- C. All components, parts or equipment found defective during testing and commissioning shall be replaced or repaired by the Contractor.
- D. The Contractor shall review and comply with all applicable requirements of OC San Contractor Safety Standards April 21, 2022 (Revision 10).
- E. The Contractor is responsible to provide all consumable supplies needed for testing and commissioning, including transportation, testing, safety equipment and personnel protection equipment.
- F. The Contractor shall be solely responsible for installing and maintaining all items in accordance with the manufacturer instructions until OC San accepts the work as defined by this contract.
- G. The Contractor shall be responsible for the repair or replacement in kind of any item damaged by the Contractor or Contractor's sub-contractor without any cost or schedule impact to OC San until turnover of the Work to OC San at the time of Final Completion. Repairs shall be completed prior to Final Completion.
- H. The Contractor shall be responsible to provide all packaging and shipping for transportation of parts and materials and equipment to and from the job site to ensure products and materials arrive at the site undamaged.

- I. The Contractor shall take measurements and record all test data during testing and commissioning and shall provide these measurements and data in a report to OC San.

## **7.2 Equipment Removal**

The Contractor shall be responsible for the complete removal and offsite disposal of the legacy Refrigerated Dryer Systems, Piping, and Heat Exchangers and other appurtenances as required to fulfill the contract requirements.

## **7.3 Equipment Installation**

The Contractor shall be responsible for installing the project elements per the Project Specification, Attachments, and as detailed herein. The SOW outlines the minimum equipment requirements, and coupled with the project specifications, will dictate the final installation requirements. All project elements shall be installed per the manufacturer's guidelines, and/or legacy design intent. OC San reserves the right to change, revise, or adapt the installation requirements as deemed appropriate. During the execution of work, proper controls shall be in place to protect workers from injury, and damage to OC San Facilities.

## **7.4 Compressor Setting and Installation**

The Contractor shall install the refrigerated dryers on their original concrete foundations and anchor them to the foundation per manufacturers specifications. The Contractor shall install all piping and connections to the existing piping, and install new valves, instruments, wiring, and appurtenances as required.

## **7.5 Permits/Licenses**

- Professional Engineer licensed design oversight for Anchor Bolts as detailed herein.
- Contractor's License Class "A"

## **7.6 Project Management and Planning**

The Contractor shall manage the project execution according to the following:

### **A. Project Communications**

A minimum of two (2) weeks prior to the start of work, a meeting with OC San staff, Project Kick-off Meeting, shall be held to establish appropriate contacts and review the Contractor's plan to implement this work.

Contract conferences shall be held on an on-call basis with OC San staff to keep OC San apprised of the job, review work in progress, and receive comments. Conferences shall be held at the OC San's offices or virtually (i.e. Microsoft Teams) as operational needs dictate. All notes and decision items shall be captured by the Contractor and reported in electronic format within one week. The formal agenda shall also be submitted at least one week prior to each meeting. At a minimum, progress meetings will be Biweekly through-out the duration of the project.

### **B. Progress Meetings**

The Contractor shall conduct recurring progress meetings. Attendees shall include the Contractor, OC San, OC San designated representative, if any, and manufacturers, vendors, and sub-contractors as needed for the meeting agenda.

Progress meetings shall occur biweekly and have a minimum duration of 30 minutes.

**C. Design Services**

The Contractor shall design the new Dryer Chiller Systems to fit on the existing foundations, and include the proper design of equipment anchorage, pipe routing, pipe connections, valving, electrical, instrumentation, and all other appurtenances to provide a complete, operational, reliable, and safe overall system solution.

The final design must bear the stamp of a professional engineer licensed in the State of California and include the anchor bolt calculations which follow the best practice recommendations for the type of system, speed, weight, vibrational characteristics, grout type, attachment techniques, etc., as well as all manufacturers' specifications and recommendations.

**D. Field Survey and Verification**

Before submitting fabrication and shop drawings, the Contractor shall perform a field survey to determine dimensions, materials of construction, joint types, fitting types, interconnections, electrical and instrumentation components, and to take other measurements necessary to accurately design, fabricate and install the equipment. Such survey and verification shall include, but not be limited to anchor bolts, foundations, and points of connection to existing piping, electrical systems, and instrumentation systems. Field verification shall include review of existing field electrical control panels where sensors and control signals are wired, types of electrical signals, and engineering units and range on each shall be field verified by the Contractor.

