PROFESSIONAL DESIGN SERVICES AGREEMENT

THIS AGREEMENT, is made and entered into to be effective the 20th day of November, 2019 by and between the ORANGE COUNTY SANITATION DISTRICT, hereinafter referred to as "SANITATION DISTRICT", and Tetra Tech, Inc., for purposes of this Agreement hereinafter referred to as "CONSULTANT".

WITNESSETH:

WHEREAS, the SANITATION DISTRICT desires to engage a CONSULTANT for **Uninterruptible Power Supply Improvements at Plant 1**, **Project No. P1-132**; to provide professional engineering services to prepare final plans and specifications, construction cost estimates, schedule, and bid documents for installation of an industrial grade uninterruptible power supply system (UPS) (including DC battery system and ancillary equipment such as HVAC, eyewash station, supporting mechanical systems, and 480v underground duct banks). Project will also involve replacement of 480v electrical system panelboards, breakers, and conductors.

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, the SANITATION DISTRICT has adopted procedures for the selection of professional services and has proceeded in accordance with said procedures to select a CONSULTANT to perform this work; and,

WHEREAS, at its regular meeting on November 20, 2019 the Board of Directors, by Minute Order, accepted the recommendation of the Operations Committee pursuant to SANITATION DISTRICT's Purchasing Ordinance to approve this Agreement between the SANITATION DISTRICT and CONSULTANT.

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. Where approval by the SANITATION DISTRICT 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 ensure that all work is performed to the standards of best engineering practice for clarity, uniformity, and completeness. CONSULTANT shall respond to all comments, suggestions, and recommendations on the SANITATION DISTRICT's review comment sheets (i.e. DS1, DS2 and DS3). 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 the SANITATION DISTRICT 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. The SANITATION DISTRICT 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 the SANITATION DISTRICT CAD Manual. Conversion of CAD work from any other non-standard CAD format to the SANITATION DISTRICT format shall not be acceptable in lieu of this requirement.

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

Electronic files shall be subject to an acceptance period of 30 calendar days during which the SANITATION DISTRICT 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 the SANITATION DISTRICT.

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 the SANITATION DISTRICT. The CONSULTANT shall submit this written justification to the SANITATION DISTRICT 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 the SANITATION DISTRICT, its agents and employees. Neither the documents nor their contents shall be released to any third party without the prior written consent of the SANITATION DISTRICT. 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 the SANITATION DISTRICT, (b) subsequently becomes publicly known to the CONSULTANT other than through disclosure by the SANITATION DISTRICT.

2. COMPENSATION

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

A. Total Compensation

Total compensation shall be in an amount not to exceed Seven Hundred Eighty-four Thousand Six Hundred Eighty Dollars ($784,680). 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, the SANITATION DISTRICT 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 the SANITATION DISTRICT, CONSULTANT shall provide the SANITATION DISTRICT 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, the SANITATION DISTRICT 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, the SANITATION DISTRICT 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. The SANITATION DISTRICT 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

The SANITATION DISTRICT 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. The SANITATION DISTRICT shall also pay to CONSULTANT actual costs for equipment rentals, leases or purchases with prior approval of the SANITATION DISTRICT. Upon request, CONSULTANT shall provide to the SANITATION DISTRICT 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 in scope of work resulting from field investigations and field work required by Contract. 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

The SANITATION DISTRICT 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 the SANITATION DISTRICT 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. The SANITATION DISTRICT 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 the SANITATION DISTRICT any excess reimbursements after the reimbursement has been paid by the SANITATION DISTRICT.

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

Local Travel is considered travel by the CONSULTANT within the SANITATION DISTRICT 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 the SANITATION DISTRICT for local travel. However, under certain circumstances overnight stay may be allowed at the discretion of the SANITATION DISTRICT 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 the SANITATION DISTRICT.

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 the SANITATION DISTRICT 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 the

SANITATION DISTRICT'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 the SANITATION DISTRICT 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

The SANITATION DISTRICT, 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 the SANITATION DISTRICT. 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 project element work performed during the period covered by the statement, as may be required by the SANITATION DISTRICT.

Upon approval of such payment request by the SANITATION DISTRICT, payment shall be made to CONSULTANT as soon as practicable of one hundred percent (100%) of the invoiced amount on a per-project-element basis.

If the SANITATION DISTRICT determines that the work under this Agreement or any specified project element hereunder, is incomplete and that the amount of payment is in excess of:

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

ii. The percentage of the work accomplished for each project element.

He may, at his discretion, retain an amount equal to that which insures that the total amount paid to that date does not exceed the percentage of the completed work for each project element 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-project-element basis. In the event the SANITATION DISTRICT'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, the SANITATION DISTRICT 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 the SANITATION DISTRICT, 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 the SANITATION DISTRICT a release of all claims against the SANITATION DISTRICT 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 the SANITATION DISTRICT 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 the SANITATION DISTRICT 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 the SANITATION DISTRICT; c) conspires to defraud the SANITATION DISTRICT by getting a false claim allowed or paid by the SANITATION DISTRICT; d) knowingly makes, uses, or causes to be made or used a false record or statement to conceal, avoid, or decrease an obligation to the SANITATION DISTRICT; or e) is a beneficiary of an inadvertent submission of a false claim to the SANITATION DISTRICT, and fails to disclose the false claim to the SANITATION DISTRICT 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 SANITATION DISTRICT and/or general public upon request, provided the public request is made through SANITATION DISTRICT, 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 Professional 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 Professional Services, shall be the property of the SANITATION DISTRICT. The SANITATION DISTRICT'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. The SANITATION DISTRICT 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 Professional 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.

7. INSURANCE

A. General

i. Insurance shall be issued and underwritten by insurance companies acceptable to the SANITATION DISTRICT.

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, the SANITATION DISTRICT will accept State Compensation Insurance Fund, for the required policy of Worker's Compensation Insurance subject to the SANITATION DISTRICT's option to require a change in insurer in the event the State Fund financial rating is decreased below "B". Further, the SANITATION DISTRICT 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 the SANITATION DISTRICT 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: One Million Dollars ($1,000,000) per occurrence with Two Million Dollars ($2,000,000) aggregate. 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 SANITATION DISTRICT 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.

C. Umbrella Excess Liability

The minimum limits of general liability and Automotive 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 automotive liability.

D. Automotive/Vehicle liability Insurance

The CONSULTANT shall maintain a policy of Automotive Liability Insurance on a comprehensive form covering all owned, non-owned, and hired automobiles, trucks, and other vehicles providing the following minimum limits of liability coverage: Combined single limit of One Million Dollars ($1,000,000) or alternatively, One Million Dollars ($1,000,000) per person for bodily injury and One Million Dollars ($1,000,000) per accident for property damage. 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 the SANITATION DISTRICT.

F. Worker's 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 Worker's Compensation Insurance shall be endorsed to provide for a waiver of subrogation in favor of the SANITATION DISTRICT. 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 Three Million Dollars ($3,000,000) 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 the SANITATION DISTRICT a certificate of insurance in a form acceptable to the SANITATION DISTRICT 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 the SANITATION DISTRICT 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 the SANITATION DISTRICT before work commences. The SANITATION DISTRICT reserves the right to require complete, certified copies of all required insurance policies, including endorsements, effecting the coverage required, at any time. The following are approved forms that must be submitted as proof of coverage:

• Certificate of Insurance	ACORD Form 25 (5/2010) or equivalent.
• Additional Insurance (General Liability)	(ISO Form) CG2010 11 85 or The combination of (ISO Forms) CG 2010 10 01 and CG 2037 10 01 All other Additional Insured endorsements must be submitted for approval by the SANITATION DISTRICT, and the SANITATION DISTRICT may reject alternatives that provide different or less coverage to the SANITATION DISTRICT.
• Additional Insured (Auto Liability)	Submit endorsement provided by carrier for the SANITATION DISTRICT approval.
• Waiver of Subrogation	State Compensation Insurance Fund Endorsement No. 2570 or equivalent.
• Cancellation Notice	State Compensation Insurance Fund Endorsement No. 2065 or equivalent.

I. Cancellation Notice

Each insurance policy required herein shall be endorsed to state that coverage shall not be cancelled by either party, except after thirty (30) days' prior written notice. The Cancellation Section of ACORD Form 25 (5/2010) shall state the required thirty (30) days' written notification. The policy shall not terminate, nor shall it be cancelled, nor the coverage reduced until thirty (30) days after written notice is given to the SANITATION DISTRICT except for nonpayment of premium, which shall require not less than ten (10) days written notice to the SANITATION DISTRICT. Should there be changes in coverage or an increase in deductible or SIR amounts, the CONSULTANT and its insurance broker/agent shall send to the SANITATION DISTRICT a certified letter which includes a description of the changes in coverage and/or any increase in deductible or SIR amounts. The certified letter must be sent to the attention of Risk Management, Div. 260, and shall be received by the SANITATION DISTRICT not less than thirty (30) days prior to the effective date of the change(s) if the change would reduce coverage or increase deductibles or SIR amounts or otherwise reduce or limit the scope of insurance coverage provided to the SANITATION DISTRICT.

J. Primary Insurance

All liability policies shall contain a Primary and Non-Contributory Clause. Any other insurance maintained by the SANITATION DISTRICT shall be excess and not contributing with the insurance provided by CONSULTANT.

K. Separation of Insured

All 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 the SANITATION DISTRICT on the Certificate of Insurance. All deductibles and/or self-insured retentions require approval by the SANITATION DISTRICT. At the option of the SANITATION DISTRICT, either: the insurer shall reduce or eliminate such deductible or self-insured retention as respects the SANITATION

DISTRICT; or the CONSULTANT shall provide a financial guarantee satisfactory to the SANITATION DISTRICT guaranteeing payment of losses and related investigations, claim administration and defense expenses.

N. Defense Costs

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 SANITATION DISTRICT 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, requested by SANITATION DISTRICT, 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.

9. PROJECT TEAM AND SUBCONSULTANTS

CONSULTANT shall provide to SANITATION DISTRICT, 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-project-element 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 the SANITATION DISTRICT.

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. SANITATION DISTRICT 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 the SANITATION DISTRICT determines are necessary to discover and verify that the CONSULTANT is in compliance with all requirements under this Agreement. The CONSULTANT shall include the SANITATION DISTRICT's right as described above, in any and all of their subcontracts, and shall ensure that these rights are binding upon all Subconsultants.

B. SANITATION DISTRICT retains the right to examine CONSULTANT's books, records, documents and any other evidence of procedures and practices that the SANITATION DISTRICT 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 the SANITATION DISTRICT's policy. The CONSULTANT shall make available to the SANITATION DISTRICT for review and audit, all project related accounting records and documents, and any other financial data within 15 days after receipt of notice from the SANITATION DISTRICT. Upon SANITATION DISTRICT's request, the CONSULTANT shall submit exact duplicates of originals of all requested records to the SANITATION DISTRICT. If an audit is performed, CONSULTANT shall ensure that a qualified employee of the CONSULTANT will be available to assist SANITATION DISTRICT'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 the SANITATION DISTRICT.

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 the SANITATION DISTRICT at:

ORANGE COUNTY SANITATION DISTRICT
10844 Ellis Avenue
Fountain Valley, CA 92708-7018
Attention: Clarice Marcin, Senior Contracts Administrator
Copy: Tod Waltz, Project Manager

Notices shall be mailed to CONSULTANT at:

Tetra Tech, Inc.
17885 Von Karman Avenue, Suite 500
Irvine, CA 92614
Attention: Robin Nezhad, PE
Copy: Melinda Tam, PE

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

14. TERMINATION

The SANITATION DISTRICT 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 the SANITATION DISTRICT 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 the SANITATION DISTRICT upon the termination or completion of the work. CONSULTANT agrees to furnish to the SANITATION DISTRICT 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 the SANITATION DISTRICT.

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.

17. AGREEMENT EXECUTION AUTHORIZATION

Both the SANITATION DISTRICT 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, the SANITATION DISTRICT informs CONSULTANT that any part of the services fails to meet those standards, CONSULTANT shall, within the time prescribed by the SANITATION DISTRICT, 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 the SANITATION DISTRICT, which approval shall not be unreasonably withheld), protect and hold harmless the SANITATION DISTRICT and all of SANITATION DISTRICT's officers, directors, employees, CONSULTANT's, 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 the SANITATION DISTRICT'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 the SANITATION DISTRICT 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 the DISTRICT 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 the SANITATION DISTRICT. A copy of the evaluation shall be sent to the CONSULTANT for comment. The evaluation, together with the comments, shall be retained by the SANITATION DISTRICT and may be considered in future CONSULTANT selection processes.

25. COMPLIANCE WITH OCSD POLICIES AND PROCEDURES

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

26. CLOSEOUT

When the SANITATION DISTRICT determines that all Work authorized under the Agreement is fully complete and that the SANITATION DISTRICT requires no further work from CONSULTANT, or the Agreement is otherwise terminated or expires in accordance with the terms of the Agreement, the SANITATION DISTRICT 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, the SANITATION DISTRICT 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 the SANITATION DISTRICT.

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 the SANITATION DISTRICT (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 the SANITATION DISTRICT 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 the SANITATION DISTRICT for any purpose nor imply acceptance of, or agreement with, the CONSULTANT's request for final Agreement Acceptance.

27. 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 the SANITATION DISTRICT, by its officers thereunto duly authorized, and CONSULTANT as of the day and year first above written.

TETRA TECH, INC.

