PROFESSIONAL DESIGN SERVICES AGREEMENT

This PROFESSIONAL DESIGN SERVICES AGREEMENT, (hereinafter referred to as "Agreement"), is made and entered into to be effective the 25th day of October, 2023, by and between the ORANGE COUNTY SANITATION DISTRICT, (hereinafter referred to as "OC SAN"), and CAROLLO ENGINEERS, INC., (hereinafter referred to as "CONSULTANT").

WITNESSETH:

WHEREAS, OC SAN desires to engage CONSULTANT for **Activated Sludge Aeration Basin Rehabilitation at Plant No. 2**, **Project No. P2-136**; and to provide professional design services for the project elements outlined in the Scope of Work attached hereto as Attachment "A" (Services); and

WHEREAS, CONSULTANT is qualified to provide the necessary services in connection with these requirements and has agreed to provide the necessary professional services; and

WHEREAS, OC SAN has adopted procedures for the selection of professional design services and has proceeded in accordance with said procedures to select CONSULTANT to perform the Services; and

WHEREAS, at its regular meeting on October 25, 2023, the Board of Directors, by Minute Order, accepted the recommendation of the Operations Committee pursuant to OC SAN's current Purchasing Ordinance to approve this Agreement.

NOW, THEREFORE, in consideration of the promises and mutual benefits, which will result to the parties in carrying out the terms of this Agreement, it is mutually agreed as follows:

1. SCOPE OF WORK

CONSULTANT agrees to furnish necessary professional and technical services to accomplish those project elements outlined in the Scope of Work attached hereto as Attachment "A", and by this reference made a part of this Agreement.

A. The CONSULTANT shall be responsible for the professional quality, technical accuracy, completeness, and coordination of all design, drawings, specifications, and other services furnished by the CONSULTANT under this Agreement, including the work performed by its subconsultants (Subconsultants). Where approval by OC SAN is indicated, it is understood to be conceptual approval only and does not relieve the CONSULTANT of responsibility for complying with all laws, codes, industry standards, and liability for damages caused by errors, omissions, noncompliance with industry standards, and/or negligence on the part of the CONSULTANT or its Subconsultants.

B. CONSULTANT is responsible for the quality of work prepared under this Agreement and shall perform all Work to the industry standards for clarity, uniformity, and completeness. CONSULTANT shall respond to all of OC SAN's questions, comments, suggestions, corrections, and recommendations (i.e., DS1, DS2, DS3, and FDS). All comments shall be incorporated into the design prior to

the next submittal deadline or addressed, in writing, as to why the comment has not been incorporated. CONSULTANT shall ensure that each submittal is 100% accurate for the level of work submitted (i.e., correct references, terms, capitalization, or equal status, spelling, punctuation, etc.)

C. In the event that work is not performed to the satisfaction of OC SAN and does not conform to the requirements of this Agreement or any applicable industry standards, the CONSULTANT shall, without additional compensation, promptly correct or revise any errors or deficiencies in its designs, drawings, specifications, or other services within the timeframe specified by the Project Engineer/Project Manager. OC SAN may charge to CONSULTANT all costs, expenses and damages associated with any such corrections or revisions.

D. All CAD drawings, figures, and other work shall be produced by CONSULTANTS and Subconsultants using OC SAN CAD Manual. Conversion of CAD work from any other non-standard CAD format to OC SAN format shall not be acceptable in lieu of this requirement.

Electronic files shall conform to OC SAN specifications. Any changes to these specifications by the CONSULTANT are subject to review and approval of OC SAN.

Electronic files shall be subject to an acceptance period of 30 calendar days during which OC SAN shall perform appropriate reviews and including CAD Manual compliance. CONSULTANT shall correct any discrepancies or errors detected and reported within the acceptance period at no additional cost to OC SAN.

E. The CONSULTANT shall ensure that all plans and specifications prepared or recommended under this Agreement allow for competitive bidding. The CONSULTANT shall design such plans or specifications so that procurement of services, labor or materials are not available from only one source, and shall not design plans and specifications around a single or specific product, piece of major equipment or machinery, a specific patented design or a proprietary process, unless required by principles of sound engineering practice and supported by a written justification that has been approved in writing by OC SAN. The CONSULTANT shall submit this written justification to OC SAN prior to beginning work on such plans and specifications. Whenever the CONSULTANT recommends a specific product or equipment for competitive procurement, such recommendation shall include at least two brand names of products that are capable of meeting the functional requirements applicable to the project.

F. All professional services performed by the CONSULTANT, including but not limited to all drafts, data, correspondence, proposals, reports, and estimates compiled or composed by the CONSULTANT, pursuant to this Agreement, are for the sole use of OC SAN, its agents and employees. Neither the documents nor their contents shall be released to any third party without the prior written consent of OC SAN. This provision does not apply to information that (a) was publicly known, or otherwise known to the CONSULTANT, at the time that it was disclosed to the CONSULTANT by OC SAN, (b) subsequently becomes publicly known to the CONSULTANT other than through disclosure by OC SAN.

2. COMPENSATION

Total compensation shall be paid to CONSULTANT for the Services in accordance with the following provisions:

A. Total Compensation

Total compensation shall be in an amount not to exceed Five Million Eight Hundred Ninety-One Thousand Five Hundred Ninety-Nine Dollars ($5,891,599). Total compensation to CONSULTANT including burdened labor (salaries plus benefits), overhead, profit, direct costs, and Subconsultant(s) fees and costs shall not exceed the sum set forth in Attachment “E” - Fee Proposal.

B. Labor

As a portion of the total compensation to be paid to CONSULTANT, OC SAN shall pay to CONSULTANT a sum equal to the burdened salaries (salaries plus benefits) actually paid by CONSULTANT charged on an hourly-rate basis to this project and paid to the personnel of CONSULTANT. Upon request of OC SAN, CONSULTANT shall provide OC SAN with certified payroll records of all employees’ work that is charged to this project.

C. Overhead

As a portion of the total compensation to be paid to CONSULTANT, OC SAN shall compensate CONSULTANT and Subconsultants for overhead at the rate equal to the percentage of burdened labor as specified in Attachment “E” - Fee Proposal.

D. Profit

Profit for CONSULTANT and Subconsultants shall be a percentage of consulting services fees (Burdened Labor and Overhead). When the consulting or subconsulting services amount is $250,000 or less, the maximum Profit shall be 10%. Between $250,000 and $2,500,000, the maximum Profit shall be limited by a straight declining percentage between 10% and 5%. For consulting or subconsulting services fees with a value greater than $2,500,000, the maximum Profit shall be 5%. Addenda shall be governed by the same maximum Profit percentage after adding consulting services fees.

As a portion of the total compensation to be paid to CONSULTANT and Subconsultants, OC SAN shall pay profit for all services rendered by CONSULTANT and Subconsultants for this project according to Attachment “E” - Fee Proposal.

E. Subconsultants

For any Subconsultant whose fees for services are greater than or equal to $100,000 (excluding out-of-pocket costs), CONSULTANT shall pay to

Subconsultant total compensation in accordance with the Subconsultant amount specified in Attachment “E” - Fee Proposal.

For any Subconsultant whose fees for services are less than $100,000, CONSULTANT may pay to Subconsultant total compensation on an hourly-rate basis per the attached hourly rate Schedule and as specified in the Scope of Work. OC SAN shall pay to CONSULTANT the actual costs of Subconsultant fees and charges in an amount not to exceed the sum set forth in Attachment “E” - Fee Proposal.

F. Direct Costs

OC SAN shall pay to CONSULTANT and Subconsultants the actual costs of permits and associated fees, travel and licenses for an amount not to exceed the sum set forth in Attachment “E” - Fee Proposal. OC SAN shall also pay to CONSULTANT actual costs for equipment rentals, leases or purchases with prior approval of OC SAN. Upon request, CONSULTANT shall provide to OC SAN receipts and other documentary records to support CONSULTANT’s request for reimbursement of these amounts, see Attachment “D” - Allowable Direct Costs. All incidental expenses shall be included in overhead pursuant to Section 2 - COMPENSATION above.

G. Other Direct Costs

Other Direct Costs incurred by CONSULTANT and its Contractor due to modifications to the Scope of Work resulting from field investigations and field work required by the Agreement. These items may include special equipment, test equipment and tooling and other materials and services not previously identified. Refer to attachment “D” Allowable Direct Costs for payment information.

H. Reimbursable Direct Costs

OC SAN will reimburse the CONSULTANT for reasonable travel and business expenses as described in this section and further described in Attachment “D” - Allowable Direct Costs to this Agreement. The reimbursement of the above-mentioned expenses will be based on an “accountable plan” as considered by Internal Revenue Service (IRS). The plan includes a combination of reimbursements based upon receipts and a “per diem” component approved by IRS. The most recent schedule of the per diem rates utilized by OC SAN can be found on the U.S. General Service Administration website at http://www.gsa.gov/portal/category/104711#.

The CONSULTANT shall be responsible for the most economical and practical means of management of reimbursable costs inclusive but not limited to travel, lodging and meals arrangements. OC SAN shall apply the most economic and practical method of reimbursement which may include reimbursements based upon receipts and/or “per diem” as deemed the most practical.

CONSULTANT shall be responsible for returning to OC SAN any excess reimbursements after the reimbursement has been paid by OC SAN.

Travel and travel arrangements – Any travel involving airfare, overnight stays or multiple day attendance must be approved by OC SAN in advance.

Local Travel is considered travel by the CONSULTANT within OC SAN general geographical area which includes Orange, Los Angeles, Ventura, San Bernardino, Riverside, San Diego, Imperial, and Kern Counties. Automobile mileage is reimbursable if CONSULTANT is required to utilize personal vehicle for local travel.

Lodging – Overnight stays will not be approved by OC SAN for local travel. However, under certain circumstances overnight stay may be allowed at the discretion of OC SAN based on reasonableness of meeting schedules and the amount of time required for travel by the CONSULTANT. Such determination will be made on a case-by-case basis and at the discretion of OC SAN.

Travel Meals – Per-diem rates as approved by IRS shall be utilized for travel meals reimbursements. Per diem rates shall be applied to meals that are appropriate for travel times. Receipts are not required for the approved meals.

Additional details related to the reimbursement of the allowable direct costs are provided in the Attachment “D” - Allowable Direct Costs of this Agreement.

I. Limitation of Costs

If, at any time, CONSULTANT estimates the cost of performing the services described in CONSULTANT’s Proposal will exceed seventy-five percent (75%) of the not-to-exceed amount of the Agreement, including approved additional compensation, CONSULTANT shall notify OC SAN immediately, and in writing. This written notice shall indicate the additional amount necessary to complete the services. Any cost incurred in excess of the approved not-to-exceed amount, without the express written consent of OC SAN’s authorized representative shall be at CONSULTANT’s own risk. This written notice shall be provided separately from, and in addition to any notification requirements contained in the CONSULTANT’s invoice and monthly progress report. Failure to notify OC SAN that the services cannot be completed within the authorized not-to-exceed amount is a material breach of this Agreement.

3. REALLOCATION OF TOTAL COMPENSATION

OC SAN, by its Director of Engineering, shall have the right to approve a reallocation of the incremental amounts constituting the total compensation, provided that the total compensation is not increased.

4. PAYMENT

A. Monthly Invoice: CONSULTANT shall include in its monthly invoice, a detailed breakdown of costs associated with the performance of any corrections or

revisions of the work for that invoicing period. CONSULTANT shall allocate costs in the same manner as it would for payment requests as described in this Section of the Agreement. CONSULTANT shall warrant and certify the accuracy of these costs and understand that submitted costs are subject to Section 11 - AUDIT PROVISIONS.

B. CONSULTANT may submit monthly or periodic statements requesting payment for those items included in Section 2 - COMPENSATION hereof in the format as required by OC SAN. Such requests shall be based upon the amount and value of the work and services performed by CONSULTANT under this Agreement and shall be prepared by CONSULTANT and accompanied by such supporting data, including a detailed breakdown of all costs incurred and work performed during the period covered by the statement, as may be required by OC SAN.

Upon approval of such payment request by OC SAN, payment shall be made to CONSULTANT as soon as practicable of one hundred percent (100%) of the invoiced amount on a per task basis.

If OC SAN determines that the work under this Agreement, or any specified task hereunder, is incomplete and that the amount of payment is in excess of:

i. The amount considered by OC SAN's Director of Engineering to be adequate for the protection of OC SAN; or

ii. The percentage of the work accomplished for each task.

OC SAN may, at the discretion of the Director of Engineering, retain an amount equal to that which ensures that the total amount paid to that date does not exceed the percentage of the completed work for each task or the project in its entirety.

C. CONSULTANT may submit periodic payment requests for each 30-day period of this Agreement for the profit as set forth in Section 2 - COMPENSATION above. Said profit payment request shall be proportionate to the work actually accomplished to date on a per task basis. In the event OC SAN's Director of Engineering determines that no satisfactory progress has been made since the prior payment, or in the event of a delay in the work progress for any reason, OC SAN shall have the right to withhold any scheduled proportionate profit payment.

D. Upon satisfactory completion by CONSULTANT of the work called for under the terms of this Agreement, and upon acceptance of such work by OC SAN, CONSULTANT will be paid the unpaid balance of any money due for such work, including any retained percentages relating to this portion of the work.

E. Upon satisfactory completion of the work performed hereunder and prior to final payment under this Agreement for such work, or prior settlement upon termination of this Agreement, and as a condition precedent thereto, CONSULTANT shall execute and deliver to OC SAN a release of all claims against OC SAN arising under or by virtue of this Agreement other than such

claims, if any, as may be specifically exempted by CONSULTANT from the operation of the release in stated amounts to be set forth therein.

F. Pursuant to the California False Claims Act (Government Code Sections 12650-12655), any CONSULTANT that knowingly submits a false claim to OC SAN for compensation under the terms of this Agreement may be held liable for treble damages and up to a ten thousand dollars ($10,000) civil penalty for each false claim submitted. This Section shall also be binding on all Subconsultants.

A CONSULTANT or Subconsultant shall be deemed to have submitted a false claim when the CONSULTANT or Subconsultant: a) knowingly presents or causes to be presented to an officer or employee of OC SAN a false claim or request for payment or approval; b) knowingly makes, uses, or causes to be made or used a false record or statement to get a false claim paid or approved by OC SAN; c) conspires to defraud OC SAN by getting a false claim allowed or paid by OC SAN; d) knowingly makes, uses, or causes to be made or used a false record or statement to conceal, avoid, or decrease an obligation to OC SAN; or e) is a beneficiary of an inadvertent submission of a false claim to OC SAN, and fails to disclose the false claim to OC SAN within a reasonable time after discovery of the false claim.