**7.7 Safety Related Tasks**

Follow all applicable requirements of the OC San Contractor Safety Standards April 21, 2022 (Revision 10) and CAL OSHA requirements. All workers shall have four (4)-gas air quality monitors on their person while at the site. The Contractor shall provide Injury and Illness Prevention Plan, Site-Specific Safety Plan, and Hot Work Permits for OC San review and approval. If confined space entry is necessary, submit permit required confined space entry documents.

**7.8 Rigging, Disassembly, Removal, and Installation**

The Contractor shall provide all equipment required for rigging, disassembly, removal of existing compressors, equipment, appurtenances, and the installation of new. Follow requirements of OC San Contractor Safety Standards April 21, 2022 (Revision 10) and SOP-303 Crane Safety Program.

The Contractor shall provide trained staff, all materials, and equipment necessary to remove the existing compressors, equipment, appurtenances and the installation of new.

**7.9 Transportation**

The Contractor assumes full responsibility and costs for all shipping, transportation, , fees, duties and tariffs, scheduling, packing, handling, insurance, and other services associated with delivery of all equipment and goods deemed necessary under this project.

The Contractor shall be liable for any damage that occurs during any transport of the equipment.

Follow all State and Local laws regarding transportation of any demolished equipment.

#### **7.10 Quality Assurance and Quality Control**

The Contractor and its personnel assigned to this Contract shall have adequate direct experience for this work, with direct experience in compressor system design, fabrication, and installation. Any personnel substitutions after award shall only be done with advanced written approval from OC San. Contractor shall provide resumes of proposed replacement staff for OC San review and approval.

The Contractor shall perform all work in accordance with approved written Quality Control Plan. The Contractor shall submit their Quality Control Plan to OC San for approval before the work begins. The Quality Control Plan shall include a description of the Contractor's procedures for calibrating test equipment, establishing work procedures, maintaining compliance to work procedures, monitoring quality of work, and training of staff. The Contractor's procedures for taking and recording data, organization and retention of records, and transmittal to OC San for review and acceptance shall be included. Include all relevant ISO 9001 procedures and certifications with the Quality Control Plan.

### **8 Project Schedule**

- 8.1** The Contractor shall provide a Project Schedule within 14 days of the Notice to Proceed (NTP) and biweekly updated schedule during field work providing a 3-week look ahead. Schedule shall be a Gantt Chart or better. The purpose of the schedule shall be to ensure adequate planning and timely execution of the work by the Contractor, facilitate coordination and interfacing of the Contractor's work with others as needed, and establish a schedule to which subsequent periodic schedule updates will be compared to determine overall progress and performance toward satisfactory completion of the work.
- 8.2** The work activities comprising the schedule shall be of sufficient detail to assure adequate planning and execution of the work such that, in the judgment of OC San, it provides an appropriate basis for predicting, monitoring, evaluating, and recording the progress of the work. The schedule shall be detailed and show critical path activities, activity duration, predecessors and successors, and start and finish dates.
- 8.3** The schedule shall contain the following milestones: Notice to Proceed; mobilization; demolition; design; parts procurement; fabrication; construction start; testing and commissioning, specified contract milestones as applicable; substantial completion; and final completion.
- 8.4** In addition to milestones/timeline, the schedule shall show at a minimum the following tasks: field verification, submittal preparation and review, factory test, fabrication, material and equipment deliveries, installation, all connections to existing plant systems and equipment including interruptions, shutdowns, LOTO, and training.

**8.5** The Contractor shall complete the project within 434 calendar days (62 weeks) from the date the Notice to Proceed is issued. A sample Project Schedule is provided below for reference purposes.