By _____
Date

_____
Printed Name & Title

ORANGE COUNTY SANITATION DISTRICT

By _____
David John Shawver Date
Board Chairman

By _____
Kelly A. Lore Date
Clerk of the Board

By _____
Ruth Zintzun Date
Purchasing & Contracts Manager

Attachments: Attachment “A” – Scope of Work
Attachment “B” – Not Used (or Not Attached)
Attachment “C” – Not Used (or Not Attached)
Attachment “D” – Allowable Direct Costs
Attachment “E” – Fee Proposal
Attachment “F” – Not Used (or Not Attached)
Attachment “G” – Not Used (or Not Attached)
Attachment “H” – Not Used (or Not Attached)
Attachment “I” – Cost Matrix & Summary
Attachment “J” – Not Used (or Not Attached)
Attachment “K” – Minor Subconsultant Hourly Rate Schedule
Attachment “L” – OCSD Safety Standards

CMM:ms

ATTACHMENT “A”

SCOPE OF WORK

Uninterruptible Power Supply Improvements at Plant No. 1
Project No. P1-132

Professional Design Service Agreement

Attachment A – Scope of Work

TABLE OF CONTENTS

I. SUMMARY

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

1. Preliminary Design Report
2. Permitting assistance
3. Preparation of bid documents

II. BACKGROUND, GENERAL PROJECT DESCRIPTION, AND PROJECT ELEMENTS

BACKGROUND

Orange County Sanitation District (OCSD) has numerous smaller Uninterruptible Power Supplies (UPS's) throughout the northwest area of Plant No. 1. Providing a regional UPS will allow for a more reliable power supply and help reduce maintenance expenses. Additionally, electrical equipment in the non-process areas has exceeded its useful life and is in need of replacement. Project J-25-4 identified select feeders and circuit breakers requiring replacement, which this project will incorporate.

GENERAL PROJECT DESCRIPTION

A new regional UPS will be installed at Power Building 8 to provide critical power to facilities at the northwest region of Plant 1. Existing UPS status and alarm signals will be modified to reflect their replacement with a power distribution unit (PDU) and automatic transfer switch at the Control Center, Power Buildings 7 and 8, and Primary Clarifiers 6-31 east and west electrical rooms.

The new electrical distribution and branch circuit panelboards will replace existing old and obsolete equipment. The project will also provide temporary power to maintain services to critical loads during contruction.

DESCRIPTION OF PROJECT ELEMENTS

PROJECT ELEMENT 1 – REGIONAL UPS

This project will implement part of the SP-150 Uninterruptible Power Supply (UPS) study recommendation to install a 3–phase industrial grade regional UPS system at Power Building 8. The regional UPS at Power Building 8 will serve facilities located at the northwest end of Plant 1. These facilities include, but are not limited to, the Control Center, Power Buildings 7 and 8, Primary Clarifiers 6-31 east and west electrical rooms, Waste Sides Stream Pump Station (WSSPS), and Primary Basins polymer facility.

Power Building 8

Modification of Power Building 8 to include the following work:

- Installation of industrial grade regional UPS distribution system.
- Construction of DC Battery Room and DC Battery System. System includes: lead acid wet cell DC batteries, battery containment and protective barrier, battery charger, alarm, notification devices, and lighting system
- Upgrade existing HVAC in Power Building 8 and provide a DC battery ventilation system with air flow monitoring
- Relocation of the following existing utility piping to allow installation of the new regional UPS and DC battery system:
    - ¾-inch Instrument air piping
    - 1-inch plant water piping
    - 2-inch potable water piping to emergency shower and eye wash
- Installation of shower and eye wash system in the battery room with water flow monitoring
- Installation of 480-volt underground duct bank from Power Building 8 to:
    - Power Building 7
    - Control Center
    - Primary Basins Polymer Facility
    - WSSPS (Waste Sidestream Pump Station)
    - Primary Clarifiers 6-31 east and west electrical rooms.

Control Center

The Control Center is a critical facility that houses critical IT, process network, and communications equipment. This facility requires 24/7 uninterruptible/filtered power to serve these equipment. The following work will be performed:

- Install a new Automatic Transfer Switch (ATS) and PDU at the Control Center HVAC room located on the first floor.
- Refeed Chiller 19ECH475 from Power Building 8.

- Remove existing power feed to Chiller 19ECH475 from MCC-OM located in the Control Center basement and reuse conduit to feed the PDU in the HVAC room.

- Install alternate power feed from MCC - OM, located in the Control Center basement to the ATS to provide a backup normal power source to the PDU.

POWER BUILDING 4

- Install a new 120/208-volt, 3-phase, 4 wire panelboard fed directly from the Control Center UPS distribution system to serve existing UPS loads.

POWER BUILDING 7

- Demolish existing wall mounted UPS and battery system.

- Install a new wall mounted 120/208-volt, 3-phase, 4 wire panelboard fed directly from Power Building 8 UPS distribution system to serve existing UPS loads.

PRIMARY CLARIFIERS 6-31 ELECTRICAL ROOMS

- Demolish existing Liebert UPS unit (11CUPS012, UPS-T1) located at Primary Clarifiers 6-15 east electrical room. Demolish existing UPS input conductors and conduit (P3001H) from the UPS back to circuit breaker in panelboard 11CDPN011.

    - Install a new 100A, 480-volt, 3 pole wall mounted automatic transfer switch and 480-volt, 3-phase standby power feed from existing MCC-T to the new 100A automatic transfer switch.

    - Install a new 15KVA, 480-208/120, 3-phase, 4-wire wall mounted dry-type transformer adjacent to the existing UPS to refeed existing UPS panelboard (PNL-UPST1). PNL-UPST1 is a 100A, 120/208-volts, 3-phase, 4-wire, 54 circuits panelboard, with a 50A, 3-pole main circuit breaker. Relocate existing wall-mounted phone enclosure, with associated conduit and conductors to create space for the new transformer.

- Demolish existing Liebert UPS unit (11DUPS042, UPS-UA1) located at Primary Clarifiers 16-31 west electrical room. Demolish existing UPS input conductors and conduit (P4001H) from the UPS back to circuit breaker in panelboard 11DBCP041.

    - Install a new 100A, 480-volt, 3-pole wall mounted automatic transfer switch and 480-volt, 3-phase standby power feed from existing MCC-UA to the new 100A automatic transfer switch.

    - Install a new 15KVA, 480-208/120, 3-phase, 4-wire wall mounted dry-type transformer adjacent to the existing UPS to refeed existing UPS panelboard (PNL-UPSUA1). PNL-UPSUA1 is a 100A, 120/208-volts, 3-phase, 4-wire, 54 circuits panelboard, with a 50A, 3-pole main circuit breaker.

    - Relocate existing temperature transmitter, convenient receptacle, and thermostat along with associated conduits and conductors to create space for the new transformer.

WASTE SIDESTREAM PUMP STATION (WSSPS)

- Install a new wall-mounted 480-120/208-volt transformer and 120/208-volt panelboard to refeed existing UPS loads.
- Provide ATS with standby feed.
- Demolish existing UPS distribution system

PRIMARY BASINS POLYMER FACILITY

- Install a new PDU and refeed existing UPS loads.
- Demolish existing UPS distribution system

PROJECT ELEMENT 2 – ELECTRICAL EQUIPMENT REPLACEMENT AT PLANT NO. 1

Replace old electrical cables, step-down transformers, distribution and branch circuit panelboards at Buildings A, B, 5, 6, Warehouse, and Fleet Services. All work in this area requires a city of Fountain Valley permit.

Building A

- o Replace incoming 480-volt conductors feeding Distribution Panelboard “D”. Provide spare set of cables.
- o Replace 480-volt Distribution Panelboard “D” along with all associated feeders.
- o Replace 480-volt Distribution Panelboard “D1” along with all associated feeders. Panelboard D1 is located on the mezzainine level and feeds the electric shop transformer T1 and Panelboard 2D.
- o Replace 480-volt -120/208-volt transformer TA and 120/208-volt distribution panelboard DA. Replace feeders to transformer and panelboard.
- o Replace 480-volt -120/208-volt transformer TC and 120/208-volt distribution panelboard DCC. Replace feeders to transformer and panelboard.

Building B

- o Replace incoming 480-volt conductors feeding Distribution Panelboard “DBS”.
- o Replace 480-volt Distribution Panelboard “DBS”, along with all associated conduits and feeders.
- o Replace 480-volt-120/208-volt transformer TB and 120/208-volt distribution panelboard DBB. Replace feeders to transformer and panelboard.
- o Replace 120/208-volt Panelboards 1B, 2B, 3B, 4B, and DBB-1 and associated incoming feeders.

Warehouse

- Replace incoming 480-volt conductors feeding Distribution Panelboard “DC”.
- Replace 480-volt Distribution Panelboard “DC”, along with all associated conduits and feeders.
- Replace 480-volt -120/208-volt transformer TC, 120/208-volt Distribution Panelboard DCC, along with all branch circuit conductors and conduits.
- Replace 120/208-volt Panelboards 1C, 2C, 3C, 4C, 5C, and Purchasing Office panel.

Building 5

- Replace 480-volt –120/208-volt transformer TFR-2DA, Panelboard 2DA. Replace feeders to transformer and panelboard.

Building 6

- Replace 480-volt panelboards, D1 and 2D, along with all associated conductors.
- Replace 480-volt-120/208-volt transformer T-1, along with primary disconnect switch, and 120/208-volt distribution panelboards 1D1A, 1D1B, and 1D1L.
- Replace 480-volt-120/208-volt transformer and panelboards 1D1C and 1D1D.
- Replace feeders to transformers and panelboards.

Fleet Services

- Replace 480-volt panelboards DPS including incoming 480-volt feeders and all associated outgoing conduits and feeders.
- Replace 480-volt -120/208-volt transformer T2, and 120/208-volt distribution panelboard D2.

PROJECT ELEMENT 3 – CONDUCTOR AND BREAKER REPLACEMENT

Replace faulty circuit breakers and undersized conductors at selected switchboards and motor control centers. All work in non-process areas requires a permit from city of Fountain Valley for Plant No. 1.

CABLES

1. Replace the conductors as described below:
    a. MCC-MSC
        i. Replace existing 500MCM conductors feeding MCC-MSC with 750MCM conductors. (SLD shows 3-500MCM via 400A CB).

ii. Replace existing #8 conductors feeding AC-1 with #2 conductors.

b. Panel X1 (PNL-X1)
   i. (X1-402) Replace existing #12 conductor feeding AH-2 with #6. (SLD shows #8, with 50A CB).
   ii. (X1-404) Replace existing #8 conductor feeding AH-1 with #2. (SLD shows #4, with 100A CB).
   iii. (X1-406) Replace existing #12 conductor feeding Elevator with #6. (SLD shows #8, with 50A CB).
   iv. (X1-409) Replace existing 500MCM conductors feeding panel D1A (PNL-D1A) with 600MCM conductors (SLD shows 350MCM conductors, feeding a 1200A Bus).

c. Panel DPS (PNL-DPS)
   i. (DPS-403) Replace existing #4 conductor feeding AH-3 with #2. (SLD shows #4, with 100A CB).

d. SWBD-MS (SWD-MS)
   i. (MS-402) Replace existing #2/0 conductor feeding emergency power cannon plug with 600MCM conductors. (SLD shows #2/0, with 400A CB).
   ii. (MS-403) Replace existing 1-500MCM conductor per phase feeding PNL-DPS with 2-500MCM conductors per phase. (SLD shows 1-500MCM/Phase, with 350AT CB).

COORDINATION WITH OTHER PROJECTS

The following projects may impact or require coordination with this project:

- P1-105 Headworks Rehabilitation and Expansion at Plant No. 1. This project will rehabilitate and upgrade facilities at the Plant No. 1 Headworks. Facilities to be rehabilitated include the Metering and Diversion Structure, the Bar Screen Building, the Bin Loading Building, the Main Sewage Pump Station, the Grit Basins, the Primary Influent channels, the Headworks Odor Control Scrubbers, replace existing PB-3A with new power building PB-3 (including a new server room), and electrical power distribution and control systems. The project will also include demolition of the original Headworks No. 1 facilities and the unused Chlorine Building pumps project.

III. PROJECT SCHEDULE

Table 1 – Project Milestones and Deadlines

MILESTONE	DEADLINE
Kickoff Meeting	The kickoff meeting will be scheduled to coincide with the Preliminary Design NTP.
Submit Project Management Plan (PMP)	10 workdays from Preliminary Design NTP
Submit draft Preliminary Design Report (PDR)	120 workdays from the Preliminary Design NTP. CONSULTANT shall establish a schedule with the OCSD PM for separately submitting working drafts of each Design Memo for OCSD 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 OCSD resources.
OCSD Review of draft PDR	15 workdays from receipt of Draft PDR
Submit final Preliminary Design Report	15 workdays from receipt of OCSD comments on Draft PDR.
Final Design Notice to Proceed	CONSULTANT's schedule shall allow 10 working days from submittal of the final PDR to receipt of the Design Phase NTP.
Submit Design Submittal 1 (DS1)	45 workdays from Design Phase NTP.
OCSD Review of DS1	20 workdays from receipt of DS1
Submit Design Submittal 2 (DS2)	45 workdays from receipt of OCSD comments on DS1
OCSD Review of DS2	20 workdays from receipt of DS2
Submit Design Submittal 3 (DS3)	50 workdays from receipt of OCSD comments on DS2
OCSD Review of DS3	20 workdays from receipt of DS3
Submit Final Design Submittal (FDS)	30 workdays from receipt of OCSD comments on DS3. CONSULTANT shall stop work upon submission of DS3, except as required to participate in OCSD meetings, until receipt of OCSD comments on DS3.
OCSD Review of FDS	20 workdays from receipt of FDS

Table 1 – Project Milestones and Deadlines

MILESTONE	DEADLINE
Final Technical Specifications and Plans	20 workdays from receipt of OCSD comments on FDS.

The time frames specified in Table 1 are used to estimate the actual milestone dates based on the assumed Notice to Proceed, as shown in **Exhibit 2**.

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

IV. PROJECT EXECUTION

All OCSD projects are divided into six phases. CONSULTANT shall provide engineering services for all Project Elements listed in Section II of 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)

PHASE 1 – PROJECT DEVELOPMENT

Not in this Scope of Work.