5. CALIFORNIA DEPARTMENT OF INDUSTRIAL RELATIONS (DIR) REGISTRATION AND RECORD OF WAGES

A. To the extent CONSULTANT's employees and/or Subconsultants who will perform work during the design and preconstruction phases of a construction contract for which Prevailing Wage Determinations have been issued by the DIR and as more specifically defined under Labor Code Section 1720 et seq, CONSULTANT and Subconsultants shall comply with the registration requirements of Labor Code Section 1725.5. Pursuant to Labor Code Section 1771.4, the work is subject to compliance monitoring and enforcement by the DIR.

B. The CONSULTANT and Subconsultants shall maintain accurate payroll records and shall comply with all the provisions of Labor Code Section 1776, and shall submit payroll records to the Labor Commissioner pursuant to Labor Code Section 1771.4(a)(3). Penalties for non-compliance with the requirements of Section 1776 may be deducted from progress payments per Section 1776.

C. Pursuant to Labor Code Section 1776, the CONSULTANT and Subconsultants shall furnish a copy of all certified payroll records to OC SAN and/or general public upon request, provided the public request is made through OC SAN, the Division of Apprenticeship Standards or the Division of Labor Enforcement of the Department of Industrial Relations.

D. The CONSULTANT and Subconsultants shall comply with the job site notices posting requirements established by the Labor Commissioner per Title 8, California Code of Regulation Section 16461(e).

6. DOCUMENT OWNERSHIP – SUBSEQUENT CHANGES TO PLANS AND SPECIFICATIONS

A. Ownership of Documents for the Services performed.

All documents, including but not limited to, original plans, studies, sketches, drawings, computer printouts and disk files, and specifications prepared in connection with or related to the Scope of Work or Services, shall be the property of OC SAN. OC SAN's ownership of these documents includes use of, reproduction or reuse of and all incidental rights, whether or not the work for which they were prepared has been performed. OC SAN ownership entitlement arises upon payment or any partial payment for work performed and includes ownership of any and all work product completed prior to that payment. This Section shall apply whether the CONSULTANT's Services are terminated: a) by the completion of the Agreement, or b) in accordance with other provisions of this Agreement. Notwithstanding any other provision of this paragraph or Agreement, the CONSULTANT shall have the right to make copies of all such plans, studies, sketches, drawings, computer printouts and disk files, and specifications.

B. CONSULTANT shall not be responsible for damage caused by subsequent changes to or uses of the plans or specifications, where the subsequent changes or uses are not authorized or approved by CONSULTANT, provided that the service rendered by CONSULTANT was not a proximate cause of the damage.

C. OC SAN shall furnish the CONSULTANT available studies, reports and other data pertinent to the CONSULTANT's services; obtain or authorize the CONSULTANT to obtain or provide additional reports and data as required; furnish to the CONSULTANT services of others required for the performance of the CONSULTANT's services hereunder, and the CONSULTANT shall be entitled to use and rely upon all such information and services provided by OC SAN or others in performing the CONSULTANT's services under this Agreement.

7. INSURANCE

A. General

i. Insurance shall be issued and underwritten by insurance companies acceptable to OC SAN.

ii. Insurers must have an "A-" Policyholder's Rating, or better, and Financial Rating of at least Class VIII, or better, in accordance with the most current A.M. Best's Guide Rating. However, OC SAN will accept State Compensation Insurance Fund, for the required policy of Workers' Compensation Insurance subject to OC SAN's option to require a change in insurer in the event the State Fund financial rating is decreased below "B". Further, OC SAN will require CONSULTANT to substitute any insurer whose rating drops below the levels herein specified. Said substitution shall occur within twenty (20) days of written notice to CONSULTANT, by OC SAN or its agent.

iii. Coverage shall be in effect prior to the commencement of any work under this Agreement.

B. General Liability

The CONSULTANT shall maintain during the life of this Agreement, including the period of warranty, commercial general liability insurance written on an occurrence basis providing the following minimum limits of liability coverage: Two Million Dollars ($2,000,000) per occurrence with Four Million Dollars ($4,000,000) aggregate. If aggregate limits apply separately to this contract (as evidenced by submission of ISO form CG 25 03 or 25 04), then the aggregate limit may be equivalent to the per occurrence limit. Said insurance shall include coverage for the following hazards: premises-operations, blanket contractual liability (for this Agreement), products liability/completed operations (including any product manufactured or assembled), broad form property damage, blanket contractual liability, independent contractors liability, personal and advertising injury, mobile equipment, owners and contractors protective liability, and cross liability and severability of interest clauses. A statement on an insurance certificate will not be accepted in lieu of the actual additional insured endorsement(s). If requested by OC SAN and applicable, XCU coverage (Explosion, Collapse and Underground) and Riggers/On Hook Liability must be included in the general liability policy and coverage must be reflected on the submitted certificate of insurance. Where permitted by law, CONSULTANT hereby waives all rights of recovery by subrogation because of deductible clauses, inadequacy of limits of any insurance policy, limitations or exclusions of coverage, or any other reason against OC SAN, its or their officers, agents, or employees, and any other consultant, contractor, or subcontractor performing work or rendering services on behalf of OC SAN in connection with the planning, development, and construction of the project. In all its insurance coverages related to the work, CONSULTANT shall include clauses providing that each insurer shall waive all of its rights of recovery by subrogation against OC SAN, its or their officers, agents, or employees, or any other consultant, contractor, or subcontractor performing work or rendering services at the project. Where permitted by law, CONSULTANT shall require similar written express waivers and insurance clauses from each of its Subconsultants of every tier. A waiver of subrogation shall be effective as to any individual or entity, even if such individual or entity (a) would otherwise have a duty of indemnification, contractual or otherwise, (b) did not pay the insurance premium, directly or indirectly, and (c) whether or not such individual or entity has an insurable interest in the property damaged.

C. Umbrella Excess Liability

The minimum limits of general liability and automobile liability insurance required, as set forth herein, shall be provided for through either a single policy of primary insurance or a combination of policies of primary and umbrella excess coverage. Umbrella excess liability coverage shall be issued with limits of liability which, when combined with the primary insurance, will equal the minimum limits for general liability and automobile liability.

D. Automobile/Vehicle Liability Insurance

The CONSULTANT shall maintain a policy of automobile liability insurance on a comprehensive form covering all owned, non-owned, and hired automobiles, trucks, and other vehicles providing the following minimum limit of liability coverage: combined single limit of One Million Dollars ($1,000,000). A statement on an insurance certificate will not be accepted in lieu of the actual additional insured endorsement.

E. Drone Liability Insurance

If a drone will be used, drone liability insurance must be maintained by CONSULTANT in the amount of one million dollars ($1,000,000) in form acceptable to OC SAN.

F. Workers' Compensation Insurance

The CONSULTANT shall provide such workers' compensation insurance as required by the Labor Code of the State of California in the amount of the statutory limit, including employer's liability insurance with a minimum limit of One Million Dollars ($1,000,000) per occurrence. Such workers' compensation insurance shall be endorsed to provide for a waiver of subrogation in favor of OC SAN. A statement on an insurance certificate will not be accepted in lieu of the actual endorsements unless the insurance carrier is State of California Insurance Fund and the identifier "SCIF" and endorsement numbers 2570 and 2065 are referenced on the certificate of insurance. If an exposure to Jones Act liability may exist, the insurance required herein shall include coverage for Jones Act claims.

G. Errors and Omissions/Professional Liability

CONSULTANT shall maintain in full force and effect, throughout the term of this Agreement, standard industry form professional negligence errors and omissions insurance coverage in an amount of not less than Five Million Dollars ($5,000,000) with limits in accordance with the provisions of this paragraph. If the policy of insurance is written on a "claims made" basis, said policy shall be continued in full force and effect at all times during the term of this Agreement, and for a period of five (5) years from the date of the completion of the services hereunder.

In the event of termination of said policy during this period, CONSULTANT shall obtain continuing insurance coverage for the prior acts or omissions of CONSULTANT during the course of performing services under the term of this Agreement. Said coverage shall be evidenced by either a new policy evidencing no gap in coverage or by separate extended "tail" coverage with the present or new carrier.

In the event the present policy of insurance is written on an "occurrence" basis, said policy shall be continued in full force and effect during the term of this Agreement or until completion of the services provided for in this Agreement,

whichever is later. In the event of termination of said policy during this period, new coverage shall be obtained for the required period to insure for the prior acts of CONSULTANT during the course of performing services under the term of this Agreement.

CONSULTANT shall provide to OC SAN a certificate of insurance in a form acceptable to OC SAN indicating the deductible or self-retention amounts and the expiration date of said policy and shall provide renewal certificates not less than ten (10) days prior to the expiration of each policy term.

H. Proof of Coverage

The CONSULTANT shall furnish OC SAN with original certificates and amendatory endorsements effecting coverage. Said policies and endorsements shall conform to the requirements herein stated. All certificates and endorsements are to be received and approved by OC SAN before work commences. OC SAN reserves the right to require, at any time, complete, certified copies of all required insurance policies, including endorsements, effecting the coverage required. The following are approved forms that must be submitted as proof of coverage:

• Certificate of Insurance	ACORD Form 25 or other equivalent certificate of insurance form
• Additional Insurance (General Liability)	The combination of (ISO Forms) CG 20 10 and CG 20 37 All other additional insured endorsements must be submitted for approval by OC SAN, and OC SAN may reject alternatives that provide different or less coverage to OC SAN.
• Additional Insured (Automobile Liability)	Submit endorsement provided by carrier for OC SAN approval.
• Waiver of Subrogation	Submit workers' compensation waiver of subrogation endorsement provided by carrier for OC SAN approval.
• Cancellation Notice	No endorsement is required. However, CONSULTANT is responsible for notifying OC SAN of any pending or actual insurance policy cancellation, as described in Article I. Cancellation and Policy Change Notice, below.

I. Cancellation and Policy Change Notice

The CONSULTANT is required to notify OC SAN in writing of any insurance cancellation notice it receives or other knowledge of pending or actual insurance policy cancellation within two (2) working days of receipt of such notice or acquisition of such knowledge. Additionally, the CONSULTANT is required to notify OC SAN in writing of any change in the terms of insurance, including

reduction in coverage or increase in deductible/SIR, within two (2) working days of receipt of such notice or knowledge of same.

Said notices shall be mailed to OC SAN at:

ORANGE COUNTY SANITATION DISTRICT
10844 Ellis Avenue
Fountain Valley, CA 92708
Attention: Contracts, Purchasing & Materials Management Division

J. Primary Insurance

The general and automobile liability policies shall contain a Primary and "Non Contributory" clause. Any other insurance maintained by OC SAN shall be excess and not contributing with the insurance provided by CONSULTANT.

K. Separation of Insured

The general and automobile liability policies shall contain a "Separation of Insureds" clause.

L. Non-Limiting (if applicable)

Nothing in this document shall be construed as limiting in any way, nor shall it limit the indemnification provision contained in this Agreement, or the extent to which CONSULTANT may be held responsible for payment of damages to persons or property.

M. Deductibles and Self-Insured Retentions

Any deductible and/or self-insured retention must be declared to OC SAN on the certificate of insurance. All deductibles and/or self-insured retentions require approval by OC SAN. At the option of OC SAN, either: the insurer shall reduce or eliminate such deductible or self-insured retention as respects OC SAN; or the CONSULTANT shall provide a financial guarantee satisfactory to OC SAN guaranteeing payment of losses and related investigations, claim administration and defense expenses.

N. Defense Costs

The general and automobile liability policies shall have a provision that defense costs for all insureds and additional insureds are paid in addition to and do not deplete any policy limits.

O. Subconsultants

The CONSULTANT shall be responsible to establish insurance requirements for any Subconsultant hired by the CONSULTANT. The insurance shall be in amounts and types reasonably sufficient to deal with the risk of loss involving the Subconsultant's operations and work.

P. Limits Are Minimums

If the CONSULTANT maintains higher limits than any minimums shown above, then OC SAN requires and shall be entitled to coverage for the higher limits maintained by CONSULTANT.

8. SCOPE CHANGES

In the event of a change in the Scope of Work or other terms in the Agreement, as requested by OC SAN, the parties hereto shall execute an Amendment to this Agreement setting forth with particularity all terms of the new Agreement, including, but not limited to, any additional CONSULTANT's fees. CONSULTANT hereby agrees to use any and all procedures, programs, and systems required by OC SAN to process and execute such Amendment(s), including, but not limited to, computer programs and systems.

9. PROJECT TEAM AND SUBCONSULTANTS

CONSULTANT shall provide to OC SAN, prior to execution of this Agreement, the names and full description of all Subconsultants and CONSULTANT's project team members anticipated to be used on this project by CONSULTANT. CONSULTANT shall include a description of the scope of work to be done by each Subconsultant and each CONSULTANT's project team member. CONSULTANT shall include the respective compensation amounts for CONSULTANT and each Subconsultant on a per task basis, broken down as indicated in Section 2 - COMPENSATION.

There shall be no substitution of the listed Subconsultants and CONSULTANT's project team members without prior written approval by OC SAN.

10. ENGINEERING REGISTRATION

The CONSULTANT's personnel are comprised of registered engineers and a staff of specialists and draftsmen in each department. The firm itself is not a registered engineer but represents and agrees that wherever in the performance of this Agreement requires the services of a registered engineer, such services hereunder will be performed under the direct supervision of registered engineers.

11. AUDIT PROVISIONS

A. OC SAN retains the reasonable right to access, review, examine, and audit, any and all books, records, documents, and any other evidence of procedures and practices that OC SAN determines are necessary to discover and verify that the CONSULTANT is in compliance with all requirements under this Agreement. The CONSULTANT shall include OC SAN's right as described above, in any and all of their subcontracts, and shall ensure that these rights are binding upon all Subconsultants.

B. OC SAN retains the right to examine CONSULTANT's books, records, documents and any other evidence of procedures and practices that

OC SAN determines are necessary to discover and verify all direct and indirect costs, of whatever nature, which are claimed to have been incurred, or anticipated to be incurred or to ensure CONSULTANT's compliance with all requirements under this Agreement during the term of this Agreement and for a period of three (3) years after its termination.