**A. Recommended Project Schedule**

<b>Milestones/Timeline</b>	<b>Deadline (Weeks from Kick-Off/NTP)</b>	<b>Review Period (Weeks)</b>	<b>Cumulative Weeks</b>
<b>Kick-Off Meeting (NTP)</b>	-	-	-
<b>Submittal of Schedule</b>	<b>2</b>	<b>2</b>	<b>4</b>
<b>Submittals</b> Shop Drawings	<b>8</b>	<b>4</b>	<b>12</b>
<b>Parts Procurement</b>	<b>22</b>	<b>20</b>	<b>42</b>
<b>Submittals</b> Construction Schedule	<b>12</b>	<b>2</b>	<b>14</b>
Fabrication Shop Drawings	<b>14</b>	<b>4</b>	<b>18</b>
Quality Control Plan	<b>18</b>	<b>2</b>	<b>20</b>
Installation, Operation, & Maintenance Manual	<b>20</b>	<b>2</b>	<b>22</b>
Training Schedule	<b>22</b>	<b>2</b>	<b>24</b>
Commissioning Plan	<b>24</b>	<b>2</b>	<b>26</b>
<b>Installation</b>	<b>42</b>	<b>16</b>	<b>58</b>
<b>Training</b>	<b>58</b>	-	<b>58</b>
<b>Commissioning</b>	<b>60</b>	<b>2</b>	<b>62</b>
<b>Final Completion of Work</b>	<b>62</b>	-	-

**9 Payment Schedule**

The payment shall be invoiced per the following work below:

- Mobilization to Site
- Upon delivery of all machine shop components
- Major mechanical completion
- Final start-up commissioning

**10 Resources Available**

**10.1** Laydown and Staging Area (To Be Determined Upon Issuance of NTP)

**11 Submittals and Deliverables**

**11.1 Submittals**

The Contractor shall provide fabrication shop drawings, product data sheets, and other submittals and procedures for review and approval by OC San for all components and parts prior to fabrication or procurement. The Contractor shall group submittals in sets to maximize efficiency. Provide detailed, to scale fabrication drawings of the compressor system and appurtenances that include dimensions, weld details, penetrations, installation details, and bill(s) of materials. Bill of materials shall

show materials of construction and coating and lining details. Submit steel metallurgical certifications for structural steel and certification that codes and standards are being met. Shop drawings must bear the stamp of a professional engineer licensed in the State of California.

Submit detailed product data sheets of all equipment, components, piping, hangers, valves, etc. Provide shop drawings for all valving, piping, connection flanges, instrumentation, and electrical components, including connection diagrams for all control valves. Provide a process flow schematic showing all equipment, components, valves and instrumentation and “redline” the legacy P&ID. Provide submittals in digital, PDF format that is high resolution (1200 dpi or higher). Ensure all non-applicable data and optional functions that are not being provided are deleted or clearly crossed out. Provide submittals to OC San for review. OC San will return submittals to the Contractor within twenty (20) working days or sooner. The Contractor shall revise submittals as directed and resubmit as necessary.

The following are the minimum submittals required for this project, as detailed herein:

1. Project Schedule
2. Equipment Shop Drawings and Data Sheets
3. Compressor System and Layout Drawings
4. Electrical Schematics/Wiring Diagrams
5. Foundation Design and or Modifications
6. Material Submittals for structural steel members
7. Installation, Operation, & Maintenance Manual(s)
8. Equipment Service Manual(s)
9. Commissioning Plan
10. Training Agenda

#### **11.2 Equipment Service Manuals (ESM)**

After acceptance of all product and shop drawing submittals, the Contractor shall submit a draft ESM, also known as Installation, Operation, and Maintenance Manual, for review and approval covering all mechanical, electrical, and instrumentation devices, and installation and operational details. Draft ESM shall be submitted 120 days prior to the start of Phase 1 – PRE-ORT. The Contractor shall revise, replace, remove and/or add documents to correct deficiencies and resubmit Final ESM prior to the start of Phase 2 – ORT and FAT for OC San review and approval. The Final ESM must be accepted by OC San 30 days before the start of Phase 2 – ORT and FAT. Revision to Final ESM may include changes necessary to reflect “as-built” conditions. ESM shall be provided in digital, PDF format that is high resolution acceptable to OC San. Ensure all non-applicable data and optional functions that are not being provided are deleted or clearly crossed out (i.e. Non-relevant configurations, sizes, materials, dash no.’s, etc. often shown on manufacturer datasheets). ESM shall include data sheets, warehouse spare equipment list, approved shop drawing submittals, installation, operation, and maintenance manuals including standard operating procedures for startup and shutdown of the compressors, supplemental drawings and instructions, and as-built information. Installation, operation, and maintenance manual section of ESM shall include recommendations for installation, adjustment, calibration and troubleshooting, step by step equipment specific procedures for starting, operating, and stopping equipment, preventative

maintenance procedures, overhaul instructions, drawings, complete parts lists and recommended spare parts, parts ordering information and special tools list.