PHASE 2 – PRELIMINARY DESIGN

TASK 2.1 - PRELIMINARY EVALUATION STUDIES (NOT USED)

TASK 2.2 - PRELIMINARY DESIGN PRODUCTION

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

The following requirements apply to PDR Production.

- Each design memo shall be submitted as a draft, along with any relevant associated drawings for OCSD review. Except where significant revisions are required, design memos need not be resubmitted prior to the compiled draft PDR.

- CONSULTANT shall schedule and execute the work so that draft design memos are produced and submitted early enough that OCSD comments can be addressed and the changes incorporated into the draft PDR. All significant equipment decisions are to be made before the start of Phase 3 - Design. At the end of Phase 2 – Preliminary Design, major design elements should be fixed and major equipment, building footprints, major structural elements, and process pipelines should be well defined and established. The extent of the design and the number and type of drawings should also be established.

- The design memos shall clearly document exact naming conventions to be used for all process equipment covered by the design memo.

- Each design memo shall identify any equipment and instruments that have fewer than three competitive suppliers. In those cases, the design memo shall recommend an appropriate procurement strategy compatible with California Law and OCSD policies.

- Where appropriate, OCSD will circulate design memos to permitting agencies for review. OCSD will review comments from those agencies and forwarded them to CONSULTANT. CONSULTANT shall respond to all OCSD and agency comments in writing and incorporate all comments into the final Design Memos as applicable.

Preliminary Design Report (PDR) Contents and Organization

The CONSULTANT shall combine the material specified above for the Predesign Evaluation Studies and the Preliminary Design Production tasks 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 – Regional UPS
  - Design Memo 2 – Implementation Plan
  - Design Memo 3 – Utility Investigation and Cable and Conduit Routings
  - Design Memo 4 – Electrical Equipment Replacement and Miscellaneous Items

Volume 2 – Drawings
- **General**
- **Civil**
- **Landscape (NOT USED)**
- **Structural**
- **Architectural (NOT USED)**
- **Mechanical**
- **Electrical**
- **Instrumentation & Control**

Volume 3 – Submittal Documentation
- **Calculations**
- **Equipment Data & Catalog Cuts**
- **Decision Log**
- **Meeting Minutes**

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.

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 4.** The following requirements apply to the labeling and organization of the PDF submittal:

- Each design memo shall be a separate file.

- Drawings shall be submitted as a single compiled file, except where the size of the file would exceed 30 MB, in which case the drawings should be separated into separate files by discipline. If the file for one discipline is more than 30 MB, the file may be divided into multiple files. In no case may drawings be submitted as separate PDF files for each drawing. The order of drawings in the PDF file shall match the list of drawings.

- The PDF files shall be named to include the project number, the name of the deliverable (e.g. Draft PDR, DS2, etc), the volume, and the particular content. The files shall also be named so that the list appears in sequential order when sorted by file name. In cases where drawings are divided into separate PDF files by discipline, a number or letter shall be included in the file name so that the files are listed in the same order as the List of Drawings. The use of special characters shall not be allowed in file names. Spaces and hyphens are acceptable, however.

- These requirements do not affect the organization, naming, and submittal of native files for CAD or MS Office files specified elsewhere in this Scope of Work and OCSD Engineering Design Standards.

The OCSD 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.

Task 2.2.1 Design Memo 1 – Regional UPS

CONSULTANT shall develop the design configuration of the proposed facilities including the following material:

- Performance requirements, UPS sizing, HVAC requirements, and Ventilation requirements.

- Evaluate and verify the existing UPS loads for the new northwest regional UPS which will feed Power Building 8, , Primary Polymer Facility, Power Building 7, WSSPS, , Control Center, Primary Clarifiers 6-31, and West and East Electrical Rooms.

- Determining HVAC and battery ventilation system for Power Building 8. Evaluate and verify the existing Northwest regional UPS loads requirements.

- Recommended types and configuration of equipment, including the information required to qualify and select specific equipment for the process.

- Sizing parameters, such as the number of units, the capacity of each piece of equipment, structure sizing, etc.

- Narrative descriptions of the proposed facilities to explain the reasons for the proposed configuration and how the facilities would be operated.

- A discussion of why the proposed configuration is preferred over other likely configuration.

- Identify equipment demolition, modifications, and additions at each location feed by the UPS.

- Evaluate and determine the routing of all cables and conduits from the northwest regional regional UPS in Power Building 8 to the respective loads. This includes ductbanks, conduits, existing cable tray and any new cable tray if required. Evaluation shall clearly depict all relevant sections of ductbanks and tunnels, including all propose change in elevations, entry and exit point, pullbox locations, etc.

- Identify locations and peform potholing for all proposed buried ductbank.

In development of the design configuration, CONSULTANT shall consult with OCSD's staff.

Code Requirements

This design memo shall document what requirements apply to the design and operation of the proposed facilities.

Identify the following that apply to the project:

- Building codes and other regulations

- State and federal safety standards and regulations.

- Seismic design criteria used based on a literature review of existing geotechnical information; evaluation of proximity to faults, seismic classification assigned to each structure, seismic calculations

Design Safety Requirements

Identify all potential safety issues for Contractor, public, and OCSD staff affecting the construction of all equipment, process areas, and buildings. As a minimum, the CONSULTANT shall consider the following and provide respective recommendations:

- Excavation and trenching hazards

- Electrical hazards

- Site access

The CONSULTANT shall identify all potential safety issues affecting the operation and maintenance of all equipment, process areas, and buildings. As a minimum, the CONSULTANT shall consider the following and provide respective recommendations:

- Eye wash and shower requirements and point of connection
- Ergonomics (including equipment operation)
- Locations of equipment that may lead to a safety issue.
- Applicable safety issues and solutions included in OCSD Safety Standards. (See **Exhibit 12**.)

Fire Protection

Evaluate fire protection requirements for Power Building 8 and all modifications required to the existing fire alarm systems.

Electrical

CONSULTANT shall obtain and adhere to OCSD's most recent Electrical Design Guidelines on the following subjects before proceeding with the preliminary electrical design:

- Tagging procedures
- Neutral grounding
- Power cable type
- Surge suppression
- Electrical equipment naming conventions
- Distribution equipment naming convention

CONSULTANT shall coordinate the electrical system design with other on-going OCSD design and construction projects affecting the project area as well as with the system requirements being developed as part of the projects listed under Coordination with Other Projects under Description of Project Elements in Section II of this Scope of Work.

CONSULTANT shall provide the following:

- Preliminary Load List. This list shall show all major and auxiliary electrical loads for each voltage level. Auxiliary loads may be lumped. In addition, this list shall be used to classify the equipment for asset management. This shall designate equipment items which are classified as "run to failure" for preventative maintenance or for predictive maintenance.
- Hazardous Area Classification requirements (see Engineering Design Guidelines, Chapter 10, Section 10.6.1 "Hazardous Areas" for NFPA 820 requirements and requirements included in Job No. J-35-1).

Electrical Load Measurements

The CONSULTANT shall take electrical measurements per Engineering Design Guidelines, Chapter 10, Section 10.2.1.4 “Report- Load Measurement and Recording”.

The following describes the general nature of measurements to be taken.

- Consultant shall take load readings at all locations described in the project elements. Load shall be recorded for a minimum 30 days at 15 minutes intervals.

The load measurements data shall be compiled in a Load Measurement and Recording Report included as an attachment to this Design Memo.

Instrumentation and Control

Provide a list of monitoring and control signals required at each building. Review the existing SAT to verify if there are sufficient spares or if new I/O modules are required.

Tag Numbering System

Provide the basis for equipment tag numbers as developed from block of numbers provided by OCSD. CONSULTANT shall develop proposed Area Numbers for OCSD review and approval. The development shall follow OCSD tagging procedures. (see Design Standards, Tagging Procedure standard).

Task 2.2.2 Design Memo 2 - Implementation Plan

This Design Memo shall address issues affecting and affected by the implementation of the proposed project. Contents of the Design Memo shall include the following issues:

Identification of Adjacent Projects

The CONSULTANT shall identify and describe projects (including projects previously identified in this Scope of Work) which might impact or be impacted by this project. Adjacent projects may include OCSD and any other known non-OCSD project that might require coordination with the project. The description shall document spatial aspects of the adjacent projects, their schedule, and any other interdependencies. The Design Memo shall describe the type of coordination required to minimize negative impacts on all of the projects.

Preliminary Construction Sequencing Plan

The plan shall include the following material:

- Description of sequencing constraints and the reasons for those constraints.
- Implementation alternatives that might expedite construction and commissioning, avoid sequencing constraints, and/or mitigate schedule and cost risks.

- A detailed narrative describing a likely sequence for how construction and commissioning would be completed. The purpose of the narrative is not to decide exactly how the project should be completed, but to demonstrate that there is at least one viable method to complete the work, and to clarify what risks may be associated with that plan. The narrative should include sequential graphics clearly describing how the work can be phased.

- A CPM construction schedule showing in the interrelationships of the elements of the project. The schedule shall be prepared using software intended for schedule projects. Examples of acceptable software packages include Microsoft Project and Primavera.

- Coordination with planned outages, construction cutover, construction activites from contiguous projects, temporary feeds to maintain existing system, etc.

Review of Constructability Issues

The Design Memo shall describe all project-specific issues that might impact bidding, construction, and commissioning. The Design Memo shall describe the following aspects of each issue:

- The consequence of the issue occurring.

- The likelihood that the issue will occur, including what factors would cause it to occur, or not.

- Suggested mitigation measures and when mitigation measures might be implemented.

- Potential project changes and approaches that may be warranted to address the issue.

Preliminary Design Construction Cost Estimate

The CONSULTANT shall prepare an AACE International Class 3 cost estimate per OCSD's Engineering Design Guidelines, Chapter 01. A sample construction cost estimate format is provided in **Exhibit 5**.

Data used to prepare the cost estimate, including vendor quotations, shall be included as an attachment to this Design Memo.

Demolition Equipment and Instrumentation Databases (EIDs)

CONSULTANT shall identify all equipment and instruments listed in the existing EIDs that will be demolished. The identification shall be noted in the MS Excel spreadsheets to be submitted with the PDR.

Task 2.2.3 Design Memo 3 - Utility Investigation and Cable and Conduit Routing

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. Utilities include all in-plant, utility company-owned and public agency-owned piping, duct banks, and other interferences.

The search shall include utilities within the public right-of-way, and those located on private property and OCSD property impacted by the proposed project. The search shall include the records and plans of OCSD and all respective public and private companies and utilities.

Review of OCSD Records

OCSD'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 OCSD records against those of the other agencies, companies and utilities. These may include, but not be limited to, oil, gas, fuel, water, and sewer pipelines; traffic control facilities, telephone and electrical conduit and duct banks, storm drains, manholes, and other structures.

On-Site Inspection

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 OCSD'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.

Subsurface Utility Investigations

Investigation of existing utilities shall be 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:

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

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

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.

CONSULTANT shall submit, for acceptance by OCSD, 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.

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

Potholes and Geophysical Investigation

CONSULTANT shall "pothole" and perform geophysical investigation (including ground-penetrating radar) 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 potholing crew. OCSD staff shall also be present during potholing.

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

- Documentation of information
- Notification of USA's "Dig Alert"
- Providing field survey
- Obtaining required permits
- Submission of traffic control plans
- Setting up traffic control
- Soft dig potholing
- Ground-penetrating radar
- Excavating
- Backfilling
- Repairing pavement to local jurisdiction requirements

"Soft" excavation potholing methods such as vacuum extraction are 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.

Potholing subcontractor shall measure and document the depth of pavement and of base material at each pothole, and every five feet along crosscut trenches.

CONSULTANT shall provide a licensed land surveyor or hire a licensed survey subcontractor(s) to field-locate the actual horizontal and vertical location of the constructed potholes. Survey controls shall be set and coordinated with the survey controls used on previous construction drawings. Control points shall be checked; northing, easting and elevation data for each pothole shall be shown on the Contract Drawings; and physical tie-ins provided in order to easily re-establish pothole locations after construction. CONSULTANT shall supply and supervise survey work and subcontractors needed to perform the pothole work. Survey datum differences shall also be reconciled.

CONSULTANT shall backfill and repair potholes consistent with the requirements of the local jurisdiction. If CONSULTANT is unable to determine local jurisdiction requirements prior to the proposal, CONSULTANT shall assume the following requirements:

- The materials removed from the excavation may not be used for backfill.

- The CONSULTANT shall be responsible for hauling off and disposing of excavated pothole material. In this case, excavation holes shall be filled with a cement slurry mix from the bottom up. The excavated materials shall be tested for hazardous materials and disposed of offsite accordingly. Testing shall be the minimum required for classifying the materials. The potholing samples shall be tested by a California Environmental Laboratory Accreditation Program (ELAP) certified laboratory to identify characteristics of hazardous waste. A substance shall be considered hazardous if it possesses properties of toxicity, ignitability, corrosivity and/or reactivity per California Code of Regulations Title 22, Section 66261. In addition, the laboratory testing shall include an on-site Organic Vapor Analyzer (OVA) test for potential hydrocarbon contaminants. Should the OVA reading be equal to or greater than 45 ppm, further laboratory testing shall be performed to include Benzene, Toluene, Ethyl Benzene, and Xylene (BTEX) test per EPA guideline 8020 and Total Hydrocarbons (TPH) tests per EPA guideline.

- AC pavement shall be replaced to full depth or the structural section (AC & Base) plus two inches with hot mix asphalt .

- Concrete pavement shall be replaced to full depth plus two inches with Portland cement.

Quantitative Assumptions

- An allowance shall be included in the proposal for potholing including number of potholes and unit price per pothole.

- An allowance shall be included in the proposal for geophysical investigation including total square feet and unit price per square foot.