C. CONSULTANT shall maintain complete and accurate records in accordance with generally accepted industry standard practices and OC SAN's policy. The CONSULTANT shall make available to OC SAN for review and audit, all project related accounting records and documents, and any other financial data within 15 days after receipt of notice from OC SAN. Upon OC SAN's request, the CONSULTANT shall submit exact duplicates of originals of all requested records to OC SAN. If an audit is performed, CONSULTANT shall ensure that a qualified employee of the CONSULTANT will be available to assist OC SAN's auditor in obtaining all project related accounting records and documents, and any other financial data.

12. LEGAL RELATIONSHIP BETWEEN PARTIES

The legal relationship between the parties hereto is that of an independent contractor and nothing herein shall be deemed to make CONSULTANT an employee of OC SAN.

13. NOTICES

All notices hereunder and communications regarding the interpretation of the terms of this Agreement, or changes thereto, shall be effected by delivery of said notices in person or by depositing said notices in the U.S. mail, registered or certified mail, return receipt requested, postage prepaid.

Notices shall be mailed to OC SAN at:

ORANGE COUNTY SANITATION DISTRICT
10844 Ellis Avenue
Fountain Valley, CA 92708-7018
Attention: Diane Marzano, Senior Contracts Administrator
Copy: Todd Waltz, Project Manager

Notices shall be mailed to CONSULTANT at:

CAROLLO ENGINEERS, INC.
3150 Bristol Street, Suite 500
Costa Mesa, CA 92626
Attention: Douglas J. Lanning, Project Manager/Senior Vice President

All communication regarding the Scope of Work, will be addressed to the Project Manager. Direction from other OC SAN's staff must be approved in writing by OC SAN's Project Manager prior to action from the CONSULTANT.

14. TERMINATION

OC SAN may terminate this Agreement at any time, without cause, upon giving thirty (30) days written notice to CONSULTANT. In the event of such termination, CONSULTANT shall be entitled to compensation for work performed on a prorated basis through and including the effective date of termination.

CONSULTANT shall be permitted to terminate this Agreement upon thirty (30) days written notice only if CONSULTANT is not compensated for billed amounts in accordance with the provisions of this Agreement, when the same are due.

Notice of termination shall be mailed to OC SAN and/or CONSULTANT in accordance with Section 13 - NOTICES.

15. DOCUMENTS AND STUDY MATERIALS

The documents and study materials for this project shall become the property of OC SAN upon the termination or completion of the work. CONSULTANT agrees to furnish to OC SAN copies of all memoranda, correspondence, computation and study materials in its files pertaining to the work described in this Agreement, which is requested in writing by OC SAN.

16. COMPLIANCE

A. Labor

CONSULTANT certifies by the execution of this Agreement that it pays employees not less than the minimum wage as defined by law, and that it does not discriminate in its employment with regard to race, color, religion, sex or national origin; that it is in compliance with all federal, state and local directives and executive orders regarding non-discrimination in employment; and that it agrees to demonstrate positively and aggressively the principle of equal opportunity in employment.

B. Air Pollution

CONSULTANT and its subconsultants and subcontractors shall comply with all applicable federal, state and local air pollution control laws and regulations.

C. Iran Contracting Act

CONSULTANT and its subconsultants and subcontractors shall comply with the Iran Contracting Act of 2010 (Public Contract Code sections 2200-2208).

17. AGREEMENT EXECUTION AUTHORIZATION

Both OC SAN and CONSULTANT do covenant that each individual executing this document by and on behalf of each party is a person duly authorized to execute agreements for that party.

18. DISPUTE RESOLUTION

In the event of a dispute arising between the parties regarding performance or interpretation of this Agreement, the dispute shall be resolved by binding arbitration under the auspices of the Judicial Arbitration and Mediation Service ("JAMS"), or similar organization or entity conducting alternate dispute resolution services.

19. ATTORNEY'S FEES, COSTS AND NECESSARY DISBURSEMENTS

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 Agreement, the prevailing party shall be entitled to reasonable attorney's fees, costs and necessary disbursements in addition to any other relief to which it may be entitled.

20. PROGRESS REPORTS

Monthly progress reports shall be submitted for review by the tenth day of the following month and must include as a minimum: 1) current activities, 2) future activities, 3) potential items that are not included in the Scope of Work, 4) concerns and possible delays, 5) percentage of completion, and 6) budget status.

21. WARRANTY

CONSULTANT shall perform its services in accordance with generally accepted industry and professional standards. If, within the 12-month period following completion of its services, OC SAN informs CONSULTANT that any part of the services fails to meet those standards, CONSULTANT shall, within the time prescribed by OC SAN, take all such actions as are necessary to correct or complete the noted deficiency(ies).

22. INDEMNIFICATION

To the fullest extent permitted by law, CONSULTANT shall indemnify, defend (at CONSULTANT's sole cost and expense and with legal counsel approved by OC SAN, which approval shall not be unreasonably withheld), protect and hold harmless OC SAN and all of OC SAN's officers, directors, employees, consultants, and agents (collectively the "Indemnified Parties"), from and against any and all claims, damages, liabilities, causes of action, suits, arbitration awards, losses, judgments, fines, penalties, costs and expenses (including, without limitation, attorneys' fees, disbursements and court costs, and all other professional, expert or CONSULTANT's fees and costs and OC SAN's general and administrative expenses; individually, a "Claim"; collectively, "Claims") which may arise from or are in any manner related, directly or indirectly, to any work performed, or any operations, activities, or services provided by CONSULTANT in carrying out its obligations under this Agreement to the extent of the negligent, recklessness and/or willful misconduct of CONSULTANT, its principals, officers, agents, employees, CONSULTANT's suppliers, CONSULTANT, Subconsultants, subcontractors, and/or anyone employed directly or indirectly by any of them, regardless of any contributing negligence or strict liability of an Indemnified Party. Notwithstanding the foregoing, nothing herein shall be construed to require CONSULTANT to indemnify the Indemnified Parties from any Claim arising solely from:

(A) the active negligence or willful misconduct of the Indemnified Parties; or

(B) a natural disaster or other act of God, such as an earthquake; or

(C) the independent action of a third party who is neither one of the Indemnified Parties nor the CONSULTANT, nor its principal, officer, agent, employee, nor CONSULTANT's supplier, CONSULTANT, Subconsultant, subcontractor, nor anyone employed directly or indirectly by any of them.

Exceptions (A) through (B) above shall not apply, and CONSULTANT shall, to the fullest extent permitted by law, indemnify the Indemnified Parties, from Claims arising from more than one cause if any such cause taken alone would otherwise result in the obligation to indemnify hereunder.

CONSULTANT's liability for indemnification hereunder is in addition to any liability CONSULTANT may have to OC SAN for a breach by CONSULTANT of any of the provisions of this Agreement. Under no circumstances shall the insurance requirements and limits set forth in this Agreement be construed to limit CONSULTANT's indemnification obligation or other liability hereunder. The terms of this Agreement are contractual and the result of negotiation between the parties hereto. Accordingly, any rule of construction of contracts (including, without limitation, California Civil Code Section 1654) that ambiguities are to be construed against the drafting party, shall not be employed in the interpretation of this Agreement.

23. DUTY TO DEFEND

The duty to defend hereunder is wholly independent of and separate from the duty to indemnify and such duty to defend shall exist regardless of any ultimate liability of CONSULTANT and shall be consistent with Civil Code Section 2782.8. Such defense obligation shall arise immediately upon presentation of a Claim by any person if, without regard to the merit of the Claim, such Claim could potentially result in an obligation to indemnify one or more Indemnified Parties, and upon written notice of such Claim being provided to CONSULTANT. Payment to CONSULTANT by any Indemnified Party or the payment or advance of defense costs by any Indemnified Party shall not be a condition precedent to enforcing such Indemnified Party's rights to indemnification hereunder. In the event a final judgment, arbitration, award, order, settlement, or other final resolution expressly determines that the claim did not arise out of, pertain to, or relate to the negligence, recklessness, or willful misconduct of the CONSULTANT, to any extent, then OC SAN will reimburse CONSULTANT for the reasonable costs of defending the Indemnified Parties against such claims.

CONSULTANT's indemnification obligation hereunder shall survive the expiration or earlier termination of this Agreement until such time as action against the Indemnified Parties for such matter indemnified hereunder is fully and finally barred by the applicable statute of limitations.

24. CONSULTANT PERFORMANCE

The CONSULTANT's performance shall be evaluated by OC SAN. A copy of the evaluation shall be sent to the CONSULTANT for comment. The evaluation, together with the comments, shall be retained by OC SAN and may be considered in future CONSULTANT selection processes.

25. COMPLIANCE WITH OC SAN POLICIES AND PROCEDURES

CONSULTANT shall comply with all OC SAN policies and procedures including the Contractor Safety Standards, as applicable, all of which may be amended from time to time.

26. CLOSEOUT

When OC SAN determines that all work authorized under the Agreement is fully complete and that OC SAN requires no further work from CONSULTANT, or the Agreement is otherwise terminated or expires in accordance with the terms of the Agreement, OC SAN shall give the Consultant written notice that the Agreement will be closed out. CONSULTANT shall submit all outstanding billings, work submittals, deliverables, reports or similarly related documents as required under the Agreement within thirty (30) days of receipt of notice of Agreement closeout.

Upon receipt of CONSULTANT's submittals, OC SAN shall commence a closeout audit of the Agreement and will either:

i. Give the CONSULTANT a final Agreement Acceptance: or

ii. Advise the CONSULTANT in writing of any outstanding item or items which must be furnished, completed, or corrected at the CONSULTANT's cost.

CONSULTANT shall be required to provide adequate resources to fully support any administrative closeout efforts identified in this Agreement. Such support must be provided within the timeframe requested by OC SAN.

Notwithstanding the final Agreement Acceptance the CONSULTANT will not be relieved of its obligations hereunder, nor will the CONSULTANT be relieved of its obligations to complete any portions of the work, the non-completion of which were not disclosed to OC SAN (regardless of whether such nondisclosures were fraudulent, negligent, or otherwise); and the CONSULTANT shall remain obligated under all those provisions of the Agreement which expressly or by their nature extend beyond and survive final Agreement Acceptance.

Any failure by OC SAN to reject the work or to reject the CONSULTANT's request for final Agreement Acceptance as set forth above shall not be deemed to be acceptance of the work by OC SAN for any purpose nor imply acceptance of, or agreement with, the CONSULTANT's request for final Agreement Acceptance.

27. COST ESTIMATES

The CONSULTANT has no control over the cost of labor, materials, equipment or services furnished by others, or over the construction contractor's methods of determining prices, or other competitive bidding or market conditions, practices or bidding strategies. CONSULTANT shall use best engineering practices along with experience and judgment, utilizing current local costs of labor, materials, equipment or services to prepare cost estimates. CONSULTANT cannot and does not guarantee that proposals, bids, actual Project construction, operation and/or lifecycle costs will not vary from cost estimates prepared by CONSULTANT.

28. THIRD PARTIES

This Agreement is entered into by and for OC SAN and the CONSULTANT, and nothing herein is intended to establish rights or interests in individuals or entities not a party hereto.

29. ENTIRE AGREEMENT

This Agreement constitutes the entire understanding and agreement between the Parties and supersedes all previous negotiations between them pertaining to the subject matter thereof.

IN WITNESS WHEREOF, this Agreement has been executed in the name of OC SAN and CONSULTANT by their respective duly authorized officers as of the day and year first written above.

CONSULTANT: CAROLLO ENGINEERS, INC.

By _____ _____
Date

_____
Printed Name & Title

ORANGE COUNTY SANITATION DISTRICT

By _____ _____
Chad P. Wanke Date
Board Chairman

By _____ _____
Kelly A. Lore Date
Clerk of the Board

By _____ _____
Ruth Zintzun Date
Finance & Procurement Manager

Attachments: Attachment "A" – Scope of Work
Attachment "B" – Labor Hour Matrix
Attachment "C" – Not Attached
Attachment "D" – Allowable Direct Costs
Attachment "E" – Fee Proposal
Attachment "F" – Not Used
Attachment "G" – Not Attached
Attachment "H" – Not Used
Attachment "I" – Cost Matrix and Summary
Attachment "J" – Not Attached
Attachment "K" – Minor Subconsultant Hourly Rate Schedule
Attachment "L" – Contractor Safety Standards
Attachment "M" – Iran Contracting Act Verification

DM:yp

ATTACHMENT “A”

SCOPE OF WORK

ATTACHMENT "A"

SCOPE OF WORK

Activated Sludge Aeration Basin Rehabilitation at Plant No. 2
Project No. P2-136

TABLE OF CONTENTS

1. PROJECT REQUIREMENTS

1.0 SUMMARY

1.0.1 PROFESSIONAL DESIGN ENGINEERING SERVICES

A. Provide professional design engineering services for the project described herein including the following:

1. Preliminary Design Report
2. Preparation of bid documents and Bid Phase Services

1.0.2 PROFESSIONAL LICENSING REQUIREMENTS

A. All plans and specifications shall be prepared by a professional engineer licensed in the State of California of the associated discipline.

1.1 BACKGROUND

The Activated Sludge (AS) plant at Plant No. 2 was built under Projects P2-23-2 and P2-23-6 in 1977 to provide 75 mgd of secondary treatment capacity. In 1996, the AS plant was expanded to 90 mgd by P2-42-2; and most recently rehabilitated by P2-74 (mechanical upgrades) and P2-47-3 (electrical upgrades) in 2008. The AS plant consists of biological reactors, a liquid oxygen (LOX) facility (liquid oxygen is delivered and stored on-site to feed the biological reactors), and secondary clarifiers.

The AS plant resides within the coastal zone and much of the outdoor mechanical equipment and instruments require significant maintenance and upkeep due to atmospheric corrosion caused by the marine environment. All components of the mechanical equipment on top of the aeration basin deck require replacement, including the aeration mixer systems and sluice gates (manual and motorized, including their actuators). Appurtenant facilities, including the purge fan rooms (2) and odor control systems, will also require the replacement of their respective mechanical components and instrumentation.

The concrete deck of the aeration basin has deteriorated and contains pervasive cracks throughout its surface. Containment of oxygen (supplied to the basins from the Liquid Oxygen Facility) within the interior of the basins has not been successful and gas leaks and bubbles have been observed in the manways, pipe penetrations, and mixer pads. Project No. P2-118/P2-118B was performed to remedy these deficiencies and the work included sealing concrete cracks by epoxy injection; replacing manhole frames and covers with airtight composite covers and gaskets; and sealing the gaps in between the equipment pad and aeration mixer to prevent further gas leakage. However, the repairs have provided mixed results and the deck still experiences water and gas leakage.