**12 Change Management**

See Exhibit "F" – General Conditions.

**13 Staff Assistance**

The Contractor will be assigned a single point of contact on this project. Any meetings and/or correspondence related to this project shall be scheduled and approved by the OC San ENGINEER.

**14 Safety and Health Requirements**

The Contractor and any Subcontractors shall comply with all applicable provisions of the OC San Contractor Safety Standards, Federal OSHA, California OSHA, and Local regulations, whichever is most stringent.

**14.1 Injury and Illness Prevention Program**

The Contractor shall submit a copy of their written, Injury and Illness Prevention Program (IIPP). The IIPP must address responsibility, compliance, communication, hazard assessment, incident investigation, hazard correction, and training as required by Title 8, California Code of Regulations, Section 3203.

**14.2 Site Specific Safety Plan**

The Contractor shall prepare and submit a written, job Site Specific Safety Plan (SSSP) in accordance with the Sanitation District's Contractor Safety Standards. The SSSP must address the specific hazards and controls based on the scope of work. The SSSP must include specific controls that will be implemented to keep workers safe. The Contractor shall also prepare and submit safety programs where required by Cal OSHA. These programs may include fall protection, lockout tagout, confined space entry, and hazard communication. The safety plan must be specific to the work being completed and approved prior to the start of work (includes mobilization).

**14.3 Contractor Safety Orientation**

The Contractor shall attend a Contractor Safety Orientation (CSO) meeting prior to the start of work. The CSO is a Sanitation District safety orientation conducted between the Risk Management Division (safety and health) and the Contractor. The CSO is conducted once per year or as job conditions or scope of work changes. The Contractor shall participate in these meetings by providing work plans and other requested safety deliverables described below. The Contractor shall sign the JSSA documentation.

**14.4 Lock Out Tag Out**

The Contractor shall participate in the OC San LOTO process. OC San will isolate the structure and associated systems prior to Contractor entry into the structure. OC San will prepare a written energy control procedure for the structure. OC San will demonstrate hazardous energy has been controlled by walking each isolation point and reviewing the energy control procedure with the Contractor. The Contractor shall apply their own lock and tag to the OC San lock box upon acceptable and sign the energy control procedure. Each Contractor employee working in the structure must apply their own lock and tag.

**14.5 Fall Protection**

Fall protection shall be provided around all openings to protect Contractor employees and OC San. Fall protection at openings shall consist of a portable guardrail or other suitable barrier to prevent persons from falling to a lower level. Fall protection will be required for personnel when using Contractor provided extension ladders when accessing the structures. Fall protection will be required when working at heights greater than six (6) feet.

Scaffold erection may be required. In all cases, the scaffolding system shall be designed by a scaffold qualified person and erected, inspected and dismantled by a scaffold competent person. The scaffolding shall be supplied by a qualified, experienced scaffolding company. Contractor shall submit scaffold plans prior to use and must be approved by OC San.

**14.6 Hot Work**

Any activity producing spark, flame or heat will require an OC San issued hot work permit. The Contractor, depending on the activity, will be required to provide appropriate controls in accordance with OC San's hot work program. These controls may include a fire watch, 20-pound fire extinguisher, fire blankets, and atmospheric monitor.

**14.7 Training Records**

Contractor shall submit copies of its employee trainings records to Risk Management for retention.

**14.8 PPE**

Contractor shall wear Level D Personal Protective Equipment (PPE), which includes hard-toe work boots, safety glasses, hard hats, high-visibility safety vests, long pants, sleeved shirts, gloves, and hearing protection (as needed).

All work performed in the wastewater treatment plant requires a calibrated 4-gas monitor (CO, H2S, LEL, O2).