Depiction of Utilities and Potholes on Plans

All utilities encountered during the preliminary design shall be shown on the Plans. Project work that requires other agencies to relocate existing utilities shall be coordinated during the design by CONSULTANT. Each subsurface utility shown on the drawings shall include the Quality Level to which it was investigated as required by CI/ASCE 38-02. Pothole locations shall be shown on drawings with survey information.

Task 2.2.4 Design Memo 4 – Electrical Equipment Replacement and Miscellaneous Items

CONSULTANT shall develop the design configuration of the proposed facilities including the following material:

- Evaluate and verify all existing loads on each equipment that is being replaced.
- Recommended layouts, clearances and configuration of all new electrical equipment, including the information required to qualify and select specific equipment for the process.
- Evaluate and determine the routing of all cables and conduits from the new distribution equipment to respective loads.
- Recommended design and configuration of temporary power distribution system to support existing loads during construction. Design shall include but not limited to provision and connection of protable diesel generators.

This includes ductbanks, conduits, existing cable tray, and any new cable tray if required.

Task 2.2.5 Preliminary Design Drawings

Preliminary Design drawings shall be bound into a separate volume. Drawing requirements by discipline are described below.

General Drawings

General drawings shall include:

- Cover sheet including location and vicinity maps
- Index of drawings
- Abbreviations
- Legends and symbols

Demolition Drawings

Preliminary Design demolition drawings shall include a site plan indicating the location of structures to be demolished along with mark-ups of key record drawings that illustrate the extent of demolition proposed, including sections depicting the proposed depth of demolition.

Civil Drawings

Civil drawings shall include:

- Overall site plan
- Horizontal control, paving, and grading showing each structure at 1”=20’ scale or as required.
- Yard piping plans at 1”=20’ scale (or as required) showing the location and routing of buried pipelines greater than 12-inch diameter size and smaller diameter process piping (down to 8-inches in diameter) if the routing is critical to the site layout.

Structural Drawings

Structural drawings shall include:

- Ground and roof plans
- Illustrative sections
- Key project-specific details required to illustrate key connections, including to existing structures.

Architectural Drawings

Architectural plans and specifications shall be prepared by a Professional Architect licensed in the State of California.

The architectural drawings shall include preliminary architectural elevations and renderings. Two alternatives shall be developed and submitted to OCSD for selection of a preferred alternative.

Mechanical Drawings

Mechanical drawings shall include the following:

- Layout plans showing the location of all major equipment, major pipe sizes, major valve locations, and access routes.
- Sections illustrating the proposed layout of equipment and piping

Electrical Drawings

Electrical drawings shall include the following:

- Preliminary Electrical Site Plan. This is a preliminary site plan that shows routing of major electrical duct banks. This sketch will not be included in the final plans since final electrical plans will show the same information in more detail. See Engineering Design Guidelines, Appendix A, Section A.2.9 “Electrical Plan Drawings” for requirements.

- Single-line Diagrams. Single-line diagrams shall show all major electrical loads from the MCC level up. Load shall include all equipment shown on the process flow diagrams. The single-line diagrams shall also show preliminary information regarding auxiliary system and equipment such as HVAC, lighting, sump pumps, UPS, etc. This will enable the CONSULTANT to conservatively size equipment, rooms, and occupancies at this preliminary design point including loads and dimensions. See Engineering Design Guidelines, Chapter 10, Section 10.3.3 “Single-Line Diagrams”, Engineering Design Guidelines, Chapter 10, Section 10.7 “Distribution System Requirements” and Engineering Design Guidelines, Appendix A, Section A.2.8 “Single-Line Diagram Drawings” for requirements.

- Power Building, Electrical and Control Room Layouts.

- Demolition Plans and Demolition Single-Line Diagrams for major equipment such as MCCs, switchgear, transformers, and control panels.

- Cable and Conduit Schedule. Instrumentation and Control Drawings

Instrumentation and Control Drawings

Instrumentation and control drawings shall including the following:

- Process and Instrumentation Diagrams (P&IDs). Preliminary Design P&IDs shall show all major equipment, valves, instruments, and most auxiliary equipment. Where the project includes multiple parallel systems, P&IDs need only be prepared for one of the systems. Replication will not be required until Phase 3 - Design. All P&IDs included with the PDR shall be complete, with no missing equipment, instruments, piping, sampling provisions, metering, etc. Equipment block numbers, however, should not be included in PDR P&IDs.

- Demolition Process and Instrumentation Diagrams. CONSULTANT shall manually annotate existing P&IDs to indicate what equipment, piping, instruments and controls will be demolished by the project. This information shall be used to prepare Demolition EIDs specified in Task 2.2.7.

TASK 2.3 - PROJECT MANAGEMENT

CONSULTANT shall be responsible for managing CONSULTANT’s project execution, schedule, budget, subconsultants, and coordination with other projects. The following project management requirements apply to both Phase 2 – Preliminary Design and Phase 3 - Design.

Task 2.3.1 Project Management Plan (Not In This Scope)

~~CONSULTANT shall prepare a Project Management Plan (PMP) prior to beginning technical work on the project. The purpose of the PMP is to ensure that the work is properly planned so that:~~

- ~~The resources are efficiently used to complete the project scope accomplish the project objectives.~~
- ~~The work is planned to meet the specified schedule while providing appropriate opportunities for OCSD input.~~
- ~~Quality control and quality assurance measures are planned and implemented to meet OCSD's expectations.~~

~~The PMP shall focus on project specific information and be as concise as possible to document the required information. Where CONSULTANT has a standard procedure for some activity, that procedure shall be referenced, and not repeated in detail.~~

Task 2.3.2 Project Management Progress Meetings

CONSULTANT shall prepare an agenda and conduct monthly project management meetings with OCSD's Project Manager and the CONSULTANT's Project Manager. The purpose of the meetings will be to review CONSULTANT's Progress Report. Meetings should be arranged so that the most recent Progress Report is available for the meeting. Other meetings shall be scheduled on an as-needed basis.

Task 2.3.3 Project Schedule

CONSULTANT shall create a detailed project schedule using a Critical Path Method approved by OCSD Project Manager. The schedule shall be cost loaded and capable of calculating earned value. The schedule shall include milestones for all dates listed in Section III – Project Schedule. The schedule shall be based on the same work breakdown structure used for estimating earned value as described in "Progress Reports" above. Schedule updates shall be submitted with the monthly Progress Report.

At a minimum, the schedule shall indicate the following:

- Projected start date and finish date for each activity
- Each project task and subtask in the WBS with predecessors and successors
- Major meetings and workshops
- Physical percent complete for each activity in the WBS and percent complete by Phase

CONSULTANT shall prepare planned, actual and earned value curves for the Baseline Schedule and for monthly updates. Monthly updates shall also include Cost Performance Index (CPI) and Schedule Performance Index (SPI) calculations.

Task 2.3.4 Project Logs

CONSULTANT shall produce and maintain on at least a monthly basis the following logs through the course of the project:

Project Decision Log. The project decision log shall track decisions made during workshops and meetings, and as a result of OCSD review of deliverables. The log shall include the date of the decision, the title of the meeting where it was made (if applicable), a description of the decision, and a brief summary of the impacts.

Action Item Log. The action item log is used to track action items generated during meetings. Action items may only be assigned to members of the OCSD or CONSULTANT teams. If action is required by a different party, the action item shall be assigned to the person on the team to track who will track the action item with that person. The action item log is not intended to include normal CONSULTANT tasks, nor to include comments on deliverables. The Action Item log shall include a tracking number (typically coded to the date), a date it was created, a description of the action required, the lead person, and the date it was resolved. If action is required by more than one person, the person who will be asked to coordinate that action shall be listed.

Design Issues Log. The Design Issues log shall list general comments and concerns raised by OCSD staff during project meetings. An example of a design issues would be a request raised during Preliminary Design for a particular type of hose bibb to be used during construction. Such detail is not usually provided during Preliminary Design, so the comment would be tracked on the Design Issues Log to be verified prior to completion of the detailed design. This log is not intended to track OCSD comments on submittals. The log shall include a very short description of how the design issue will be addressed. The Design Issues log will be used during review of major submittals to confirm that the issue has been appropriately addressed.

Meeting Log. See Task 2.1.2.1 Workshops and Meetings, Workshop and Meeting Planning.

Task 2.3.5 Progress Reports

CONSULTANT shall submit monthly progress reports at the same time as monthly invoices that include the following contents:

- Work activities completed to date, in the current reporting period, and projected for the coming month.
- A brief description of outstanding issues and their potential for impact on scope, schedule (design and construction), budget (design and construction), and quality.
- Potential changes in the project scope or design scope.
- Budget status including estimates of actual costs to date, earned value, costs to complete, and costs at completion. The budget status over time shall be presented on a graph with associated tabular data indicating for each month the actual costs incurred, earned value, and planned value.

- A discussion of corrective actions to be taken to avoid or mitigate cases where estimated costs at completion exceed budgets.

- Schedule status, including an updated project schedule as a color hardcopy and as a native format electronic file.

- A discussion of corrective actions to be taken to avoid or mitigate cases where the project schedule is expected to be delayed.

- Updated Project Decision Log

- Updated Action Item Log

- Updated Design Issues Log

- Updated Meeting Log

- Updated Risk Management Log

- Summary of the status of CONSULTANT invoices, including identification of invoices not yet submitted and submitted but unpaid invoices.

- Overall project budget and schedule completion in graphical format on the same graph. Show actual budget used, original schedule completion, and actual estimated project completion on the graph.

- The approved WBS shall form the basis for reporting the status of each Scope of Work task in the monthly project Progress Report and the project Invoices.

All calculations of earned value and estimates to complete shall be made at the same level of detail as included in the Cost Matrix and Summary submitted with CONSULTANT's proposal. Furthermore, for estimating earned value, tasks shall be further broken down to subtasks of no more than $100,000. Progress reports shall include the basis for estimating earned value for each task and subtask.

Task 2.3.6 Project Invoices

CONSULTANT shall prepare and submit monthly invoices to OCSD no later than the first Wednesday of the following month. Invoices shall be submitted for every month that work is being performed, unless OCSD's Project Manager has provided prior approval for combining the work of two months into a single invoice.

The invoices shall document the man-hours and billing rate for each person that works on the project. Overhead, profit and any direct costs shall also be shown for each task. As part of the summary section of the invoice, CONSULTANT shall also include the following information:

- Budget

- Current billing period invoicing

- Previous billing period “total invoiced to date”
- Budget Amount Remaining
- Current billing period “ total percent invoiced to date”

Although CONSULTANT is required to track costs at the same level of detail as in the Cost Matrix and Summary for monthly Progress Reports, 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	Tasks 3.6 through 3.8
3251	Design Submittal 1	Tasks 3.1 through 3.3, divided into effort by design submittal. FDS is charged against DS3
3252	Design Submittal 2	
3253	Design Submittal 3/FDS	
3254	Bid Support Services	Task 3.4

Approval of an invoice by OCSD requires a Progress Report for the period covered by the invoice. Payment of an invoice will be delayed until the Progress Report is submitted.

OCSD will provide a sample invoice structure to CONSULTANT at the beginning of the project.

Task 2.3.7 Management of Subconsultants

The CONSULTANT shall be responsible for managing all subconsultants, including the assignment of scope, management of deliverables and schedules, reporting of progress, invoicing, and quality control.

TASK 2.4 – PDR PRODUCTION WORKSHOPS AND MEETINGS

CONSULTANT shall hold meetings and workshops throughout the project to keep OCSD appraised of the job, review work-in-progress, share information, discuss project submittals, present findings of technical analyses, receive and resolve comments, and obtain decisions and direction by OCSD staff. This task defines the major meetings and workshops to be held by the CONSULTANT in accordance with the requirements of OCSD’s Engineering Design Guidelines. CONSULTANT shall also hold additional meetings as required to keep OCSD apprised of the job, to review work-in-progress, and to receive and resolve comments.

When informal meetings or conference calls are held during the course of the project, the CONSULTANT shall document all conclusions reached in those meetings by an email to the OCSD Project Manager and Project Engineer describing the context of the meeting, the discussions, and the conclusions. The email shall be sent within 3 work days of the information meeting or conference call. Discussions and decisions made without documentation from an email will not be recognized as having occurred.

Workshop and Meeting Planning

Due to limited OCSD staff availability, some meetings may need to be scheduled up to four weeks in advance to find a time when all the required OCSD team members are available. On projects with many meetings, there is also a potential that a meeting will not be held until it is too late. To prevent this, the CONSULTANT Project Manager shall create and maintain a log of all anticipated meetings. The log shall also be used to track submission, review and finalization of agendas and minutes.

The log shall include, as a minimum, the following information for each meeting:

- Subject of Meeting. If the meeting is specifically included in the scope, use that title. Provide enough of a description that no two meetings have the same exact subject description.

- Scheduling Reference. Examples might include “4 weeks after Kickoff Meeting”, “Upon submittal of DM 5”, or “1 week after receipt of the draft DM.”

- Date. If the meeting is too far in the future to schedule, indicate that this date is tentative.

- Date Minutes Drafted. This should be the date that the draft minutes were transmitted to OCSD.

- Date Minutes Reviewed. This should be the date that OCSD transmitted it’s comments on the minutes, or indicated that there were no comments on the minutes.

Workshop and Meeting Agendas

CONSULTANT shall submit an agenda to OCSD for review at least one week prior to each meeting and workshop. The agenda shall include the following:

- Topics: A listing of each topic to be covered with sufficient detail so that OCSD attendees can reasonably determine if their participation is needed or not. A one-line description is not typically sufficient for the purpose. The topic description shall include what information will be presented, and what decisions will be needed.

- Timing: The proposed timing of each topic on the agenda including the projected start and stop time for the subject. The purpose of this item is to allow OCSD staff who cannot attend the entire meeting to attend the portions where they are needed.