The current deck structure is unable to support any vehicle driving over it, such as maintenance pick-up trucks and cranes. The deck was evaluated by P2-118 and maximum weight limits were implemented to avoid further deterioration. Staff currently uses outside vendors to mobilize heavy duty cranes with boom lifts capable of removing the mixers off the deck and to provide the reach necessary to access all areas of the deck.

Primary effluent (PE) from the Primary Effluent Pump Station (PEPS) enters the Aeration Basin through the Influent Splitter Box. The PE flows are mixed with Return Activated Sludge (RAS) flows before entering the basins. An influent conduit distributes the PE flows into each basin (total 8). Inside the basins, the concrete walls (above water level) and ceiling have experienced severe cement loss (refer to Exhibit 19.5 Project Elements for photos) and the concrete aggregate is now exposed.

The combustible gas and oxygen levels inside the basins are monitored by instrument panels located above the basin's deck in an outdoor environment and include a combination of hardwired and PLC controls to purge the aeration basin and shut down the aeration basin mixers upon high-high LEL detection. There are four panels for the first stage containing combustible gas analyzers, and four panels in the fourth stage containing combustible gas and oxygen analyzers, for a total of 8 panels. The panels are exposed to marine conditions and the basins are classified Class1 Division 2 area. The internal temperature of the panels is typically much higher than outside ambient air temperatures. Recently, a fourth stage panel (for the C&D basins) was repaired due to damage caused by an electrical spark inside the panel. The panels will require an air condition type of cooling system to be installed. The instruments' quality and accuracy have also diminished and need replacement.

Two 12" diameter oxygen pipes run underground from the Oxygen Facility to the top of the aeration basins. The oxygen piping was originally constructed using carbon steel. Most of the components associated with the oxygen piping and control system are severally corroded and require significant effort by maintenance staff to maintain.

The process equipment for the secondary clarifiers is not part of this project. However, the existing stainless-steel handrails (installed under P2-23-6) were declared to be unsafe and are incapable of providing the minimum deflection resistance as required by Cal/OSHA standards. Several locations of the baseplates have also corroded.

1.2 GENERAL PROJECT DESCRIPTION

The project involves major rehabilitation of the aeration basins, purge fan rooms, and odor control system including structural rehabilitation for the aeration basin's deck, the Scott tunnel, and the purge fan rooms; concrete repair and protective coating for the interior of the basins; replacement of the mechanical equipment, panels, control valves, flowmeters, instrumentation, and oxygen piping on top of the aeration deck; rehabilitation of the influent conduit upstream of the aeration basins; rehabilitation of the oxygen pipe between the LOX facility and aeration basin; and handrail replacement for the secondary clarifiers.

1.3 PROJECT EXECUTION PHASES

All OC SAN projects are divided into six phases. CONSULTANT shall provide engineering services for all Project Elements listed in this Scope of Work for the following Phases:

Phase 1 – Project Development (Not in this Scope of Work)

Phase 2 – Preliminary Design

Phase 3 – Design

Phase 4 – Construction (Not in this Scope of Work)

Phase 5 – Commissioning (Not in this Scope of Work)

Phase 6 – Close Out (Not in this Scope of Work)

1.4 DESCRIPTION OF PROJECT ELEMENTS

Detailed descriptions of the Project Elements are presented below.

1.4.1 PROJECT ELEMENT 1 – AERATION BASIN REHABILITATION

A. Replace in kind the thirty-two (32) surface aerators including sixteen (16) 75HP and sixteen (16) 40HP aerators including the motors, gearboxes, mixing blades, power cables, control wiring and instrumentation. Replace the existing JOG push buttons. Replace the LOS push buttons with E-STOP push buttons. Add the E-Stop logic wiring and light to the MCC bucket and the E-Stop I/O signal to the PLC.

B. Replace all (16) manual sluice gates, frames, and covers in the influent splitter box. Replace all (8) the motorized sluice gates including the gates, actuators, frames, covers, power cables, control wiring and instrumentation for aeration basins A-H. Replace all splitter box covers in the influent splitter box.

C. Rehabilitate the Aeration Basin concrete deck. Repair and seal all penetrations and gaps in the manways, equipment pads, and pipe penetrations on top of the Aeration Basins.

D. Repair and coat all concrete interior surfaces of the Aeration Basins. Repair and/or replace as necessary, all pipes and appurtenances in the Aeration Basins' interior.

E. Rehabilitate the influent splitter box and the influent conduits (3'-4" x 7'-0" box culverts) in the front of the Aeration Basins.

F. Modify the four (4) existing outdoor RIO panels and provide air conditioning and sunshades to each panel.

G. Oxygen and Air Piping Replacement: Replace approximately 400 ft of 12" underground oxygen piping from the vaporizers to the aeration decks including cathodic protection; replace approximately 500 ft of 6" to 20" of oxygen piping on the top of aeration decks including the oxygen supply pipes, purge air pipes, and ventilation pipes, valves and all appurtenances; (**refer to Exhibit 19.6**).

H. Replace four Combustible Gas Analyzers Panels (first stage) and four Combustible Gas & Oxygen Analyzer panels (fourth stage) and associated instruments, flowmeters and control valves with air-conditioned panels.

I. Replace all associated cable and instrumentation wiring. Replace existing flexible conduit to the motors and instruments. Replace any associated corroded conduits.

J. The DO probe, conduits, and cable will be demolished and not replaced.

K. Abandoned panels and conduits will be demolished and not replaced.

L. Refer to Exhibit 19.5 Project Elements for project location and scope limits

M. Assumptions for Level of Effort

1. For the purpose of estimating the predesign and design phase levels of effort, the CONSULTANT shall make the following assumptions regarding this project element:

a. The AS plant can be operated with half of the plant isolated (4 out of 8 tanks) for extended periods of time to allow for confined space entry investigations during design. To accommodate the operation of the process, four to six weeks will be scheduled between entries to each half of the basins.

b. The Primary Effluent Pump Station, Return Activated Pump Stations (East and West), and the Liquid Oxygen Facility are not part of this project. The lighting and receptacles in the aeration deck are not part of this project.

c. Replace the 40 manhole gaskets and frames if CONSULTANT determines the manways cannot be sealed to prevent further gas leakage.

1.4.2 PROJECT ELEMENT 2 – PURGE FAN ROOM REHABILITATION (NO CHANGES)

A. Replace in-kind the purge fan system (four (4) 30HP purge air fans, control panels, power cables, control wiring, instrumentation, and appurtenances) inside both purge fan rooms.

B. Replace the existing NFPA 820 aeration basin air purging and aeration mixer shutdown control scheme to provide full monitoring and automatic control. Add a Go/No-Go system to both purge fan rooms.

C. Replace all associated cabling and instrumentation wiring. Replace conduits. Replace existing LOS/JOG pushbutton stations with E-STOP/JOG type.

D. Concrete and structural repairs to East and West Purge Air Fan Rooms

E. Assumptions for Level of Effort

1. For the purpose of estimating the predesign and design phase levels of effort, the CONSULTANT shall make the following assumptions regarding this project element:

a. The lighting and receptacles are not part of this project.

1.4.3 PROJECT ELEMENT 3 – ODOR EQUIPMENT REPLACEMENT

A. Replace the outdoor mounted odor control fan system (two 1/3HP fan motors, control panel, instrumentation, and appurtenances), which provides ventilation to the influent splitter box and convey the foul air to the existing odor control scrubbers at the primary treatment area through duct work in the tunnels. Replace the existing control scheme to full monitoring and control.

B. Replace all associated cabling and instrumentation wiring. Replace corroded conduits. Replace existing LOS/JOB pushbutton stations with E-STOP/JOG type

Further investigation resulted in OC San recommendation to incorporate SCADA monitoring and control of this equipment which will result in additional design effort covering various design disciplines.

Effort includes four new drawings (3 electrical and 1 I&C, plus 2 modified I&C drawings

1.4.4 PROJECT ELEMENT 4 – SCOTT TUNNEL REHABILITATION (NO CHANGES)

A. Rehabilitate the interior concrete surfaces of the Scott Tunnel. Replace corroded pipe supports in kind.

B. Assumptions for Level of Effort

1. For the purpose of estimating the predesign and design phase levels of effort, the CONSULTANT shall make the following assumptions regarding the project element:

a. Existing utilities inside the tunnel are not part of this project.

1.4.5 PROJECT ELEMENT 5 – SECONDARY CLARIFIER HANDRAILS (NO CHANGES)

A. Replace approximately 10,000 lineal feet of handrails at the secondary clarifier. Refer to **Exhibit 19.5 Project Elements** for limits of replacement.

B. Assumptions for Level of Effort

1. For the purpose of estimating the predesign and design phase levels of effort, the CONSULTANT shall make the following assumptions regarding the project element:

a. Verify the existing handrail materials and consider the side mounted option as used in the secondary clarifier expansion under P2-42-2.

1.4.6 PROJECT ELEMENT 6 – CABLE TRAYS (NO CHANGES)

A. Mitigate existing electrical and structural cable tray deficiencies in the Activated Sludge Facility area identified under Project No. 7 in Project No. J-47, Cable Tray Improvements at Plant No. 2 Study. The deficiencies include non-compliant single conductors, grounding conductors, and structural supports. (See **Exhibit 19.11 J-47 Cable Tray drawings**).

1.4.7 TEMPORARY FACILITIES DURING CONSTRUCTION (ASSUMPTION – NIGHT SHUT-DOWN / DE-WATER FOR CCTV INSPECTION – REHAB / CONSTRUCTION WILL REQUIRE BYPASS PUMPING

A. Work inside the influent splitter box will require temporary handling of flows, either by bypass pumping or gravity pipe to complete the rehabilitation and maintain non-reclaimable flows into the AS Plant during construction. Consultant shall consider all methods to safely isolate the

splitter box that will allow safe access for the Contractor to perform its repairs, minimize interruptions to the plant processes, and avoid any sewage spill.

B. The following items shall be considered in the design of the temporary facility:

1. Detailed plans and specifications providing sufficient information for bidding and construction, including detailed sequences of operation and installation

2. Description of materials and equipment to handle flows, including pump and pipe sizes, controls and alarms, power and/or fuel requirements

3. Anticipated times of flow interruption and/or flow diversion by the temporary facility installation

a. (Assumption – night shut-down / de-water for CCTV inspection – Rehab / construction will require bypass pumping

4. Key map showing bypass alignment and point of connections

5. Sufficient redundancy of temporary facility to avoid unforeseen interruptions to process flows

6. Environmental controls including air quality, stormwater, and noise controls

7. Traffic control requirements to accommodate staff access to process facilities during construction

1.4.8 COORDINATION WITH OTHER PROJECTS

A. The project shall be a complete and fully functional facility that is integrated with existing facilities and coordinated with other construction projects. CONSULTANT shall coordinate potential conflicts with the following adjacent projects:

1. FR2-0018 Activated Sludge Clarifier Repairs at Plant No. 2

a. Construction scheduled between August 2022 and March 2024. Confined space entries for P2-136 will require coordination with the construction project to minimize outage disruptions to the process areas.

2. FR2-0023 Activated Sludge Clarifier Entry Improvements at Plant No. 2

a. Construction scheduled between May 2023 and May 2024. Confined space entries for P2-136 will require coordination with the construction project to minimize outage disruptions to the process areas.

3. P2-98A A-Side Primary Clarifiers Replacement at Plant 2

a. Construction scheduled between July 2021 and November 2026. The project will replace four primary treatment clarifiers upstream of the aeration basins repairs for P2-136. Confined space entries for P2-136 will require coordination with the construction project to minimize outage disruptions to the process areas. Development of the P2-136 work sequence and work restrictions will also require coordination with the construction project.

4. FE21-07 Liquid Oxygen Tank A Replacement at Plant No. 2

a. Construction scheduled between January 2023 and January 2025. Confined space entries for P2-136 will require coordination with the construction project to minimize outage disruptions to the process areas.

5. Liquid Oxygen Tank B Replacement at Plant No. 2

a. Design is anticipated to start in 2023.

1.5 DESIGN CONSIDERATIONS

The following design considerations shall be carried from Preliminary Design through Final Design.

1.5.1 TECHNOLOGY AND CONFIGURATION CHOICES

A. The project elements in this facility shall be achieved using proven technologies. Alternative means of accomplishing the project elements must be reviewed and accepted by OC SAN prior to detailed evaluation. All alternative technologies proposed should be currently operating in other wastewater treatment facilities of similar capacity.

1.5.2 DESIGN DECISIONS

A. Design decisions shall be agreed upon by OC SAN prior to any work being performed by the CONSULTANT in preliminary and detailed design. All design decisions shall be documented.

1.5.3 DESIGN SELECTION CRITERIA

A. Design selection shall consider construction, lifecycle, operation, and maintenance costs as well as process benefits and overall quality. When design recommendations are presented to OC SAN, the design selection criteria shall be clearly identified with the recommendation.

B. The cost estimate shall consist of a life cycle cost analysis for the options proposed, including costs for engineering, construction, start-up, and operational and maintenance, and future rehabilitation and replacement.

C. The construction cost estimate shall be as described in Engineering Design Guidelines Section 01.4.6 included as **Exhibit 17**. Life cycle cost analysis is described in Section 01.2.19 of the Guidelines.

1.5.4 PROJECT ELEMENT DESCRIPTION REVISIONS

A. CONSULTANT shall review and revise the Project Element Descriptions using track changes at the end of Preliminary Design and at each design submittal. Changes shall be submitted to OC SAN for review.

1.5.5 COST MODEL (NOT IN THIS SCOPE OF WORK)

A. Not used

1.6 PROJECT SCHEDULE

1.6.1 GENERAL

A. The table below lists the time frames associated with each major project deliverable and with OC SAN's review and approval of those deliverables. CONSULTANT shall comply with the deadlines indicated in that table.

B. OC SAN's Project Manager will issue a Preliminary Design NTP. OC SAN's Project Manager will also issue a Final Design NTP upon OC SAN's acceptance of the final Preliminary Design Report.

C. The time frames specified below are used to estimate the actual milestone dates based on the assumed NTP date, as shown in **Exhibit 8 - Project Schedule Calculation**.

D. OC SAN will consider an alternative CONSULTANT-proposed schedule provided it is consistent with OC SAN resources and schedule constraints and adds value to OC SAN.

PROJECT MILESTONE AND DEADLINES	
MILESTONE	**DEADLINE**
Preliminary Design NTP / Kickoff Meeting	The kickoff meeting will be scheduled to coincide with the Preliminary Design NTP.