- Attendees. The agenda shall include both OCSD and CONSULTANT team members. The OCSD Project Manager will add the OCSD staff attendees to the agenda prepared by the CONSULTANT, based on the CONSULTANT's Agenda and the CONSULTANT's recommendation of which OCSD staff members should attend.

- Meeting time and place. The CONSULTANT shall work with the OCSD PM to set the meeting date and time. Most meetings will be held at OCSD offices. The OCSD PM will reserve the conference room.

- A preliminary list of material to be provided at the meeting.

Materials to be used by the meeting attendees to prepare for the meeting shall be sent with the meeting agenda.

The CONSULTANT shall transmit to the OCSD Project Manager the following by the time of the meeting:

- Hard copies of the agenda, one for each attendee

- One sign-in sheet with the names of attendees pre-listed.

- Native electronic files used for the presentation. With the exceptions noted below, hard copies of presentation materials will generally not be required. The OCSD Project Manager will make the electronic files available to the OCSD project team internally.

- Hardcopies of all materials that cannot be easily viewed when projected on a screen. Examples might include design drawings and spreadsheets.

Meeting Minutes

CONSULTANT shall transmit the minutes to the OCSD Project Manager within 3 business days of the meeting in MS Word format using OCSD's template, or an approved substitution. CONSULTANT shall also update and transmit the Action Item Log, Decision Log, and Design Issues Log with the minutes.

The OCSD Project Manager will distribute the minutes for internal review. If there are no OCSD comments on the minutes, they will be considered final. If there are comments, the OCSD Project Manager incorporate all appropriate OCSD comments on the MS Word file with changes tracked. The updated MS Word file will be transmitted back to CONSULTANT. If CONSULTANT has no comments on the OCSD edits, the minutes will be considered final. If CONSULTANT has further comments on the OCSD edits, those comments should be discussed with the OCSD Project Manager.

Informal Meeting Requirements

Informal meetings such as office meetings shall be recorded as follows:

- CONSULTANT shall notify the OCSD Project Manager/Project Engineer prior to the meeting.
- CONSULTANT shall prepare minutes for the meeting.
- The minutes shall be submitted to the OCSD Project Manager/Project Engineer.
- After review and modification, the minutes will be filed as a formal record of the meeting.
- Meetings that do not follow this procedure will not be recognized as having occurred

CONSULTANT shall prepare for all telephone and teleconferencing meetings in the same manner as outlined above.

A copy of all comments on project issues obtained by CONSULTANT from OCSD staff without direct OCSD Engineering Project Manager's involvement shall be submitted for the Project Manager's approval within three business days of receipt.

Task 2.4.1 PDR Production Workshops

PDR Production Workshops shall be held during Preliminary Design to review the topics listed below. 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 to 4 hours in length.

Topic	Number of Workshops
PDR Production Kickoff	1
Design Memos	4
Implementation Plan and Sequencing Constraints	2

TASK 2.5– PERMITTING ASSISSTANCE

CONSULTANT services related to Permitting Assistance may span across Phase 2 – Preliminary Design and Phase 3 - Design. When such services are required, they will be based on the requirements of Section III – Project Schedule and the schedule constraints associated with each particular permit. The CONSULTANT shall allocate the budgeted hours between the Environmental Documentation services in Phase 2 and Phase 3 based on when these services will be required.

For all applicable Project Elements of this Scope of Work, CONSULTANT shall provide Bid Documents that ensure that the facility features and the facility performance, and construction procedures comply with all conditions of existing permits and permits required to construct this project. Construction drawings, specifications and supplemental drawings shall be prepared, as necessary, in the format required to obtain all permits.

CONSULTANT shall assist OCSD in obtaining permits. This assistance shall include completing application forms provided by OCSD, preparing supporting documentation for the permit applications as required by the issuing agency, furnishing the required number of copies of all construction drawings and exhibits, and attending meetings with permitting agencies at the request of OCSD.

With the exception of construction contractor-furnished permits, OCSD staff will execute all applications. All permit fees will be paid directly by the OCSD and will not be part of CONSULTANT's fee.

CONSULTANT shall submit all supporting documentation in a timely fashion for all permits required for this project as described below.

Task 2.5.1 Building Permits

The CONSULTANT shall assume 2 meetings at 2 hours each.

TASK 2.6– QUALITY CONTROL

The following Quality Control requirements apply both to Phase 2 – Preliminary Design and Phase 3 - Design. Quality control activities during Design should be budgeted for and charged to the Phase 3 quality control budget.

Submittals that contain gross deficiencies or errors requiring a significant amount of OCSD staff time for checking will be returned without review until OCSD is satisfied that a thorough CONSULTANT's review, checking and correction for coherence, consistency, spelling, etc. has been performed.

Quality Control Requirements

The CONSULTANT shall develop a Quality Assurance/Quality Control (QA/QC) Plan for implementation of the Scope of Work. The CONSULTANT's QA/QC Plan shall be reviewed and approved by OCSD Project Manager and shall include or reference all the controls necessary for implementation. As a minimum, the QA/QC Plan shall include the following:

1. Purpose and objective
2. QA/QC Team – Roles and Responsibilities
3. Independent Quality Control (IQC) Team – Roles and Responsibilities
4. The In-house Quality Process
5. QC coordination with OCSD

6. Technical Memo QC process

7. Design submittal QC process

8. Final design documents QC process

QA/QC documentation shall include, but not be limited to, the following:

1. Design Guidelines

2. Calculation Log

3. IQC Comment Log

4. Discipline Drawing IQC Checklists

5. QC Validation Forms

On a periodic basis, OCSD will conduct an audit of CONSULTANT's work to ensure conformance with the QA/QC Plan. OCSD shall notify CONSULTANT when these audits will occur. For this project, an audit will be done before the PDR submittal and after the DS1 submittal. CONSULTANT shall respond to any OCSD comments made during the audit within two weeks. If comments are extensive, OCSD will schedule a follow-up audit approximately 60 days after the comments are received.

Acceptance of CONSULTANT professional services shall be based on the result of audits conducted on the elements of the approved QA/QC Plan and the incorporation or resolution of comments resulting from these audits.

OCSD may also make periodic visits to the CONSULTANT's offices to review the progress of the technical work. These visits may include talking to CONSULTANT's personnel, reviewing drawings (both hardcopy and electronic), discussing QA/QC techniques that will be employed by OCSD in reviewing I/C drawings and assisting CONSULTANT's staff with understanding I/C requirements for such project elements as P&ID's.

A detailed description of the QA/QC Plan requirements is included in the Engineering Design Guidelines, Chapter 01, Design Guidelines – General Requirements, and as revised in Section V of this Scope of Work, "Project-Specific Deviations from OCSD Design Guidelines". Major elements of the QA/QC Plan shall include the following:

- CONSULTANT shall be responsible for the technical adequacy and quality control of his work.

- CONSULTANT controls shall assure that planning and design inputs are correctly translated into planning and design documents such as drawings, procedures, specifications, reports, and calculations.

- CONSULTANT shall be responsible for the physical control, security, and distribution of controlled documents required for performance of the Scope of Work.

- CONSULTANT's planning and design activities shall be controlled through the review workshop process, including discipline checks, inter-discipline cross-checks, and multidiscipline review workshops by an Independent Project Review Team.

Prior to the submittal to OCSD, each Evaluation Memo, Design Memo, and Design Submittal identified in the Scope of Work shall be thoroughly reviewed and corrected by a member of the QC Team. The reviewer shall attest to their review in the form of a written affidavit outlining the submittal subject and identifying the corrected deficiencies.

Discipline Internal Check

CONSULTANT shall perform discipline check and review all drawings, specifications, studies, reports, calculations, and any other deliverable required by the Scope of Work. These requirements shall be implemented by those Project Team members responsible for the specific planning or design activity. Documentary evidence of such checking shall be provided to OCSD with each project submittal.

Discipline Integrity Check

Immediately prior to the submittal of DS1, the CONSULTANT shall perform a drawing integrity check (plan check) for all disciplines. Each discipline shall provide an affidavit attesting to the details of the review, listing drawings and specification sections reviewed. The DS1 submittal shall also have a coordination check between the P&IDs and Mechanical Drawings. The mechanical lead engineer shall attest to the accuracy of each P&ID and the respective mechanical drawings.

Interdiscipline Coordination Check

CONSULTANT shall perform an inter-discipline coordination cross-check immediately before each design submittal to correct discrepancies among the process and demolition plans; mechanical, structural, electrical, and instrumentation and controls drawings, and databases. Within each submittal, all documents shall have inter-discipline coordination checked and shall be in agreement with each other. Documentary evidence of such checking shall be provided to OCSD with each project submittal. CONSULTANT shall refer to Engineering Design Guidelines, Chapter 01, Design Guidelines, General Requirements, and Phase 2 – Preliminary Design and Phase 3 –Design in this Scope or Work for additional requirements.

Documentation of Level of Effort for QA/QC

CONSULTANT shall include man-hours for all QA/QC activities related to Preliminary Design in this task, including the development of the QA/QC Plan and review of Bid Documents either by CONSULTANT, or by the CONSULTANT in conjunction with OCSD staff in meetings and workshops. The level of effort will be reviewed with OCSD staff prior to award of the Professional Design Services Agreement (PDSA).

PHASE 3 – DESIGN

All changes in OCSD's Engineering Standards, OCSD's Design Guidelines, and/or changes in design concepts and facility layouts as a result of OCSD comments that may occur up to transmittal of OCSD comments on Design Submittal 1 or 2, shall be incorporated into the Design by CONSULTANT with no increase in CONSULTANT's Not-to-Exceed upper limit on fees.

TASK 3.1 - BID DOCUMENTS

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;; equipment and instrumentation databases (EIDs); SCADA Administration Tool(SATs).

Task 3.1.1 Specifications

Task 3.1.1.1 Contract Agreement, General Conditions, and Special Provisions

CONSULTANT shall review OCSD's standard Contract Agreement, General Conditions, and Special Provisions, and General Contractor warranty requirements. The CONSULTANT shall prepare the initial draft of the Bid Submittal Forms – Attachment A Schedule of Prices, and the Special Provisions, Appendix A Work Completion schedule including the definition of contract milestones, the number of calendar days to be allowed for each, and a recommended amount of liquidated damage for not meeting the schedule requirements.

CONSULTANT shall identify all proposed changes or additions to OCSD's standard warranty requirements. Any proposed changes and additional warranties will be allowed only upon review and acceptance by OCSD.

Task 3.1.1.2 General Requirements and Additional General Requirements

OCSD will prepare the General Requirements (GRs) for the project, which will be updated by OCSD throughout the project. The CONSULTANT shall prepare the Additional GRs which take the form of Division 01 technical specifications. CONSULTANT shall be responsible for preparing the Additional GRs and all other technical specifications so that they are consistent with the GRs provided by OCSD.

In addition, CONSULTANT shall review OCSD's standard GRs and propose revisions via Additional GRs. OCSD's standard Contract Agreement sets the order of precedence in which plans and specifications in Divisions 01 through 17 supercede the GRs. Where minor changes to and deletions of certain GRs are warranted due to particular needs of the project, CONSULTANT may propose specific revisions to the GRs, subject to acceptance by OCSD's Engineering and Construction Division Manager.

Specific requirements in OCSD's GRs shall not be duplicated in Additional GRs Specifications. Only deviations from the GRs and project-specific requirements not addressed in OCSD's standard GRs shall be included in Additional GRs.

Additional GRs Specifications shall be developed by the CONSULTANT for specific project requirements and the numbering convention shall be per OCSD's template project Table of Contents. The following are the minimum Additional GRs topics required for this project:

- Summary of the Work
- Work Restrictions
- Sequence and Constraints
- Measurement and Payment
- Seismic Design Criteria (for those restraints, supports, etc. to be design by the Contractor)
- Site Access
- Mobilization/Demobilization
- Construction Photographs and Videos
- Equipment Shipping, Storage, and Handling

Task 3.1.1.3 Technical Specifications

CONSULTANT shall be responsible for contents of all technical specifications (Divisions 01 through 17), including edited OCSD Master technical specifications. OCSD's master technical specifications shall be reviewed in detail, and changes, deletions and additions required by the project shall be proposed by CONSULTANT. CONSULTANT shall be responsible for developing specifications required by the project that are not found in OCSD's Master Specifications.

Refer to the "Procurement Alternatives" portion of this Scope of Work regarding sole-source specification requirements.

Task 3.1.2 Drawings

The CONSULTANT shall prepare construction drawings per OCSD Design Standards including CAD Manual, Design Guidelines, Master Specifications, and Tagging Procedures.

Task 3.1.5 Equipment and Instrumentation Databases (EIDs)

OCSD will provide a truncated copy of the EID database for CONSULTANT to begin populating by completing the CONSULTANT-furnished fields for each device. The database shall identify all new equipment and instruments and all existing equipment and instruments to be deleted and/or modified under this project.

CONSULTANT shall submit the EID database for the project with information that is typically included in equipment data sheets. (see Engineering Design Guidelines, Appendix A for Equipment and Instrument Database (EID) requirements.

Task 3.1.6 SCADA Administration Tool(SAT)

OCSD uses SAT files to list all analog and discrete monitoring points on the project, filed by PLC. When existing PLCs are to be modified on a project, the CONSULTANT shall modify a copy of the database provided by OCSD to reflect the new equipment and demolition of existing facilities. (see Engineering Design Guidelines, Appendix A, Section A.3.14 " SCADA Administration Tool (SAT)" for requirements). A one-hour training session on the use of SAT will be provided by OCSD.

TASK 3.2 - DESIGN SUPPORT DOCUMENTATION

Task 3.2.1 Design Information

CONSULTANT shall include the following material with each Design Submittal:

- CONSULTANT shall maintain the Project Logs specified under Phase 2 Project Management through Phase 3 as well. Current copies of all logs shall be included with each Design Submittal.
- Written response log to OCSD comments on the previous submittal.
- Calculations
- Proposed list of suppliers to be named in the specifications for major equipment.
- Equipment data sheets
- Equipment catalog cuts and vendor quotations.
- All memos that may be been prepared since the previous submittal was delivered.