PROJECT MILESTONE AND DEADLINES	
MILESTONE	**DEADLINE**
Submit draft Preliminary Design Report (PDR)	**175** workdays from the Preliminary Design NTP. CONSULTANT shall establish a schedule with the OC SAN PM for separately submitting working drafts of each Design Memo for OC SAN review prior to completing the draft PDR. This schedule shall factor in the logical sequence for completing the memos as well as both CONSULTANT and OC SAN resources.
OC SAN Review of draft PDR	**20** workdays from receipt of Draft PDR
Submit final Preliminary Design Report	**20** workdays from receipt of OC SAN comments on Draft PDR.
Final Design NTP	CONSULTANT's schedule shall allow **15** working days from submittal of the final PDR to receipt of the Design Phase NTP.
Submit Design Submittal 1 (DS1)	**80** workdays from Design Phase NTP.
OC SAN Review of DS1	**20** workdays from receipt of DS1
Submit Design Submittal 2 (DS2)	**80** workdays from receipt of OC SAN comments on DS1.
OC SAN Review of DS2	**20** workdays from receipt of DS2
Submit Design Submittal 3 (DS3)	**85** workdays from receipt of OC SAN comments on DS2.
OC SAN Review of DS3	**20** workdays from receipt of DS3
Submit Final Design Submittal (FDS)	**30** workdays from receipt of OC SAN comments on DS3. CONSULTANT shall **continue** work upon submission of DS3, except as required to participate in OC SAN meetings
OC SAN Review of FDS	**20** workdays from receipt of FDS
Final Technical Specifications and Plans	**20** workdays from receipt of OC SAN comments on FDS.

2. PHASE 2 – PRELIMINARY DESIGN

The preliminary design phase will define the project. The final deliverable of this phase will be a Preliminary Design Report (PDR) with the basis of design for all elements of the project.

2.0 PRELIMINARY DESIGN EXECUTION

2.0.1 MAJOR DECISIONS

A. The CONSULTANT shall plan the resolution of major decisions through the following process:

1. Identify major decisions early and the timing required to prevent impacts to the project schedule.

2. Identity the decision-making method that will be used to gain OC SAN concurrence and provide appropriate opportunities for OC SAN to provide input.

3. Identify and schedule at the start of the project the workshops, technical design meetings and focused meetings where major decisions will be made and include a list of required attendees.

B. These decisions should be tracked on the Decision Log and flagged as a major decision.

2.1 PRELIMINARY DESIGN PRODUCTION

2.1.1 GENERAL

A. Preliminary Design Report (PDR) production involves the preparation of design memos, drawings, calculations, and other supporting material resulting in the PDR.

2.1.2 DESIGN MEMOS

A. The CONSULTANT shall produce Design Memos as indicated below in accordance with **Exhibit 1 - Preliminary Design Report Requirements.** The CONSULTANT shall discuss the combining of design memos with OC SAN and develop a design memo submittal list.

☒**Process Design Configuration**
- ☐Design Configuration
- ☐Redundancy
- ☐Monitoring and Sampling
- ☒Process Flow Diagrams
- ☐Operating Philosophies
- ☒Site and Facility Layouts
- ☐Preliminary Load Criticality Ranking Table

☐**Hydraulic Analysis**
- ☐Hydraulic Analysis
- ☐Hydraulic Profile

☒**Demolition**
- ☒Describe Demolition Requirements
- ☒Demolition List
- ☒Demolition Plans
- ☒Demo EID

☒**Rehabilitation Requirements**

☐**Geotechnical Data Report**
- ☐Review of Existing Data - Preliminary Geotechnical Report
- ☐Geotechnical Data Report and Recommendations

☒**Civil Design Parameters**
- ☒General Civil
- ☐Drainage Requirements
- ☒Corrosion Protection Requirements

☐**Utility Requirements**

☒**Structural Design Parameters**

Summary of findings and recommendations for structural rehab of all concrete elements, deck structure/ loading requirements, and to seal the gaps in the deck to prevent gas leakage. Include the mixing system condition assessments and recommendations

☐**Architectural Design Parameters**

☒**Process Mechanical Design Parameters**

☐**Building Mechanical Design Parameters**

☐**Fire Protection**
- ☐Fire Protection Requirements
- ☐Fire Water Flow Analysis
- ☐Fire Protection Requirements for Existing Facilities

☒**Electrical**
- ☒Codes/standards. Brief description of electrical system. Electrical drawings.
- ☐Identify Electrical System Impacts
- ☐Report – Data Collection and Verification

☐Preliminary Load List
☐Preliminary Standby Power Requirements
☐ETAP – Preliminary Short Circuit Analysis and Load Flow/Voltage Drop Studies
☐ETAP – Provide Data. OC SAN will perform ETAP studies.
☐Preliminary Analysis for cable pull calcs, ductbank cable derating, cable tray fill calcs.
☒Hazardous Area Classification Requirements

☒**Instrumentation and Control**
☒Instrumentation and Control System
☒Specialty Safety Systems
☒Preliminary SAT
☒PLC and RIO Panel Location Map
☐CCTV Coverage Map
☒NFPA 820 Risk analysis (see Preliminary Design Activities)

☐**Landscaping**
☐Landscaping Requirements
☐Develop up to **[three]** alternative concepts for review and acceptance

☒**Plant Utility Investigation Findings**

☐**Vibration Analysis**

☐**Collections Basis of Design**
☐Codes and Standards
☐Hydraulic Analysis
☐Pipeline Basis of Design
☐Manhole Basis of Design
☐Hydraulic Profiles

☐**Collections Rehabilitation Alternatives**
☐Pipeline Rehabilitation
☐Manhole Rehabilitation

☐**Collections Pipeline Design**
Assume 3 viable alignment options
☐Design Memo Items 1-12
☐Open-cut vs. Trenchless Technologies
☐Trenchless Technologies at Major Closings

☐**Collections Utility Investigation Findings**

☐**Collections Conceptual Traffic Control**
☐AHJ and Traffic Control Identification
☐Basis for Traffic Control Strategy
☐Traffic Analysis
☐Traffic Control Plans

☒**Design Safety Requirements**
☒Design Safety Requirements
☒Identify all potential project specific safety issues
☒Identify all potential Cal OSHA and OC SAN safety issues
☒Identify construction safety hazards
☐Use Sample Full Project Safety Review Plan to verify safety elements
☐Risk Management Check List to verify safety elements
☐HAZOP

☐**Public Impacts**

☒**Environmental and Regulatory Requirements**
☐CEQA Part of Programmatic EIR
☒CEQA work consists of a Notice of Exemption (NOE). The NOE will be filled by OC SAN.

☐Determine project environmental and regulatory requirements
☐Matrix of CEQA and Permit Requirements
☐Mitigation, Monitoring and Reporting List

☐**Permit Requirements**
☐List of Permits Required
☐Oil Well Abandonment

☐**Stormwater Requirements**

☒**Hazardous Material Survey, Mitigation and Control**

☐**Maintainability**
☐Define Maintainability Requirements
☐Maintainability Requirements Plan Drawings
☐Define Maintainability Rules
☐Define Maintainability Information for Project Specific Equipment

☐**Facility Operation and Maintenance**
☐Facility O&M Requirements
☐Preliminary Assessment of O&M Staffing Requirements

☒**Implementation Plan**
☒Identification of Adjacent Projects
☒Preliminary Commissioning Checklist
☒Preliminary Construction Sequencing Plan
☒Review of Constructability Issues
☒Temporary Handling of Flow. Refer to Project Element no.1 for work inside splitter box.

☐**Construction Odor Monitoring and Mitigation**

☒**Preliminary Technical Specification List**

B. The final design memos will be combined into a single PDR document

2.1.3 PRELIMINARY DESIGN DRAWINGS

A. The CONSULTANT shall produce the following Preliminary Design Report drawings in accordance with **Exhibit 1 - Preliminary Design Report Requirements.**

☒General
☒Demolition
☒Civil
☐Landscape
☒Structural
☐Architectural
☒Mechanical
☒Electrical
☒Instrumentation and Control

2.1.4 PRELIMINARY DESIGN REPORT (PDR) PRODUCTION, CONTENTS AND ORGANIZATION

A. Preliminary Design Report (PDR) Production involves the preparation of design memos, drawings, calculations, and other supporting material resulting in the PDR.

B. The CONSULTANT shall combine the materials described below into a draft PDR. The PDR shall be structured as outlined below, with the contents corresponding to the tasks listed in this Scope of Work.

Volume 1 – Preliminary Design Report Technical Memos
Executive Summary
Design Memos
Design Memo 1, 2, 3, etc.

List of Proposed Specification Sections

Volume 2 – Drawings (see Preliminary Design Drawings list below)

Volume 3 – Submittal Documentation

Calculations
Equipment Data & Catalog Cuts
Decision Log
Meeting Minutes

C. The Executive Summary shall summarize the conclusions of the Memos included in the report, and specifically include a summary construction schedule and construction cost estimate.

D. The draft PDR and final PDR shall be submitted in searchable PDF format legible on-screen and as a hard copy. The number of hard copies is indicated in **Exhibit 9 - Deliverables Quantities**. The labeling and organization of the PDF submittal shall be in accordance with **Exhibit 14 - Bluebeam Designer Training for Submission**.

E. Each evaluation memo and design memo shall be a separate file.

F. The OC SAN Project Manager may request that the CONSULTANT submit an electronic proof set of the Draft PDR and Final PDR prior to hard copy production in order to initially confirm that the submittal is ready for printing.

2.1.5 PRELIMINARY DESIGN COST ESTIMATE

A. The CONSULTANT shall provide a cost estimate for the associated PDR submittal indicated below in accordance with **Exhibit 1 - Preliminary Design Report Requirements**.

2.2 PRELIMINARY DESIGN ACTIVITIES

The following services shall be provided by the CONSULTANT or an appropriately qualified subconsultant. In any case, the CONSULTANT shall be responsible for managing all subconsultants, including reviewing their work products prior to submission to OC SAN.

2.2.1 EASEMENTS, PROPERTY BOUNDARIES AND WORK AREA LIMITS

1. Not in this SOW

2.2.2 TOPOGRAPHIC SURVEY

1. Not in this SOW

2.2.3 GEOTECHNICAL INVESTIGATION

1. Not in this SOW

2.2.4 PLANT UTILITY INVESTIGATION

A. To better manage the risks associated with construction, CONSULTANT shall perform a thorough search of all utilities impacted by the work for all applicable Project Elements of this Scope of Work, regardless of size and all other facilities above or below ground.

B. Review of OC SAN Records

1. OC SAN's "As-built/Record" plans may be incomplete or inaccurate with respect to the routing of individual utilities, pipelines, etc. in the vicinity of the project. CONSULTANT shall check OC SAN records against utilities in the field by document research. Affected utilities may include, but not be limited to, instrument air, gas (natural and digester), oxygen, water (potable and non-potable), and wastewater pipelines; telephone (copper cable) and electrical conduit and duct banks, instrumentation, telecommunications, storm drains, manholes, and other structures.

C. On-Site Inspection

1. An on-site inspection shall be made in the project area. During the on-site inspection, a senior-level CONSULTANT representative shall walk the site accompanied by OC SAN's

Project Engineer and Supervising Inspector. The CONSULTANT representative shall be experienced in the location and identification of utilities in the field. During the on-site inspection the CONSULTANT shall document all visible features that indicate utilities within the project area and compare them with the available utility plans.

2. Confined space entries into the Aeration Basins shall be made to investigate utilities in the interior of the basins.

D. Subsurface Utility Investigations

1. For the underground oxygen piping, investigation of existing utilities shall be done in accordance with the respective ASCE guidelines, except as amended by this Scope of Work. A brief description of the ASCE guidelines defines the Quality Level of detail for researching subsurface utilities as follows:

a. **Quality Level D:** Information derived from existing records or oral recollections.

b. **Quality Level C:** Information obtained by surveying and plotting visible above-ground utility features and by using professional judgment in correlating this information to Quality Level D information.

c. **Quality Level B:** Information obtained through the application of appropriate surface geophysical methods to determine the existence and approximate position of subsurface utilities. Quality Level B data shall be reproducible by surface geophysics, such as ground penetrating radar, at any point of their depiction. This information is surveyed to applicable tolerances and reduced onto plan documents.

d. **Quality Level A:** Precise horizontal and vertical location of utilities obtained by the actual exposure (or verification of previously exposed subsurface and surveyed utilities) and subsequent measurement of subsurface utilities, usually at a specific point. Minimally intrusive excavation equipment is typically used to minimize the potential for utility damage. A precise horizontal and vertical location, as well as other utility attributes, is shown on the plan documents. Accuracy is typically set to 15-mm vertical and to applicable horizontal survey and mapping accuracy.

2. Refer to CI/ASCE 38-02, Standard Guidelines for Collection and Depiction of Existing Subsurface Utility Data for details.

3. CONSULTANT shall determine all utilities impacted by the work for all applicable Project Elements of this Scope of Work. Utilities include all in-plant utilities, duct banks, and other interferences. All utilities encountered during the preliminary design shall be shown on the plans.

4. Subsurface investigation for all utilities in and around the work area shall be performed to Quality Level D and Quality Level C. All utilities shall be plotted both in plan and profile on a scaled drawing that can later be incorporated into scaled (1” = 40’) plan drawings.

5. CONSULTANT shall submit, for acceptance by OC SAN, recommendations on which utilities should be investigated to Quality Level A and where Quality Level B investigations should be performed. As part of the submittal, a Potholing Plan and Geophysical Investigation Plan shall be developed including proposed pothole locations and type of geophysical investigation.

6. Prior to OC SAN’s acceptance of the Potholing Plan/Geophysical Investigation Plan, a project field walk by the CONSULTANT Project Manager, OC SAN Project Engineer, Supervising Inspector, and other designated OC SAN personnel shall be performed.

E. Potholes Investigation (for the two 12” oxygen pipes)

1. CONSULTANT shall secure the services of a subcontractor to perform the pothole work and geophysical investigation (including ground-penetrating radar).

2. CONSULTANT shall “pothole” and perform geophysical investigation on all utilities described and shown in the accepted Potholing Plan/Geophysical Investigation Plan. CONSULTANT’s staff shall be on-site during potholing to provide direction to the potholing crew. OC SAN staff shall also be present during potholing. Field investigations include visiting the project work site and each utility to verify the location of all interferences.

3. CONSULTANT shall provide all the related work necessary, including, but not limited to:

   a. Documentation of information

   b. Notification of USA’s “Dig Alert”

   c. Providing field survey

   d. Obtaining required permits

   e. Submission of traffic control plans (per WATCH manual) and setup of traffic control

   f. Marking out pothole locations with water-based paint to facilitate removal

   g. Soft dig potholing and ground-penetrating radar

   h. Excavation and backfill

4. “Soft” excavation potholing methods such as vacuum extraction is preferred; however, excavation methods shall be chosen to adequately define the utility. Crosscut trenches may be preferred for defining some utility locations. Hydro-jetting soft dig should be avoided in sandy, wet and contaminated soil conditions.

5. Potholing subcontractor shall measure and document the depth of pavement and of base material at each pothole, and every five feet along crosscut trenches. All potholes shall be provided with GPS coordinates to document findings onto Plans.

6. Work conducted within OC SAN’s treatment plants shall comply with the requirements of the OC SAN Stormwater Management Plan.

7. The results of potholing and geophysical efforts shall be summarized in a field findings report.

8. CONSULTANT shall backfill and repair potholes. CONSULTANT shall assume the following requirements:

   a. The materials removed from the excavation may be used to fill potholes and shall be placed with a maximum lift thickness of four inches and mechanically compacted.

   b. AC pavement shall be replaced to full depth or the structural section (AC & Base) plus two inches with hot mix asphalt unless otherwise. Cold mix is allowed.

   c. Concrete pavement shall be replaced to full depth plus two inches with Portland cement unless otherwise required.

F. Quantitative Assumptions

1. Four potholes shall be assumed for purposes of the Request for Proposal.

G. Depiction of Utilities and Potholes on Plans

1. All utilities encountered during the preliminary design shall be shown on the Plans. Each subsurface utility shown on the drawings shall include the Quality Level to which it was investigated as required by CI/ASCE 38-02.

2. Pothole locations shall be shown on drawings with survey information using GPS coordinates or plant datum.

2.2.5 FIRE PROTECTION SERVICES (NOT IN THIS SCOPE)

2.2.6 ELECTRICAL LOAD MEASUREMENTS (NOT IN THIS SCOPE)

2.2.7 PUBLIC RELATIONS (NOT IN THIS SCOPE)

2.2.8 CONDITION ASSESSMENT AND EVALUATION (SUBS CONFIRMED TO BE SCOPED AS ORIGINALLY PLANNED)

A. Concrete Structures

a. A visual inspection of the conditions of the aeration basin structure (interior and exterior), purge fan rooms, and Scott Tunnel will be required to determine the cause of damage and the extent of damage, prior to formulating repair details.

b. Core samples and surface penetrating radar may be necessary to obtain additional information such as concrete thickness and deterioration, rebar locations, carbonation, and any other deficiencies. Refer to Exhibit 19.3 for existing concrete core lab results already taken.

c. Liquid and gas leakage from deck appurtenances shall be considered when developing repair details to prevent fluid leakage.

d. A structural analysis for the concrete deck of the aeration basins will be required, including vehicle load calculations, to determine if the structural capacity can be attained prior to formulating repair details. Typical OC SAN maintenance vehicles, crane and equipment shall be taken into account in the load analysis. CONSULTANT shall consider if there is sufficient structural distress to warrant not restoring the deck's structural integrity to its original design. Refer to Exhibits 19.1 to 19.4 for additional details.

e. Summarize findings and recommendations in the Structural Design Parameters Design Memo.

2. Mechanical Equipment

a. Inspect the mixer blades, ductwork (above ground portion only), and pipe supports to determine condition and need for replacement.

b. Summarize findings and recommendations in the Rehabilitation Requirements Design Memo.

2.2.9 NFPA 820 RISK ANALYSIS

The current LEL monitoring system combines hardwired interlock and software interlock via Programmable Logic Controller (PLC) to isolate the Aeration Basins of Oxygen (O2). For example:

1. Hardwired Combustible Gas Monitor Relay High-High Alarm Contact Purging Sequence

- Closing the O2 valves
- Opening the vent valves
- Turning on the purge blowers
- Shutdown of 1st and 2nd Stage Aeration Basin Mixers
- Shutdown of 3rd and 4th Stage Aeration Basin Mixers

Hardwired Interlock uses a programmed High-High %LEL Alarm on the Gas Monitor relay contact to initiate the above sequence irrespective of the PLC mode.

2. Software-Configured Gas Monitor Transmitter Process Control Operation

The PLC control logic can be bypassed in the field via a 'NORMAL/BYPASS' selector switch – when active, the sequence is as follows:

High %LEL Alarm (Operator-adjustable)

- Closing the O2 valves
- Opening the vent valves
- Turning on the purge blowers

High-High %LEL Alarm (hardcoded, non-adjustable)

- Shutdown of 1st and 2nd Stage Aeration Basin Mixers
- Shutdown of 3rd and 4th Stage Aeration Basin Mixers

When System is in 'BYPASS' mode, the PLC will disregard the LEL Monitor's analog input readings. The hardwired shutdown sequence is only able to be reset once %LEL is below High-High setting programmed at Monitor and via the 'RESET' pushbutton in the field is pressed, as the High-High Shutdown uses a latching relay.

PLC is to also include 'Test' and 'Reset' functionalities. Activation of the 'TEST' function at the PLC/HMI level will initiate the High and High-High Alarms programmed in the PLC as mentioned above and enable the above-mentioned equipment functions. The 'RESET' function will return the state of the Blowers, Valves, and Mixers to their normal operation, subject to LEL Monitor readings. PLC 'TEST' and 'RESET' functions are not able to bypass the hardwired interlocks for the High-High LEL shutdown sequence.

CONSULTANT is to validate integrity of the above safety operation in accordance with NFPA 820 and provide a Risk Analysis if a Safety Instrumented System (SIS), via dedicated controller independent of Plant PLC, should be provided to shut down the mixers, close the O2 valves, open vent valves and initiate purge blowers by monitoring the %LEL with respect to the O2 concentration in the 4th stage mixers, as a fixed ratio, as a requirement for combustibility potential.

2.2.10 SPECIALTY SERVICE

A. Confined space support, certification, and development of confined space entry procedures will be required prior to any entries into the aeration basins.

2.2.11 VALUE ENGINEERING ASSISTANCE (NOT IN THIS SCOPE)

2.2.12 ENVIRONMENTAL DOCUMENTATION (NOT IN THIS SCOPE)

2.2.13 PERMITTING ASSISTANCE (NOT IN THIS SCOPE)

2.2.14 PROJECT MANAGEMENT

A. CONSULTANT shall be responsible for managing CONSULTANT's project execution, schedule, budget, subconsultants, and coordination with other projects. The CONSULTANT shall perform the project management requirements in accordance with **Exhibit 3 - Project Management Requirements** with the project specific options identified below.

B. Project Management Plan (PMP):

☐Not required

☒Required

☐PMP approval prior to beginning technical work on the project.

C. Project Logs

☒Major Decision Log

☒Project Decision Log

☒Action Item Log

☒Decision Issues Log

☒Meeting Log

☒Risk Management Log

D. Progress Report

☐Not required

☒Required

E. Project Invoices

1. Costs for invoicing shall be grouped into the following work packages:

Work Package	Description	Tasks
3146	Preliminary Design	**All Phase 2 tasks, except those listed above.**
3250	CONSULTANT Services During Design	**Task 3.2.12**
3251	Design Submittal 1	**All other Tasks, divided into effort by design submittal. FDS is charged against DS3.**
3252	Design Submittal 2	
3253	Design Submittal 3	
3254	Bid Support Services	**Task 3.4**

2.2.15 RISK MANAGEMENT

A. When required below, CONSULTANT shall provide risk management in accordance with **Exhibit 4 - Risk Management Requirements** with the project specific options identified below.

B. Risk Management:

☐Not required
☒Required
☐Initial Risk Workshop
☒PDR Risk Management Workshop: **2-3** hours. (held **4** weeks prior to draft PDR at OC SAN or held virtually)

C. Moderator

1. CONSULTANT shall conduct the Workshops defined in **Exhibit 4 - Risk Management Requirements**.

2.2.16 QUALITY CONTROL

A. The CONSULTANT shall provide quality control requirements in accordance with **Exhibit 6 - Quality Control Requirements**.

2.3 PDR WORKSHOPS AND MEETINGS

2.3.1 GENERAL

A. Workshop and meeting planning, requirements, agendas, and meeting minutes shall be in accordance with **Exhibit 5 - Workshop and Meeting Requirements**.

2.3.2 PDR PRODUCTION WORKSHOPS

A. Predesign Kickoff Workshop

1. A two-hour project kick-off meeting shall be held with OC SAN staff to introduce principal members of OC SAN and CONSULTANT's teams. The discussion topics shall include: OC SAN responsibilities, CONSULTANT's responsibilities, invoice procedures, personnel badges, parking, site access, CONSULTANT's Scope of Work, detailed project schedule with milestones, Work Breakdown Structure requirements, and OC SAN confined space and other safety policy training.

B. PDR Production Workshops shall be held during Preliminary Design to review the topics listed below in the table. The list below also indicates the number of workshops to be held to cover the specific topic. Unless otherwise noted, each workshop shall be 2 hours in length.

PDR PRODUCTION WORKSHOPS	
TOPIC	**NUMBER OF WORKSHOPS**
Predesign Kickoff Workshop (Intro, Overall Scope, Plan of Attack, Coordinate Assessment, etc.)	1
Condition Assessment Planning for Interior Of Aeration Basins	1
Deck Evaluation and Findings of Condition Assessment) – Discuss Alternatives	2
Mechanical Equipment Evaluation (1st meeting overall equipment / manufacturers, 2nd meeting aerator -sole source issues?)	2
Purging and Testing Procedures of Oxygen Pipe (identify risks, valves up/downstream, purging, etc.)	1
Electrical and Instrumentation and Control	3 (keep at 3)
NFPA 820 Risk Analysis	1 (keep)
Implementation Plan and Sequencing Constraints	2 (1 for E / I&C implementation, (1) for bypass / temp equipment for rehab)

2.3.3 PDR REVIEW WORKSHOPS

A. CONSULTANT shall hold the following workshops to review the draft Preliminary Design Report as required in **Exhibit 5 - Workshop and Meeting Requirements**:

1. Draft PDR Review Workshop

2.3.4 EQUIPMENT AND PROCESS REDUNDANCY WORKSHOP

A. Not in the SOW

2.3.5 MAINTAINABILITY WORKSHOPS

A. Not in the SOW

2.3.6 PDR CONSTRUCTABILITY WORKSHOP

A. A constructability workshop shall be held after the draft PDR submittal review to identify any fatal flaws in the design relative to constructability. Some of the subjects that shall be covered in this workshop include the following: conflicts between design disciplines, geotechnical considerations, construction sequencing, power outages, equipment shutdowns, viability of equipment relocation, safety, operational requirements, access for maintenance, size-critical equipment requirements and constraints, permitting, public nuisance issues, other local conditions and constraints.

B. This workshop shall be held at OC SAN facilities and shall generally be four-hours in length. OC SAN and CONSULTANT staff shall attend this workshop.

C. CONSULTANT shall be responsible for completing the following tasks relative to the workshop:

1. Prepare package for constructability review workshop participants. The package shall consist of detailed plans and specifications and other information selected by CONSULTANT.

2. Prepare presentation on the project.

3. Summarize the constructability review workshop comments and action taken on each comment in a memorandum.

4. All comments and recommendations of the workshop shall be incorporated into Implementation Plan Design Memo and the Bid Documents.

2.3.7 TECHNICAL PROGRESS MEETINGS

A. Technical Progress Meetings shall be held every two-weeks to review various issues with OC SAN's project team. The CONSULTANT shall coordinate with the OC SAN Project Manager to determine what topics will be covered in what meetings, and what OC SAN and CONSULTANT team members are required for each.

2.3.8 FOCUSED MEETINGS

A. Focused meetings shall be held throughout preliminary design to discuss specific issues in detail and generate comments and direction from OC SAN staff. The following tentative list of topics may be covered in these meetings:

1. Salvage and reuse of existing mechanical equipment
2. Safety Standards, confined space requirements, and other safety requirements
3. Potholing and existing utilities
4. Utility tie-ins and process outages
5. Deck repairs, concrete rehabilitation, and protective coating
6. Influent splitter box repairs and constraints
7. Vehicle deck loading requirements
8. Risks when working with live oxygen in the aeration basin and piping
9. Demolition and abandonment
10. Technical definitions/equipment data sheets
11. Control strategies including normal/abnormal/emergency schemes
12. Control panels and instrumentation, RIO capacity
13. EID and P&ID requirements and basis for equipment tag numbering
14. Construction sequencing and restrictions, inspections, contractor access, and outages
15. Procurement constraints
16. Coordination with other projects
17. Additional meetings as necessary

B. Meeting lengths shall be as required to cover the topic in question. Depending on subject matter and attendees, one meeting may cover multiple subjects. CONSULTANT shall determine how many meetings will be needed to cover these topics. CONSULTANT may suggest

additional topics as necessary. Supplementary meetings may be scheduled with OC SAN staff, as necessary to allow coordination between CONSULTANT and OC SAN staff.

2.3.9 COORDINATION WITH OTHER PROJECTS MEETINGS

A. The project shall be a complete and fully functional facility that is integrated with existing facilities and coordinated with other construction projects. CONSULTANT shall coordinate potential conflicts with the following adjacent projects and participate in the number of meetings indicated in the following table:

B. CONSULTANT shall conduct the meetings listed below in Phase 3 – Design. The CONSULTANT shall allow the following time for each meeting:

MEETINGS	NUMBER	DURATION
Project Coordination Meetings	4	1 hour each

2.3.10 STORMWATER COMPLIANCE MEETING

A. Not in this SOW.

3. PHASE 3 – DESIGN

3.0 BID DOCUMENTS

3.0.1 GENERAL

A. CONSULTANT shall provide engineering services to prepare biddable plans, technical specifications, and other Bid Documents as required based on the design concepts and criteria developed during Phase 2 - Preliminary Design. In this Scope of Work, construction documents include specifications; drawings; cable, conduit and cable tray schedules; commissioning plan materials; equipment and instrumentation database (EID); SCADA Administration Tool (SAT); and bypassing plans.