Task 3.2.2 Electrical Design Documentation

CONSULTANT shall provide the following electrical design information:

- Load List for all equipment. Lumping of auxiliary loads is allowed.
- For uniterruptible power supply (UPS), distribution panels, power distribution units (PDU), DC Battery System, transformers, power panels and all other equipment include documentation from at least three suppliers clearly showing each manufacturer's space requirements for their equipment. The purpose of this requirement is to confirm that sufficient space has been provided in electrical rooms for the largest equipment that might be supplied. If the largest equipment cannot be accommodated in the available space, CONSULTANT shall specify space restrictions in the technical specifications, provided the space restriction does not unduly limit the number of suppliers who can supply the required equipment.

- Lighting calculations.

- Duct bank cable pulling tension, derating and cable tray fill calculations.

Task 3.2.3 Construction Cost Estimates

CONSULTANT shall provide Construction Cost Estimates with each Design Submittal starting with Design Submittal 1 per OCSD's Engineering Design Guidelines, Chapter 01, Section 01.4.6 "Construction Cost Estimate."

Task 3.2.4 Construction Schedule

The CONSULTANT shall provide a Preliminary Construction Schedule in Gantt chart format using scheduling software such as Primavera Project Planner (P3) or Microsoft Project.

For DS1, the construction schedule prepared for the Preliminary Design Report may be updated based on changes since the PDR, but at the same level of detail.

For DS3 and later submittals, more information shall be included in the schedule. The goal is to develop a realistic schedule based on project information, not a "rule of thumb". The construction schedule shall based on the commissioning documents prepared for the project as well. CONSULTANT shall engage the services of a least one construction individual to review the quantity takeoffs from CONSULTANT staff and use this information to assist in the development of the detailed construction schedule. CONSULTANT may use their own staff if they are qualified or hire a Subconsultant to assist in this activity.

Task 3.2.5 Fire Protection Services

CONSULTANT shall secure the services of a Subconsultant to determine the fire protection requirements, prepare final plans and specifications for the selected plan and assist OCSD in obtaining approval from the fire authority.

Task 3.2.6 Utility Survey and Coordination Services

CONSULTANT shall determine all utilities impacted by the work for all applicable Project Elements of this Scope of Work. Utilities include all in-plant, utility company-owned, and public agency-owned piping, duct banks, and other interferences. All utilities encountered during the preliminary design shall be shown on the plans. Project work that requires other agencies to relocate existing utilities shall be coordinated during the design by CONSULTANT. Field investigations include visiting the project work site and each utility to verify the location of all interferences.

CONSULTANT shall secure the services of a licensed survey subcontractor to field locate potholes as necessary Survey locations of potholes shall be tied to the sample controls as used for the Control Survey.

CONSULTANT shall also secure the services of a subcontractor to perform the pothole work. CONSULTANT shall be responsible for identifying locations where potholing will be critical to the design effort to identify the location of existing piping, duct banks, and foul air ducts. The results of potholing efforts will be summarized in a field findings report. "Soft" excavation methods (vacuum extraction or sift drilling) will be used where feasible.

An allowance shall be included in the proposal for this effort including number of borings and unit price per boring as follows:

1. CONSULTANT's fee proposal shall include a cost for potholes and unit cost for additional potholes. The cost shall provide for a minimum of 30 potholes during preliminary design and 10 potholes during final design.

TASK 3.3 - DESIGN SUBMITTALS

Design Submittals shall be delivered in hard copy, PDF format (see section "Submittals in PDF Format" in Part V General Requirements), and native files. The number of hard copies is indicated in **Exhibit 4**. The following requirements apply to the labeling and organization of the PDF and native:

- Specifications shall be compiled into a single PDF file. When the specification exceeds approximately 700 pages, the specifications shall be broken into separate volumes. Divisions 16 and 17 should be kept in the same volume.

- Drawings shall be submitted as a single compiled file, except where the size of the file would exceed 30 MB, in which case the drawings should be separated into separate files by discipline. If the file for one discipline is more than 30 MB, the file may be divided into multiple files. In no case may drawings be submitted as separate PDF files for each drawing. The order of drawings in the PDF file shall match the list of drawings. Bluebeam Revu provides a mechanism for reducing the size of some PDFs. This tool works by compressing bitmap images and removing non-visible document data. It does not affect vector content (see section "Submittals in PDF Format" in Part V General Requirements).

- The PDF files shall be named to include the project number, the name of the deliverable (e.g. Draft PDR, DS1, etc), the volume, and the particular content. The files shall also be named so that the list appears in sequential order when sorted by file name. In cases where drawings are divided into separate PDF files by discipline, a number or letter must be included in the file name so that the files are listed in the same order as the List of Drawings.

- These requirements do not affect the organization, naming, and submittal of native files for CAD or MS Office files specified elsewhere in this Scope of Work and OCSD Design Standards.

- All native Word files used for specifications shall be submitted, combined into a single folder with the number of the specification section in the file name so that the files are listed in the same order they would appear in a hard copy print. Attachments to specification sections should be named so that they also fall in the correct order on the file list.

- Specification sections based on OCSD master specifications shall be edited using tracked changes so that by opening the Word file, the changes made from the OCSD master can be readily viewed. The printed version of the specification sections (both PDF and hard copy) shall not show the tracked changes.

- Native CAD files shall be submitted per the CAD manual standards, with all applicable.

The OCSD Project Manager may request that 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.

The Design Submittals shall be organized per the following structure. CONSULTANT may propose an alternative organization of the submittal for approval by the OCSD Project Manager.

Volume 1 - Submittal Documentation
- Memo to Reviewers
- Responses to Comments on Previous Submittal
- Design Information
- Facility Operations and Maintenance
- Electrical Design Documentation
- Instrumentation and Control Documentation
- Construction Cost Estimate
- Construction Schedule
- Procurement Alternatives

Volume 2 - Specifications

Volume 3 - Drawings

Volume 4 – Project Support Documentation
- Design Period Memos as needed to document specific design issues and their resolutions.
- Calculations
- Equipment Selection (organized by Specification Section)
  - Equipment Data Sheets
  - Catalog Cuts
  - Vendor Quotes

Volume 5 – Electronic Files and Databases

The Memo to Reviewers included at the beginning of Volume 1 shall describe how the submittal is organized, include a table of contents, and list any significant changes that have been made to the design since the last submittal, or the last time a particular issue was discussed.

TASK 3.4 - BID SUPPORT SERVICES

Task 3.4.1 Bid Phase Activities

CONSULTANT shall provide the following bid period services:

- Participate in the pre-bid meeting.
- Prepare project drawing set and project specification addenda to provide clarification and resolve errors and omissions identified prior to bid opening.

Task 3.4.2 Bid Evaluation Assistance

- Participate in reviewing alternate equipment proposals from the Contractor, if applicable.
- Participate in the evaluation of the submitted bids, furnish consultation and advice to OCSD staff and assist with all the related equipment, cost, and other analyses as required to finalize the award decision.

Task 3.4.3 Conformed Document Preparation

- 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 OCSD Design Guidelines” and the requirements of the CAD Manual).

TASK 3.5 - PROJECT MANAGEMENT

CONSULTANT Project Management responsibilities during Phase 3 - Design shall be as specified for Phase 2 – Preliminary Design.

TASK 3.6 - RISK MANAGEMENT ASSISTANCE

The CONSULTANT’s responsibilities for risk management assistance during Phase 3 - Design shall be as specified for Phase 2 – Preliminary Design. Specific Phase 3 risk management tasks shall include the following.

Task 3.6.1 Design Phase Risk Workshops

The design phase risk workshops shall be held per the following table:

Workshop Name	Timing	Duration
DS1 Risk Workshop	During OCSD's review of DS1	2 hours

The purposes of the workshops are to:

- Review the existing Risk Management Plan (RMP)
- Identify new key project-specific risks,
- Update the nature of the impact of each risk should it occur
- Update how likely the risk is to occur
- Update mitigation strategies that should be implemented, or be ready to be implemented to address each risk.

The workshops will be held at OCSD offices. CONSULTANT shall prepare the agenda, any appropriate presentation materials, and minutes for the Workshop. The minutes shall include sufficient information for OCSD to update the RMP and for CONSULTANT to update the Risk Mitigation Measure Log.

Task 3.6.2 Risk Mitigation Measure Log

Maintaining the Risk Mitigation Measure Log required for Phase 2 shall be continued through submission of the Final Design Submittal.

Task 3.6.3 Risk Monitoring Updates

The Risk Monitoring updates required for Phase 2 shall be continued through submission of the Final Design Submittal.

TASK 3.7 - WORKSHOPS AND MEETINGS

The requirements specified in Task 2.1.2 Workshops and Meetings specified for Phase 2 – Preliminary Design related to Workshop and Meeting Planning and Workshop and Meeting Agendas shall also apply for Phase 3 - Design.

Task 3.7.1 Design Phase Workshops

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 following workshops in Phase 3 – Design.

During final design, workshops shall be held after each design submittal. A constructability workshop shall also be held.

Task 3.7.1.1 Design Submittal 1 Workshops

DS1 Review Kickoff Workshop

The DS1 Kickoff Workshop shall be held immediately after DS1 is submitted. The objectives of this meeting include the following:

- Review how the submittal is organized, what material is included, and what material is not included, and how complete the various portions of the design are.
- Review significant design changes made since the previous submittal, and the reasons for those changes.
- Present key features of the submittal that OCSD staff should pay particular attention to when reviewing the submittal after the workshop.

CONSULTANT shall include at the Workshop staff members needed to present the material and directly address questions that may arise on the material. For this project, OCSD would anticipate the following CONSULTANT staff members would need to be physically present. In certain cases, CONSULTANT may propose that other team members participate by teleconference.

- Project Manager
- Project Engineer
- Lead Electrical

This workshop shall be 2 to 3 hours in length.

Immediately following the full workshop, the CONSULTANT Project Manager and Project Engineer shall present to OCSD's core engineering team the documentation of the quality control process implemented prior to delivery the design submittal. If the quality control process does not appear to have been implemented per OCSD or CONSULTANT's quality control standards, the OCSD Project Manager may reject the submittal.

DS1 Review Meetings

Up to DS1design submittal review meetings shall be held at approximately the midpoint of OCSD's review period. The design submittal meetings shall be working sessions that bring together OCSD and CONSULTANT staff to discuss specific design issues in detail. Each drawing shall be reviewed relative to the operation and maintenance of the facilities (i.e., space between equipment, utility requirements, maintenance concerns, etc). In addition, CONSULTANT shall also address questions that OCSD staff has identified during the first half of their review of the design submittal. The following Review Meetings shall be held:

- Electrical and I&C - (1) meetings
- Mechanical, Civil/Yard - (1) meeting
- Construction - (1) meetings

Each meeting shall be 2 to 4 hours in length.

DS1 Validation Workshop

The DS1 Validation workshop shall be held to review and validate the CONSULTANT's responses to OCSD's DS1 comments. This workshop shall be held after CONSULTANT has reviewed OCSD's comments on DS1 and developed suggested resolutions to the comments. The same OCSD and CONSULTANT staff that attended the kick-off workshop and design submittal review meetings should attend this workshop. The primary focus of this workshop is to resolve differences between the CONSULTANT and OCSD staff on how the comments should addressed.

This workshop shall be 2 to 4 hours in length.

Task 3.7.1.2 Design Submittal 2 Workshops

DS2 Review Kickoff Workshop

The DS3 Kickoff Workshop shall be held immediately after DS3 is submitted and shall be conducted as specified for the DS1 Kickoff Workshop, including the review of the CONSULTANT's quality control documentation.

This workshop shall be 2 to 4 hours in length.

DS2 Review Meetings

The DS3 Review Meetings shall be conducted as specified for the DS1 Review Meetings.

DS2 Validation Workshop

The DS3 Validation Workshop shall be conducted as specified for the DS1 Validation Workshop.

This workshop shall be 2 to 3 hours in length.

Task 3.7.1.3 Design Submittal 3 Workshops

DS3 Review Meetings

The DS3 Review Meetings shall be conducted as specified for the DS1 Review Meetings.

DS3 Validation Workshop

The DS3 Validation Workshop shall be conducted as specified for the DS1 Validation Workshop.

This workshop shall be 2 to 3 hours in length.

Task 3.7.1.4 Final Design Submittal Workshops

FDS Review Kickoff Workshop

An FDS Review Kickoff Workshop will not be required.

Task 3.7.2 Design Phase Meetings

Task 3.7.2.1 Technical Progress Meetings

Technical Progress Meetings shall be held every 4 weeks to review various issues with OCSD's project team. A total of 10 meetings shall be held during Preliminary Design Phase. The CONSULTANT shall coordinate with the OCSD Project Manager to determine what topics will be covered in what meetings, and what OCSD and CONSULTANT team members are required for each.

Task 3.7.2.2 Focused Meetings

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

- Quality control plan
- Potholing
- Sample P&ID; basis for equipment tag numbering,sample EID and SAT database
- Electrical distribution system, system controls and the related upgrades
- Single-line diagrams and electrical demolition

- Construction sequencing

- Additional meetings as necessary

Each meeting shall generally be 2-3 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 OCSD staff, as necessary to allow coordination between the CONSULTANT and OCSD staff.

Task 3.7.2.2 Safety and Risk Meeting

Meet with OCSD Safety and Risk Management personnel, and OCIP (Owner Controlled Insurance Program) safety representatives, between DS1 and DS3 to review the plans and specifications in accordance with OCSD safety policies and OCSD Risk Management goals.