3.0.2 ENGINEERING DESIGN GUIDELINE UPDATES

A. All changes in OC SAN's Engineering Standards, OC SAN's Design Guidelines, and/or changes in design concepts and facility layouts as a result of OC SAN comments that may occur up to transmittal of OC SAN comments on Design Submittal **2**, shall be incorporated into the Design by CONSULTANT with no increase in CONSULTANT's Not-to-Exceed upper limit on fees.

3.0.3 GENERAL REQUIREMENTS AND ADDITIONAL GENERAL REQUIREMENTS

A. The following are the minimum Additional GRs topics required for this project:

☒Summary of Work
☒Work Sequence
☒Work Restrictions
☐Permits
☐Environmental Restrictions and Controls
☒Measurement and Payment (includes Mobilization/Demobilization)
☒Contractor's Construction Schedule and Reports
☒Seismic Design Criteria (for those restraints, supports, etc. to be design by the Contractor)
☒Shipping, Storage and Handling
☒Project Control Management System (PMWeb construction management software)
☒Equipment Service Manuals
☒Equipment and Instrument Database (EID)
☒Commissioning
☒Training of OC SAN Personnel

☒Hazardous Materials Mitigation and Controls
☐Mold Remediation and Controls

3.0.4 DESIGN SUBMITTALS

A. The CONSULTANT shall produce the following design submittals as indicated below in accordance with **Exhibit 2 - Design Requirements.** If a design submittal is eliminated, then the design submittal shall include the requirements associated with the required design submittal along with the requirements associated with the previous unchecked design submittals.

☒Design Submittal 1
☒Design Submittal 2
☒Design Submittal 3
☒Final Design Submittal
☒Final Technical Plans and Specifications

B. Continuing Work After Design Submittal Submission

☒CONSULTANT is expected to **continue design work** on the project while OC SAN staff reviews Design Submittal 1 and Design Submittal 2. For Design Submittal 3, CONSULTANT shall stop all design work until receipt of OC SAN comments on that submittal.
☐CONSULTANT is expected to **stop design work** on the project until OC SAN staff completes the review of each Design Submittal.

3.0.5 CABLE AND CONDUIT SCHEDULE

☒CONSULTANT shall put the cable and raceway schedule on the drawings. CONSULTANT may utilize an Excel spreadsheet and copy the spreadsheet onto the drawings.
☐CONSULTANT shall utilize OC SAN's Microsoft Access Cable and Raceway Schedule database electronic format. See exhibit titled "Cable Conduit and Tray Schedule Database".

3.0.6 COMMISSIONING PLAN MATERIALS

A. The CONSULTANT shall provide a commissioning plan materials in accordance **Exhibit 2 - Design Requirements.**

B. Specification Section 01810, Commissioning

☐OC SAN will prepare Section 01810
☒CONSULTANT shall edit Section 01810

C. ORT Procedures

☐OC SAN will prepare ORT procedures
☒CONSULTANT shall prepare ORT procedures using OC SAN's ORT procedure generator
☐CONSULTANT shall prepare new ORT procedures **[consisting of:]**

D. Pre-FAT Procedures

☐Pre-FAT procedures not required
☐OC SAN will prepare Pre-FAT procedures
☒CONSULTANT shall prepare Pre-FAT procedures

E. FAT Procedures

☐OC SAN will prepare FAT procedures
☒CONSULTANT shall prepare FAT procedures

F. RAT Procedures

☐RAT procedures not required

☐OC SAN will prepare RAT procedures
☒CONSULTANT shall prepare RAT procedures

G. PAT Procedures

☒PAT procedures not required
☐OC SAN will prepare PAT procedures
☐CONSULTANT shall prepare PAT procedures

3.0.7 EQUIPMENT AND INSTRUMENTATION DATABASE (EID)

☐EID is not required.
☐OC SAN will develop the EID in accordance **Exhibit 2 - Design Requirements.**
☒CONSULTANT shall develop EID in accordance **Exhibit 2 - Design Requirements.**

3.0.8 SCADA ADMINISTRATION TOOL (SAT)

☐SAT is not required.
☐OC SAN will develop the SAT in accordance **Exhibit 2 - Design Requirements.**
☒CONSULTANT shall develop the SAT in accordance **Exhibit 2 - Design Requirements.**

3.0.9 CONSTRUCTION SUBMITTAL ITEMS LIST

☐OC SAN will develop the Construction Submittal Items List in accordance with **Exhibit 2 - Design Requirements.**
☒CONSULTANT shall develop the Construction Submittal Items List in accordance with **Exhibit 2 - Design Requirements.**

3.0.10 TEMPORARY FACILITIES DURING CONSTRUCTION

☐Temporary facilities and bypass pumping are not required.
☐Temporary facilities and bypassing during construction may be required, as described under the “Temporary Facilities During Construction” paragraph under the Project Elements, and shall be described in words on the drawings and technical specifications.
☒Detailed plans and work sequence for temporary facilities and bypassing during construction, as described under the “Temporary Facilities During Construction” paragraph under the Project Elements.

3.1 DESIGN SUPPORT DOCUMENTATION

3.1.1 DESIGN SUBMITTAL SUPPORT DOCUMENTATION

A. The CONSULTANT shall provide a Design Submittal Support Documentation in accordance **Exhibit 2 - Design Requirements.**

B. Design Information

1. CONSULTANT shall include the following material with each Design Submittal:

   a. CONSULTANT shall maintain the Project Logs specified under Phase 2 Project Management through Phase 3. Current copies of all logs shall be included with each Design Submittal.

   b. Written response log to OC SAN comments on the previous submittal..

   c. Calculations.

   d. Proposed list of suppliers to be named in the specifications for major equipment

   e. Draft or final Field Findings Reports not submitted in the previous submittal and those revised since the previous submittal.

   f. Equipment data sheets

g. Equipment catalog cuts and vendor quotations.

h. Commissioning Package List: The Preliminary Commissioning Package List first developed in the PDR Production Phase shall be updated in each Design Submittal and used as a starting point to develop the list of commissioning procedures.

i. All memos that may be been prepared since the previous submittal was delivered.

C. Facility Operation and Maintenance

☒Not required.
☐Update operating philosophies
☐Update estimates of Operation and Maintenance staffing requirements

D. Electrical Design Documentation

☐Electrical design documentation not required.
☐Updated Electrical Load Criticality Table
☐Electrical Analysis Report
☒Load list for all equipment
☐Equipment sizing from three manufacturers for motor control centers, switchgear, transformers and power panels
☐Lighting calculations
☐Standby generator sizing calculations
☐Ductbank cable pulling tension, derating and cable tray fill calculations
☒ Panel heat load calculations

E. Power System Studies

☐ETAP not required.
☒Plant ETAP model for the project performed by OC SAN.
☐Plant ETAP model for the project performed by CONSULTANT.
☐Electrical Systems Analysis Report performed by CONSULTANT.

3.1.2 CONSTRUCTION COST ESTIMATE

A. The CONSULTANT shall provide a cost estimates for the associated design submittal indicated below in accordance with **Exhibit 2 - Design Requirements.**

☒Design Submittal 1
☒Design Submittal 2
☒Design Submittal 3
☒Final Design Submittal

3.1.3 CONSTRUCTION SCHEDULE

A. The CONSULTANT shall provide a Preliminary Construction Schedule for the associated design submittal indicated below in accordance with **Exhibit 2 - Design Requirements.**

☐Construction Schedule is not Required
☒ Design Submittal 1
☒Design Submittal 2
☒Design Submittal 3
☒Final Design Submittal

3.1.4 PROCUREMENT ALTERNATIVES

A. The CONSULTANT shall recommend the appropriate procurement alternatives as described in **Exhibit 2 - Design Requirements**.

☒Procurement alternatives not required

☐Procurement alternatives required

B. Equipment that may be needed to be obtained from a sole source supplier for this project includes:

1. Not in SOW

C. Equipment to be pre-qualified will include:

1. Not in SOW

3.2 DESIGN ACTIVITIES

The following services shall be provided by the CONSULTANT or an appropriately qualified subconsultant. In any case, the CONSULTANT shall be responsible for managing all subconsultants, including reviewing their work products prior to submission to OC SAN.

3.2.1 EASEMENTS, PROPERTY BOUNDARIES AND WORK AREA LIMITS

A. Not in this SOW.

3.2.2 TOPOGRAPHIC SURVEY

A. Not in this SOW.

3.2.3 GEOTECHNICAL BASELINE REPORT

A. Not in this SOW.

3.2.4 UTILITY AND SITE INVESTIGATIONS

A. CONSULTANT services related to Utility Investigation on the project are specified in Phase 2 – Preliminary Design and those services shall continue during Phase 3 – Design as required. CONSULTANT shall allocate the budgeted hours between Phase 2 and Phase 3 based on when these services will be required..

3.2.5 FIRE PROTECTION SERVICES

A. Not in this SOW.

3.2.6 NOISE EVALUATION SERVICES

A. Not in this SOW.

3.2.7 TRAFFIC CONTROL SERVICES

A. Not in this SOW

3.2.8 PUBLIC RELATIONS

A. Not in this SOW.

3.2.9 SPECIALTY SERVICE

A. Not in SOW

3.2.10 ENVIRONMENTAL DOCUMENTATION

A. Not in this SOW.

3.2.11 PERMITTING ASSISTANCE

A. Not in this SOW.

3.2.12 PROJECT MANAGEMENT

A. CONSULTANT shall be responsible for managing CONSULTANT’s project execution, schedule, budget, subconsultants, and coordination with other projects. CONSULTANT services related to Project Management on the project are specified in Phase 2 – Preliminary Design and those services shall continue during Phase 3 – Design as required. CONSULTANT shall

allocate the budgeted hours between Phase 2 and Phase 3 based on when these services will be required.

3.2.13 RISK MANAGEMENT

A. CONSULTANT shall provide risk management in accordance with **Exhibit 4 - Risk Management Requirements**. Moderator shall be as specified for Phase 2 – Preliminary Design.

B. Risk Management:

☐Not required
☒Required
☒DS1 Risk Workshops: **1** hour (held during OC SAN's review of DS1 at OC SAN)
☒DS2 Risk Workshops: **1** hour (held during OC SAN's review of DS2 at OC SAN)
☒DS3 Risk Workshop: **2** hours (held during OC SAN's review of DS3 at OC SAN)

3.2.14 QUALITY CONTROL

A. The CONSULTANT shall provide Quality Control requirements in accordance with **Exhibit 6 - Quality Control Requirements**.

☒Independent Multi-Discipline Design Workshop is not required.
☐Independent Multi-Discipline Design Workshop is required. (minimum duration of **[4]** days)

3.3 DESIGN WORKSHOPS AND MEETINGS

3.3.1 GENERAL

A. Workshop and meeting planning, requirements, agendas, and meeting minutes shall be in accordance with **Exhibit 5 - Workshop and Meeting Requirements**.

3.3.2 DESIGN PHASE WORKSHOPS

A. The focus of workshops is to review project progress to date and the technical decisions that have been made in focused meetings. CONSULTANT shall conduct the workshops listed below in Phase 3 – Design. The CONSULTANT shall allow the following time for each workshop:

DESIGN PHASE WORKSHOPS	
WORKSHOP TYPE	**DURATION**
Design Review Meetings	**3** hours
Design Validation Meeting	**2** hours

B. The Design Review Meetings shall include the following topics, as applicable to the project:

1. Electrical and I&C
2. Structural
3. Mechanical
4. Construction Sequencing

C. During final design, design review and validation workshops shall be held after each design submittal, except FDS.

3.3.3 PRE-DS2 CONSTRUCTABILITY WORKSHOP

A. Not in this SOW

3.3.4 DESIGN PHASE MEETINGS

A. Technical Progress Meetings

1. Technical Progress Meetings shall be held every **4** weeks for **1.5** hours to review various issues with OC SAN's project team. The CONSULTANT shall coordinate with the OC SAN

Project Manager to determine what topics will be covered in what meetings, and what OC SAN and CONSULTANT team members are required for each.

B. Focused Meetings

1. Focused meetings shall be held concurrently with technical progress meetings to discuss specific issues in detail and generate comments and direction from OC SAN staff. The following tentative list of topics may be covered in these meetings:

a. Concrete repair methods and materials

b. Safety, hazardous areas, confined space and other safety requirements (e.g. Working with live oxygen piping, handrails, etc.)

c. Control concepts, Instrumentation and control upgrades, PLC and I/O layouts, panels

d. Sample P&ID; basis for equipment tag numbering; Sample control descriptions, Sample EID database, Sample SAT database

e. I/O relocation plan

f. Single-line diagrams, electrical demolition, conduit and cable schedules

g. Construction sequencing, inspections, construction constraints, and outage requirements;

h. Coordination with other projects; basis for Work Restrictions and Work Sequence

i. Additional meetings as necessary

2. Each meeting shall generally be **1.5** hours in length. CONSULTANT shall determine how many meetings will be needed to cover these topics. CONSULTANT may suggest additional topics as necessary. Supplementary meetings may be scheduled with OC SAN staff, as necessary to allow coordination between the CONSULTANT and OC SAN staff.

3.3.5 CONSULTANT OFFICE TECHNICAL MEETINGS (COTMS)

A. Not in this SOW

3.3.6 COORDINATION WITH OTHER PROJECTS MEETINGS

A. The project shall be a complete and fully functional facility that is integrated with existing facilities and coordinated with other construction projects. CONSULTANT shall coordinate potential conflicts with the following adjacent projects and participate in the number of meetings indicated in the following table:

MEETINGS	NUMBER	DURATION
Project Coordination Meetings	4	1 hour each

3.3.7 COMMISSIONING TEAM MEETINGS

A. Design phase commissioning team meetings shall be held every **two weeks** after completion of OC SAN's review **DS2**.

B. Meetings will generally be **one** hour in length. CONSULTANT shall determine how many meetings shall be needed to cover these topics and organize the topics accordingly. CONSULTANT may suggest additional topics as necessary. Supplementary meetings may be scheduled with OC SAN staff, as necessary, to allow coordination between CONSULTANT and OC SAN staff.

C. The Commissioning Team meetings shall cover the following subjects:

1. Provide a detailed review of the proposed construction sequencing plan and make recommendations for improvements. These recommendations shall be incorporated into the

plans and specifications as appropriate. Possible incentives for the Contractor to finish the project early shall be explored.

2. Identify procedures, testing requirements and sequencing for commissioning.

3. Develop a detailed outline of a commissioning plan based on the results of the recommended construction sequencing plan.

4. Prepare testing requirements and plan to prove process performance relative to design criteria developed in the PDR. Testing shall be performed after the RAT and supervised by the CONSULTANT.