Task 3.7.2.3 CONSULTANT Office Technical Meetings (COTMs)

OCSD has found it mutually beneficial to visit the CONSULTANT offices from time to time to observe the detailed design in process, answer detailed technical questions, and establish lines of communications with CONSULTANT staff. During the Design Phase, CONSULTANT shall arrange for OCSD staff to meet in CONSULTANT's work center and audit "over the shoulder" design reviews with CONSULTANT's staff. The reviews will be monitored by a member of CONSULTANT's Management Team. Signification decisions will be reported to Consultants Project Manager and OCSD's Project Manager and logged into the Decision Log. Action items will be identified.

The CONSULTANT shall schedule, at a minimum, the following CONSULTANT Office Technical Meetings (COTMs):

- One three-hour visit to review the Conduit, Tray and Cable Schedules

- One three-hour visit to review each of the SAT and EID products, including P&ID, SAT and EID coordination.

- One three-hour visit to perform DS1 over the shoulder review.

- One three-hour visit to perform DS3 over the shoulder review.

The CONSULTANT shall schedule each of the above COTMs and shall coordinate with OCSD's Project Manager to be sure the correct personnel participate in the meetings. The CONSULTANT may propose additional, eliminate, or combine COTMs as needed to support the detailed design.

OCSD may also request additional "over the shoulder" design review meetings to audit the design in other areas not listed above.

TASK 3.8 - QUALITY CONTROL

The quality control requirements for Phase 3 - Design and Bid are specified under Quality Control for Phase 2.

TASK 3.9 – PERMITTING ASSISTANCE

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

PHASE 4 – CONSTRUCTION AND INSTALLATION SERVICES

Not in this Scope of Work.

PHASE 5 – COMMISSIONING SERVICES

Not in this Scope of Work.

PHASE 6 – CLOSE OUT

Not in this Scope of Work.

V. GENERAL REQUIREMENTS

GENERAL

OCSD ENGINEERING DESIGN GUIDELINES AND STRATEGIC PLAN

CONSULTANT shall refer to and adhere to the requirements of OCSD Safety Standards, OCSD Engineering Design Guidelines and other OCSD's Design Standards referenced therein. **Exhibit 12**Error! Reference source not found. is a complete set of the OCSD Design Guidelines, OCSD CAD Manual, and an excerpt from the OCSD Instrument and Equipment Tagging Procedure, which are the latest edition at the time of the design proposal stage. CONSULTANT shall request the most current version of these documents prior to the start of work

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 OCSD Master Specifications, and other related OCSD Standards, etc.

Refer also to Section "CONSULTANT's Responsibilities" in OCSD Engineering Design Guidelines Chapter 01. Refer to "Master Specifications Instructions for Use" that mandates rules and conventions to be used in all OCSD project specifications.

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.

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

The project Scope of Work and OCSD Engineering Design Guidelines impact CONSULTANT's project cost.

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

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

OCSD may update OCSD's Master Specifications and/or add new OCSD Master Specifications up to transmittal by OCSD of comments on Design Submittal 1. The CONSULTANT shall utilize the new and/or modified Master Specifications for the DS3 submittal.

The CONSULTANT shall not begin editing the project specifications until the project team meets with OCSD'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 OCSD's master specifications, and where other sources will be utilized.

Project Phases and Tasks

Project tasks and deliverables shall include the requirements described in this Scope of Work. CONSULTANT shall also refer to Appendix A of OCSD 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.

Construction Sequencing and Constraints

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

Working Hours

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

Standard Drawings and Typical Details

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

Software

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

Version specific

o Windows 10 Professional
o Esri software 10.3.1 (fGDB, pGDB or shapefile formats)
o Microsoft Internet Explorer 11
o AutoCAD P&ID ver 2016 (for P&ID drawings only)
o Autodesk software 2015 (AutoCAD, AutoCAD Map3D or compatible dwg file format)
o Microsoft Office 2016
o Maximo 7.6
o Bluebeam Revu eXtreme (version 2018.2)
o Primavera P6 for scheduling
o Database software as defined elsewhere in the project Scope of Work

Version non-specific

If the version is needed for one of the standard software items listed below, please email OCSD Information Technology at sde@ocsd.com to request the version number and the timeframe for any planned upgrades.

o Windows Professional
o Esri software (fGDB, pGDB or shapefile formats)
o Microsoft Internet Explorer
o AutoCAD P&ID ver 2016 (for P&ID drawings only)
o Autodesk software (AutoCAD, AutoCAD Map3D or compatible dwg file format)
o Microsoft Office
o Maximo
o Bluebeam Revu eXtreme
o Primavera P6 for scheduling
o Database software as defined elsewhere in the project Scope of Work

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

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

Submittal Review using Bluebeam

OCSD has standardized on the use of Bluebeam Revu for reviewing and providing comments to PDF files. Prior to submitting electronic PDF files, format them as indicated below (underlined text refers to commands or functions within the Bluebeam software). See "**Exhibit 17** Designer Training for Submission" and "OCSD CAD Standards Manual" prior to submission.

1. Flatten file with Document\Flatten
2. Reduce file size with Document\Process\Reduce File Size
3. Make PDF searchable with Document\OCR
4. Create page labels with Thumbnails Toolbar\Create Page Labels
5. Create bookmarks with Create Bookmarks\Page Labels
6. Enable hyperlinks with File\Batch\Link\New

PDF files will be hosted in a Bluebeam cloud-based studio session for review. See "SOW **Exhibit 18** Designer User Training" for a detailed explanation on how Bluebeam will be used to provide, validate, and close submittal review comments.

1. The purpose of the studio session is to provide review and collaboration. The session provides multiple attendees, despite location, the opportunity to review and comment on the same PDFs in real time. All review actions are tracked and recorded.
2. OCSD staff will create the Bluebeam studio session, invite attendees, configure, and manage the Studio session.
3. Bluebeam provides reviewers with tools for annotating PDFs called a markup. OCSD provides two toolboxes for annotating PDFs: "OCSD Drawings Review" and "OCSD Report Review."
4. Markups are both graphical and tabular. When the graphic markup is placed, corresponding tabular data are created. The collection of tabular data is considered the markup list.
5. The markup is automatically populated with various properties including author, sheet number, comment, markup type, etc. to make reviewing consistent. The tabular data within the markup list are hyperlinked to the graphical markup for back-and-forth viewing.
6. The markup list may be sorted or filtered. For example, filtering markups by author makes that attendee's markups more prominent on the page by dimming everyone else's markups.
7. Within a studio session, markups may only be modified by the markup author except for the Status data field using the "Set Status" command. OCSD has customized this field for the reconciliation of comments and backcheck. Session attendees may "Reply" to the markup of other reviewers. Replying to a markup provides the responder the opportunity to explain how the markup will be incorporated.

8. The comment reconciliation steps are summarized below:
    a. Reply – respond to OCSD provided review comment with: **Agree, Disagree,** or **Flag for Discussion**.
    b. Direct – meet with OCSD to reconcile the non-agrees with either an **Incorporate** or **Do Not Incorporate** response. OCSD will work with Consultant to ensure clear direction is provided.
    c. QC Check – Consultant tells OCSD that the comment has been addressed in the next submittal by responding with **Incorporated** or **Not incorporated**.
    d. Backcheck – reconciliation of open and incorporated comments by OCSD with an **Open** or **Closed** response.
9. A one-hour training session on the use of Bluebeam and custom status menu will be provided by OCSD. All Consultant team members responsible for quality control and reconciliation of submittal comments shall attend.

Submittals in PDF Format

OCSD has standardized on the use of Bluebeam Revu for reviewing and providing comments to PDF files. To facilitate the use of Bluebeam, the following Bluebeam commands shall be executed prior to submission of PDF files:

1. Reduce file size with Document\Process\Reduce File Size
2. Make PDF searchable with Document\OCR
3. Create page labels with Thumbnails Toolbar\Create Page Labels
4. Create bookmarks with Create Bookmarks\Page Labels
5. Enable hyperlinks with File\Batch\Link\New

PDF files will be hosted in a cloud-based Studio session for review:

10. The purpose of the Studio session is to provide cloud-based review and collaboration. The session provides multiple attendees, despite location, the opportunity to review and comment on the same PDFs in real time. All review actions are tracked and recorded.
11. OCSD staff will create the Bluebeam Studio session, invite attendees, configure, and manage the Studio session.
12. Bluebeam provides reviewers with tools for annotating PDFs called a markup. OCSD provides two toolboxes for annotating PDFs: "OCSD Drawings Review" and "OCSD Report Review."
13. Reviewers will need to install the OCSD Profile and Toolboxes containing the Bluebeam tools for providing markups. OCSD team members and CONSULTANT shall use these tools during design review, reconciliation of comments, and backcheck.
14. Markups are both graphical and tabular. When the graphic markup is placed, corresponding tabular data are created. The collection of tabular data is considered the markup list.
15. The markup is automatically populated with various properties including author, sheet number, comment, markup type, etc. to make reviewing consistent. The tabular data within the markup list are hyperlinked to the graphical markup for back-and-forth viewing.

16. The markup list may be sorted or filtered. For example, filtering markups by author makes that attendee's markups more prominent on the page by dimming everyone else's markups.
17. Within a Studio session, markups may only be modified by the markup author except for the Status data field using the "Set Status" command. OCSD has customized this field for the reconciliation of comments and backcheck. Session attendees may "Reply" to the markup of other reviewers. Replying to a markup provides the responder the opportunity to explain how the markup will be incorporated.
18. The reconciliation steps are summarized below:
    a. Provide comments
    b. Agree/Disagree (disagrees requires comments)
    c. Reconcile the disagrees (through email, phone, or meeting)
    d. Incorporated/Not incorporated (not incorporated needs a response)
    e. Open/Closed (for OCSD backcheck)
19. Alerts concerning a markup may be sent to a session attendee. They will receive an email with a snapshot view of the selected markup and available, associated metadata. The snapshot is also a link into the session and clicking it will not only take the recipient directly into the session, but straight to the markup as well.
20. Studio sessions may persist and remain active throughout design and construction and multiple submittals may be contained within a Studio session for backcheck.

VI. STAFF ASSISTANCE

OCSD staff member or designee assigned to work with CONSULTANT on the design of this project is Todd Waltz at (714) 593-7117, e-mail to: twaltz@ocsd.com.

EXHIBITS:

Exhibit 1	**Design Submittal Requirements Matrix**
Exhibit 2	**Project Schedule Calculation**
Exhibit 3	**Sample Criticality Data Table (Not Used)**
Exhibit 4	**Deliverables Quantities**
Exhibit 5a	**Sample Construction Cost Estimate Format-Basis of Estimate**
Exhibit 5b	**Sample Construction Cost Estimate Format-Sample 2-4**
Exhibit 6	**Sample Full Project Safety Review Plan**
Exhibit 7	**Sample Risk Management Check List**
Exhibit 8	**MMRP Log Template (Not Used)**
Exhibit 9	**Sample ORT Procedure (Not Used)**
Exhibit 10	**Sample FAT Procedure (Not Used)**
Exhibit 11	**Sample RAT Procedure (Not Used)**
Exhibit 12	**OCSD Engineering Design Guidelines**
Exhibit 13	**Project Reference Material (Not Used)**
Exhibit 14	**(Not Used)**
Exhibit 15	**(Not Used)**
Exhibit 16	**(Not Used)**
Exhibit 17	**Designer Training for Submission**
Exhibit 18	**Designer User Training**

TW:dm

ATTACHMENT “D”

ALLOWABLE DIRECT COSTS

ATTACHMENT "D"
ALLOWABLE DIRECT COSTS

LONG DISTANCE TELEPHONE CHARGES	All long distance telephone charges incurred will be reimbursed as direct costs. Telephone charges to area codes serving Los Angeles, Orange, Riverside, and San Bernardino Counties will not be reimbursed.
FACSIMILE TRANSMISSION CHARGES	Facsimile transmission charges will not be reimbursed, except the long distance toll charges, as described above.
REPRODUCTION AND PRINTING CHARGES	In-house reproduction of records and documents will not be reimbursed by the SANITATION DISTRICT. Use of an outside copy service for specialty items and volume reproduction will be reimbursed at direct cost. Use of a professional printing service will be reimbursed at actual cost.
OVERNIGHT MAIL DELIVER AND MESSENGER SERVICE	Use of Federal Express, Express Mail, UPS, or such similarly-related service, as well as a messenger service, will be reimbursed at direct cost only when necessary.
POSTAGE	Incidental postage will not be reimbursed by the SANITATION DISTRICT.
FILM PROCESSING	Film processing will be reimbursed at actual cost.
COMPUTER USAGE	Computer use by Consultant and/or support staff will not be reimbursed.
MILEAGE	Per mile reimbursement will be at the current rate set by the Internal Revenue Service.
TEMPORARY STAFF	The use of outside temporary support staff will be reimbursed at direct cost with prior approval of the SANITATION DISTRICT.
OFFICE SUPPLIES	The purchase of office supplies by Consultant will not be reimbursed.
LODGING	The cost of lodging including room and all applicable taxes will be reimbursed on a per diem basis as an allowable maximum as established by U.S. General Service Administration. Lodging incidentals as defined by IRS are included in the per diem rates. Lodging personal incidentals including movies, internet, laundry service, valet service, room service, etc., will not be reimbursed. Receipts must be provided for the actual incurred cost. Cancellations of the hotel reservations by the Consultant must be per the hotel policy. Late cancellations, early or late departure will not be reimbursed by the SANITATION DISTRICT.
GROUND TRANSPORTATION	The cost of ground transportation for taxi, shuttle, train, etc., will be reimbursed. Limousine service will not be reimbursed. The Consultant shall use the most economic and practical mode of transportation that is reasonably available.