5. Identify timing within the construction contract schedule when commissioning activities are required, including hold points for testing and inspection.

6. Identify roles and responsibilities of the Project Manager, Resident Engineer, Inspector, Project Engineer, PCI, Engineering support, Design CONSULTANT and Contractor.

7. Develop a timeline of commissioning

8. Develop a commissioning specification

9. Develop standard forms for testing and commissioning documentation

10. Electrical, mechanical and process tie-ins

11. Startup requirements and testing

12. O&M training

3.3.8 CONSTRUCTION SUBMITTAL ITEMS LIST MEETING

A. Meet with OC SAN between DS2 and DS3 to review the CONSULTANT's approach to developing the project Construction Submittal Items List using **Exhibit 18 - Master Construction Submittal Items List** and the CONSULTANT-provided specifications and discuss the grouping of submittals in commissioning packages and phases.

3.3.9 STORMWATER COMPLIANCE MEETING

A. Not in this SOW.

3.4 BID PHASE SUPPORT SERVICES

3.4.1 BID PHASE SUPPORT SERVICES

A. CONSULTANT shall provide the following bid period services:

1. Participate in the pre-bid meeting.

2. Prepare project drawing set and project specification addenda to provide clarification and resolve errors and omissions identified prior to bid opening.

3.4.2 BID EVALUATION ASSISTANCE

A. Participate in reviewing alternate equipment proposals from the Contractor, if applicable.

B. Participate in the evaluation of the submitted bids, furnish consultation and advice to OC SAN staff and assist with all the related equipment, cost, and other analyses as required to finalize the award decision.

3.4.3 CONFORMED DOCUMENT PREPARATION

A. Within **two** weeks of the bid date, prepare conformed documents set (drawings, databases, specifications, and other required materials) that incorporates the addenda. See Engineering Design Guidelines, Chapter 01, Design Guidelines – General Requirements, Section 01.4 "Preparation of Project Deliverables" for requirements as modified in Section V of this Scope of

Work, “Project-Specific Deviations from OC SAN Design Guidelines” and the requirements of the CAD Manual).

4. PHASE 4 – CONSTRUCTION AND INSTALLATION SERVICES

Not in this Scope of Work.

5. PHASE 5 – COMMISSIONING SERVICES

Not in this Scope of Work.

6. PHASE 6 – CLOSE OUT

Not in this Scope of Work.

7. GENERAL REQUIREMENTS

7.0 GENERAL

7.0.1 OC SAN ENGINEERING DESIGN GUIDELINES AND STRATEGIC PLAN

A. CONSULTANT shall refer to and adhere to the requirements of OC SAN Safety Standards, OC SAN Engineering Design Guidelines, any deviations to the Engineering Design Guidelines listed below, and other OC SAN’s Design Standards referenced therein. **Exhibit 16 - Spec Review using Microsoft Word and Teams**

B. **Exhibit 17** is a complete set of the OC SAN Safety Standards and OC SAN Design Standards, the latest edition at the time of the design proposal stage.

C. The Engineering Guidelines define what plant design concepts/tools/methods and project management requirements shall be adhered to and in what manner they shall be used/provided by Consultants, e.g., requirements regarding design concepts, submittals, documentation details, use of OC SAN Master Specifications, and other related OC SAN Standards, etc.

D. Refer also to Section “CONSULTANT’s Responsibilities” in OC SAN Engineering Design Guidelines Chapter 01. Refer to “Master Specifications Instructions for Use” that mandates rules and conventions to be used in all OC SAN project specifications.

E. The project Scope of Work defines whether or not each specific deliverable described in the Guidelines shall be part of the project and when each task shall take place.

F. The project Scope of Work also includes requirements that supplement and/or modify the Guidelines requirements for this project.

G. The project Scope of Work and OC SAN Engineering Design Guidelines impact CONSULTANT’s project cost.

H. Except as specified in this Scope of Work, design of all facilities shall conform to the recommendations of the currently approved Master Plan for OC SAN facilities. The project shall also incorporate all applicable mitigation measures included in associated environmental documents and site-specific local requirements.

I. In addition, OC SAN will require the CONSULTANT to follow subsequent revisions of OC SAN Safety Standards, OC SAN Engineering Design Guidelines and other OC SAN Design Standards up to transmittal by OC SAN of comments on Design Submittal **[1][2]**, shall be incorporated into the Design by CONSULTANT with no increase in CONSULTANT’s Not-to-Exceed upper limit on fees.

J. OC SAN may update OC SAN’s Master Specifications and/or add new OC SAN Master Specifications up to transmittal by OC SAN of comments on Design Submittal 2. The CONSULTANT shall utilize the new and/or modified Master Specifications for the DS3 submittal.

K. The CONSULTANT shall not begin editing the project specifications until the project team meets with OC SAN's Design Standards Custodian to discuss and receive comments regarding the CONSULTANT's proposed list of project specifications. This meeting will be used to determine which specifications are to use OC SAN's master specifications, and where other sources will be utilized.

7.0.2 PROJECT PHASES AND TASKS

A. Project tasks and deliverables shall include the requirements described in this Scope of Work. CONSULTANT shall also refer to Appendix A of OC SAN Engineering Design Guidelines for the level of detail requirements for individual deliverables in each Phase of the project not covered in the Scope of Work.

7.0.3 CONSTRUCTION SEQUENCING AND CONSTRAINTS

A. CONSULTANT shall develop with OC SAN staff and include in the Bid Documents detailed requirements for construction sequencing and constraints. These shall ensure safe and reliable operation and maintenance of OC SAN facilities. The facilities must be kept on-line and fully operational with minimal interruptions throughout construction.

7.0.4 WORKING HOURS

A. Meetings with OC SAN staff shall be scheduled from Monday through Thursday between the hours of 8:00 AM and 4:00 PM. Any CONSULTANT staff working on-site shall conform to OC SAN work schedules. CONSULTANT shall refer to the Engineering Design Guidelines, Chapter 01, Section 01.3.5 "CONSULTANT Inspection of Treatment Facilities" for further requirements.

7.0.5 STANDARD DRAWINGS AND TYPICAL DETAILS

A. All the details used in the project (OC SAN's Standard Drawings and CONSULTANT-developed typical details) shall be shown on the Plans.

7.0.6 SOFTWARE

A. The CONSULTANT is expected to develop and provide the deliverables using the standard software currently approved for use by OC SAN. The standard OC SAN software includes, but is not limited to, the following:

B. Any software that the CONSULTANT needs to comply with these standards shall be purchased and maintained by the CONSULTANT at no additional cost to OC SAN. In the event OC SAN provides the CONSULTANT with access to OC SAN software and hardware at an OC SAN facility in order to facilitate performance of their work, all software shall remain the property of OC SAN. Only software licensed to OC SAN shall be installed on OC SAN equipment. In addition, only OC SAN IT Department staff will perform the installation of this software.

C. Refer to Chapters 10 and 11 and Appendix A of OC SAN Engineering Design Guidelines for requirements on preparation of Criticality Tables and ETAP, SAT, and EID databases. Refer to OC SAN CAD Manual and to Chapter 11 and Appendix A of OC SAN Engineering Design Guidelines for requirements regarding P&ID drawings.

7.0.7 SUBMITTAL REVIEW USING BLUEBEAM

A. OC SAN has standardized on the use of Bluebeam Revu for reviewing and providing comments to PDF files. PDF files will be hosted in a Bluebeam cloud-based studio session for review. See **Exhibit 15 - Bluebeam Designer User Training** for a detailed explanation on how Bluebeam will be used to provide, validate, and close submittal review comments.

B. Prior to submitting electronic PDF files, format them as indicated in **Exhibit 14 - Bluebeam Designer Training for Submission** and "OC SAN CAD Standards Manual" prior to submission.

C. A one-hour training session on the use of Bluebeam and custom status menu will be provided by OC SAN. All Consultant team members responsible for quality control and reconciliation of submittal comments shall attend.

7.0.8 WORD TRACK CHANGES

A. Specifications documents and other MS-Word based deliverables will be hosted in OC SAN Teams environment for review. The guidelines for reviewing and commenting on MS-Word files, including Specifications reviews, can be found in **Exhibit 16 - Spec Review using Microsoft Word and Teams.**

7.0.9 GIS SUBMITTALS

A. Consultant shall provide the following GIS deliverables propagated from approved design submittals after the design submittal is accepted. These GIS submittals will not be reviewed or presented by Consultant. The purpose is to provide project specific GIS layers that could be used to visualize interproject dependencies and conflicts.

1. Electronic Submittal
    a. Kmz files for use with Google Earth
2. Final PDR
    a. Single project boundary (Polygon)
        (1) Boundary to encompass all new facilities and existing to be modified including:
            - Buildings\Structures
            - Tunnels
            - Utilities
            - Pavement
    b. Structures (Polygon)
            - New structure outline
            - Additions to existing structures
            - Structure label
3. DS1
    a. Project boundary - *updated from PDR*
    b. Structures - *updated from PDR*
    c. Utilities (Polyline)
        (1) Utility alignment
    d. Manholes, bollards, valve covers (Point)
4. DS2, DS3, and FDS
    a. Project boundary - updated from previous DS
    b. Structures - updated from previous DS
    c. Utilities - updated from previous DS
    d. Manholes - updated from previous DS
    e. Critical (as defined by Dig Alert) utility crossings (Point)
        (1) Critical utility label (update as necessary):
            - Oxygen gas
            - 12 kV Electrical
    f. Asphalt (Polygon)
        (1) Asphalt to be replaced

7.0.10 PMWEB PROCEDURES

A. This Agreement shall utilize PMWeb as the Project Control Management System (PCMS) for overall management of the Agreement. All PCMS related documents requiring formal signatures shall be digital, and all copies digitally distributed. The PCMS conforms to the requirements set forth in California Government Code section 16.5 regarding digital signatures; therefore, digital signatures are in full force and effect and are legally the same as a hand-written signature. At least one PCMS account shall have the authority to approve Amendments.

B. OC SAN shall maintain the PCMS and serve as the administrator for the duration of this Agreement. OC SAN will provide the CONSULTANT with user access for approved personnel as needed for the duration of the Agreement. OC SAN shall control access to the PCMS by assigning user profiles and login credentials. Notify OC SAN of any changes to personnel. Access modifications shall be coordinated as needed throughout the Agreement. Do not to share PCMS account passwords with anyone inside or outside of the company.

C. Routine maintenance of the PCMS system may be required during the Agreement. Access to the PCMS system may be restricted or unavailable at these times and will be scheduled outside of typical working hours whenever possible.

D. The PCMS is a web-based environment and is therefore subject to the inherent speed and connectivity problems of the Internet. The CONSULTANT is responsible for its own connectivity to the Internet. PCMS response time is dependent on the CONSULTANT's equipment, including processor speed, Internet access speed, Internet traffic, etc.

E. OC SAN will not be liable for any delays associated with the utilization of the PCMS including, but not limited to slow response time, down time periods, connectivity problems, or loss of information.

F. The OC SAN will provide a one-time free training session of up to two (2) hours to train CONSULTANT's designated staff on general system requirements, procedures, and methods.

G. Automated system notifications generated via PCMS (e.g., in-system notices, system generated email, or email with attachment) shall constitute a formal written notification in compliance with the Professional Design Service Agreement (PDSA), Professional Construction Service Agreement (PCSA), or Task Order (TO) Agreement

7.0.11 CONSULTANT TRAINING

A. The CONSULTANT shall attend the following OC SAN training before starting any design:

a. P&ID Development: 1 hour

b. EID Development and/or Demolition: 1 hour

c. CAD Training: 2 hours

d. OC SAN Tagging Procedures Training: 2 hours

e. Commissioning Package List Training: 1 hour

f. Bluebeam Training/Refresher for Design Submittal Comments: 2 hours

g. PCI SAT Training: 2 hours

8. PROJECT-SPECIFIC DEVIATIONS FROM OC SAN DESIGN GUIDELINES

A. None in this SOW

8.1 ENGINEERING DESIGN GUIDELINES CHAPTER 01, "DESIGN GUIDELINES – GENERAL REQUIREMENTS"

A. Not applicable.

9. STAFF ASSISTANCE

OC SAN staff member or designee assigned to work with CONSULTANT on the design of this project is Todd Waltz at (714) 587-0536 e-mail to: **twaltz@ocsan.gov.**

10. EXHIBITS

Exhibit 1 - Preliminary Design Report Requirements

Exhibit 2 - Design Requirements

Exhibit 3 - Project Management Requirements

Exhibit 4 - Risk Management Requirements

Exhibit 5 - Workshop and Meeting Requirements

Exhibit 6 - Quality Control Requirements

Exhibit 7 - Design Submittal Requirements Matrix

Exhibit 8 - Project Schedule Calculation (Not Used)

Exhibit 9 - Deliverables Quantities

Exhibit 10 - Sample Construction Cost Estimate Format (Not Used)

Exhibit 11 - Sample Full Project Safety Review Plan (Not Used)

Exhibit 12 - Sample Risk Management Check List (Not Used)

Exhibit 13 - MMRP Log Template (Not Used)

Exhibit 14 - Bluebeam Designer Training for Submission

Exhibit 15 - Bluebeam Designer User Training

Exhibit 16 - Spec Review using Microsoft Word and Teams

Exhibit 17 - OC SAN Engineering Design Guidelines and Standards – Available online at

Document Central | Orange County Sanitation District (ocsan.gov)

Exhibit 18 - Master Construction Submittal Items List (Not Used)

Exhibit 19 - Project Reference Material

1. **P2-118 Structural evaluation of deck**
2. **2010 Condition Assessment by RMS**
3. **Aeration Basins A and H Lab Test Results**
4. **Corrosion report on Aeration Basins A and H**
5. **Project Elements**
6. **Corrpro Report SP-129 buried oxygen pipe**
7. **P2-23-6 record drawings**
8. **P2-74 record drawing**
9. **P2-118 record drawings**
10. **P2-123 record drawings**
11. **J-47 Cable Tray drawings**

Exhibit 20 - Sample Criticality Data Table (Not Used)

Exhibit 21 - Commissioning Procedure Training

Exhibit 22 - ORT Procedure Examples

Exhibit 23 - Pre-FAT Procedure Examples

Exhibit 24 - Sample FAT Procedure

Exhibit 25 - Sample RAT Procedure

Exhibit 26 - J-102 Electrical Master Plan (Not Used)

TW:tk

EXHIBITS

Exhibits to Attachment “A” Scope of Work are considered reference material and were previously provided as part of the Request for Proposals package.