AIRFARE	Airline ticket cost including one bag will be reimbursed only if pre-approved by the SANITATION DISTRICT. First class tickets will not be reimbursed unless pre-approved by the SANITATION DISTRICT. Membership dues for corporate card frequent user programs or the cost of airline club membership will not be reimbursed.
AUTO RENTAL	Rental car cost for intermediate or standard model, mid-size car (Class "C") or the smaller car compatible with the specific need and rental car gas will be reimbursed. Receipts must be provided to substantiate requested reimbursements.
PARKING FEE	Parking fees for hotel, airport, rail station, etc. will be reimbursed. Consultant shall use the most economic and practical parking location as reasonably available. Excessive parking fees that are deemed unreasonable by the SANITATION DISTRICT will not be reimbursed.
TRAVEL MEALS	Travel meals will be reimbursed on a per diem basis as established by U.S. General Service Administration. Per diem rates include gratuities (tips) and will not be separately reimbursed by the SANITATION DISTRICT. Personal expenses such as cost of alcoholic beverages will not be reimbursed. No receipts are required for the approved meals. The daily total reimbursement for meals shall not exceed the SANITATION DISTRICT per diem rate which is available upon request.
PER DIEM DAILY RATE FOR LODGING AND MEALS	The SANITATION DISTRICT may utilize per diem daily rate that includes lodging, meals and incidentals (M&IE) as established by IRS and U.S. General Service administration for pre-approved travel when reasonable.
RENTAL EQUIPMENT	Consultant will be reimbursed at actual cost, no mark-up.
OTHER DIRECT COSTS	OCSD may authorize other items that may be necessitated due to modifications in scope of work resulting from field investigations and field work required by Contract. These items may include special equipment, test equipment and tooling and other materials and services not previously identified. These items will be reimbursed based on actual cost incurred. A one-time mark-up of 15% for additional equipment rentals, materials and outside services required for field work and investigations may be allowed, as applicable, if justified. No additional markup is allowed by Consultant on other direct costs resulting from work performed by its Contractors.
MISCELLANEOUS	Cost of miscellaneous personal items such as, but not limited to newspapers, toiletries, shoeshine, tobacco products, pay TV, movies, valet services, health club charges, in-room mini bars, clothing and footwear will not be reimbursed. ATM/bank fees incurred by Consultant while traveling will not be reimbursed. Costs for project team lunches will not be reimbursed unless pre-approved by the SANITATION DISTRICT.

ATTACHMENT “E”

FEE PROPOSAL FORM

ATTACHMENT "E"
FEE PROPOSAL FORM

Submitted by: Tetra Tech
(Name of Firm)

Consultant Name:		Tetra Tech			
Raw Labor		$ 236,690			
Fringe Costs	56.00%	$ 132,547			
		Burdened Labor (Raw Labor + Fringe)		$ 369,237	
		Overhead	74.00%	$ 273,235	
				Subtotal (Burdened labor + OH)	**$ 642,472**
Note: Round all values to nearest dollar.				Profit (% of Subtotal) 9.13%	$ 58,658
				Total Direct Costs, not to exceed	$ 1,500
TOTAL - "Consultant" Not to Exceed					**$ 702,630**

Major Subconsultant A Name:					
Raw Labor					
Fringe Costs		$ -			
		Burdened Labor (Raw Labor + Fringe)		$ -	
		Overhead		$ -	
				Subtotal (Burdened labor + OH)	**$ -**
Note: Round all values to nearest dollar.				Profit (% of Subtotal) 10.00%	$ -
				Total Direct Costs, not to exceed	
TOTAL - Major Subconsultant A Not to Exceed					**$ -**

ATTACHMENT "E"
FEE PROPOSAL FORM

Submitted by: Tetra Tech
(Name of Firm)

Major Subconsultant B Name:					
Raw Labor					
Fringe Costs		$ -			
		Burdened Labor (Raw Labor + Fringe)		$ -	
		Overhead		$ -	
				Subtotal (Burdened labor + OH)	**$ -**
Note: Round all values to nearest dollar.				Profit (% of Subtotal)	10.00% $ -
				Total Direct Costs, not to exceed	
TOTAL - Major Subconsultant B Not to Exceed					**$ -**

Major Subconsultant C Name:					
Raw Labor					
Fringe Costs		$ -			
		Burdened Labor (Raw Labor + Fringe)		$ -	
		Overhead		$ -	
				Subtotal (Burdened labor + OH)	**$ -**
Note: Round all values to nearest dollar.				Profit (% of Subtotal)	10.00% $ -
				Total Direct Costs, not to exceed	
TOTAL - Major Subconsultant C Not to Exceed					**$ -**

ATTACHMENT "E"
FEE PROPOSAL FORM

Submitted by: Tetra Tech
(Name of Firm)

Subconsultants Under $100,000		
Subconsultant 1	C-Below	$ 50,050
Subconsultant 2	Jensen Hughes	$ 32,000
Subconsultant 3		
Subconsultant 4		
Subconsultant 5		
TOTAL - Subconsultants Under $100,000		**$ 82,050**

SUMMARY	
Consultant	$ 702,630
Major Subconsultant A	$ -
Major Subconsultant B	$ -
Major Subconsultant C	$ -
Subconsultants Under $100,000	$ 82,050
GRAND TOTAL - Not to Exceed	**$ 784,680**

ATTACHMENT “I”

COST MATRIX & SUMMARY

Uninterruptible Power Supply Improvements at Plant 1, P1-132

Attachment I - Cost Matrix

Task Item	Labor hours														Total Hours	Raw Labor	Fringe Costs	Burdened Labor	Overhead	Burdened Labor & Overhead	Profit	Total Subs	Allowable Direct Costs	Total Fees
	Principle-in-Charge	Project Manager	Project Engineer	Electrical Engineer	I&C Engineer	Lead Constructability	QA/QC	Project Controls	Civil Engineer	Mechnical Engineer	Structural Engineer	CAD	Administrative Support	Survey Lead										
Average Actual Salary Fully Burdened Hourly Rate (includes payroll costs, OH, and Profit)	96.56	108.17	85.29	37.86	57.33	120.67	77.26	61.15	56.93	54.09	75.96	47.05	36.23	67.31			56.00%		74.00%		9.13%			
PHASE 2 - PRELIMINARY DESIGN																								
2.1 Predesign Evaluation Studies (NOT USED)															0	0.00	0.00	0.00	0.00	0.00	0.00			0.00
2.2 Preliminary Design Production (7 months)	**4**	**0**	**0**	**0**	**0**	**0**	**0**	**20**	**0**	**0**	**0**	**10**	**32**	**0**	**66**	**3,239.10**	**1,813.90**	**5,053.00**	**3,739.22**	**8,792.21**	**802.73**	**0**	**0**	**9,594.94**
2.2.1 DM 1 - Regional UPS	**2**	**12**	**72**	**118**	**40**	**28**	**0**	**30**	**28**	**60**	**36**	**20**	**26**	**16**	**488**	**30,139.92**	**16,878.36**	**47,018.28**	**34,793.52**	**81,811.80**	**7,469.42**	**2,000**	**1,500**	**92,781.22**
2.2.2 DM 2 - Implementation Plan	**0**	**0**	**14**	**10**	**5**	**10**	**0**	**52**	**6**	**7**	**7**	**0**	**14**	**0**	**125**	**8,004.96**	**4,482.78**	**12,487.74**	**9,240.93**	**21,728.66**	**1,983.83**	**0.00**	**0.00**	**23,712.49**
2.2.3 DM 3 - Utility Investigation, Cable, Conduit Routing	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**12**	**48**	**0**	**0**	**8**	**0**	**72**	**140**	**8,689.16**	**4,865.93**	**13,555.09**	**10,030.77**	**23,585.86**	**2,153.39**	**50,050.00**	**0.00**	**75,789.24**
2.2.4 DM 4 - Auto shop area and miscellaneous items	**0**	**0**	**16**	**80**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**96**	**4,393.44**	**2,460.33**	**6,853.77**	**5,071.79**	**11,925.55**	**1,088.80**	**0.00**	**0.00**	**13,014.36**
2.2.5 Preliminary Design Drawings	**0**	**0**	**12**	**28**	**26**	**3**	**0**	**0**	**27**	**27**	**35**	**106**	**8**	**0**	**272**	**14,869.43**	**8,326.88**	**23,196.31**	**17,165.27**	**40,361.58**	**3,685.01**	**0.00**	**0.00**	**44,046.59**
2.3 Project Management	**0**	**40**	**6**	**0**	**0**	**0**	**0**	**40**	**6**	**6**	**6**	**0**	**50**	**0**	**154**	**10,217.92**	**5,722.04**	**15,939.96**	**11,795.57**	**27,735.52**	**2,532.25**	**0.00**	**0.00**	**30,267.78**
2.4 PDR Production Workshops and Meetings	**0**	**58**	**12**	**86**	**0**	**0**	**0**	**0**	**20**	**11**	**11**	**0**	**24**	**0**	**222**	**13,991.97**	**7,835.50**	**21,827.47**	**16,152.33**	**37,979.80**	**3,467.56**	**0.00**	**0.00**	**41,447.36**
2.5 Permitting Assistance	**0**	**0**	**6**	**12**	**0**	**0**	**0**	**12**	**12**	**12**	**12**	**0**	**6**	**0**	**72**	**4,161.00**	**2,330.16**	**6,491.16**	**4,803.46**	**11,294.62**	**1,031.20**	**0.00**	**0.00**	**12,325.82**
2.6 Quality Control	**2**	**20**	**0**	**0**	**0**	**0**	**64**	**0**	**0**	**0**	**0**	**24**	**12**	**0**	**122**	**8,865.12**	**4,964.47**	**13,829.59**	**10,233.89**	**24,063.48**	**2,197.00**	**0.00**	**0.00**	**26,260.48**
2.x Not Used															0	0.00	0.00	0.00	0.00	0.00	0.00			0.00
2.x Not Used															0	0.00	0.00	0.00	0.00	0.00	0.00			0.00
2.x Not Used															0	0.00	0.00	0.00	0.00	0.00	0.00			0.00
Subtotal - Phase 2 - Preliminary Design	**8**	**130**	**138**	**334**	**71**	**41**	**64**	**166**	**147**	**123**	**107**	**168**	**172**	**88**	**1,757**	**106,572.02**	**59,680.33**	**166,252.35**	**123,026.74**	**289,279.09**	**26,411.18**	**52,050.00**	**1,500.00**	**369,240.27**
PHASE 3 - FINAL DESIGN																								
3.1 Bid Documents (12 months)	**2**	**0**	**19**	**40**	**8**	**2**	**0**	**34**	**12**	**12**	**12**	**60**	**21**	**0**	**222**	**11,934.70**	**6,683.43**	**18,618.13**	**13,777.42**	**32,395.55**	**2,957.71**	**0.00**	**0.00**	**35,353.26**
3.2 Design Support Documentation	**0**	**0**	**20**	**90**	**10**	**8**	**0**	**36**	**13**	**29**	**25**	**0**	**12**	**0**	**243**	**13,495.72**	**7,557.60**	**21,053.32**	**15,579.46**	**36,632.78**	**3,344.57**	**30,000.00**	**0.00**	**69,977.36**
3.3 Design Submittals	**0**	**0**	**32**	**104**	**0**	**0**	**0**	**100**	**63**	**39**	**38**	**180**	**100**	**0**	**656**	**33,456.30**	**18,735.53**	**52,191.83**	**38,621.95**	**90,813.78**	**8,291.30**	**0.00**	**0.00**	**99,105.08**
DS 1 (60%)	0	0	12	42	0	0	0	20	25	16	16	72	20	0	223	11,452.85	6,413.60	17,866.45	13,221.17	31,087.62	2,838.30	0	0	33,925.92
DS 2 (90%)	0	0	12	42	0	0	0	20	25	16	16	72	20	0	223	11,452.85	6,413.60	17,866.45	13,221.17	31,087.62	2,838.30	0	0	33,925.92
DS 3 (100%)	0	0	8	20	0	0	0	20	13	7	6	36	20	0	130	6,655.40	3,727.02	10,382.42	7,682.99	18,065.42	1,649.37	0	0	19,714.79
FDS	0	0	0	0	0	0	0	20	0	0	0	0	20	0	40	1,947.60	1,090.66	3,038.26	2,248.31	5,286.57	482.66	0	0	5,769.23
FTS	0	0	0	0	0	0	0	20	0	0	0	0	20	0	40	1,947.60	1,090.66	3,038.26	2,248.31	5,286.57	482.66	0	0	5,769.23
3.4 Bid Support Services	**0**	**0**	**8**	**16**	**0**	**0**	**0**	**0**	**0**	**8**	**12**	**8**	**8**	**0**	**60**	**3,298.56**	**1,847.19**	**5,145.75**	**3,807.86**	**8,953.61**	**817.46**	**0.00**	**0.00**	**9,771.08**
3.5 Project Management	**0**	**48**	**12**	**0**	**0**	**0**	**0**	**72**	**8**	**8**	**8**	**0**	**40**	**0**	**196**	**13,563.48**	**7,595.55**	**21,159.03**	**15,657.68**	**36,816.71**	**3,361.37**	**0.00**	**0.00**	**40,178.08**
3.6 Risk Management Assistance	**2**	**4**	**6**	**8**	**0**	**2**	**0**	**38**	**4**	**4**	**4**	**0**	**6**	**0**	**78**	**4,970.76**	**2,783.63**	**7,754.39**	**5,738.25**	**13,492.63**	**1,231.88**	**0.00**	**0.00**	**14,724.51**
3.7 Workshops and Meetings	**0**	**111**	**111**	**0**	**0**	**0**	**0**	**0**	**60**	**45**	**45**	**0**	**48**	**0**	**420**	**32,481.15**	**18,189.44**	**50,670.59**	**37,496.24**	**88,166.83**	**8,049.63**	**0.00**	**0.00**	**96,216.47**
3.8 Quality Control	**2**	**20**	**0**	**0**	**0**	**0**	**114**	**0**	**0**	**0**	**0**	**48**	**24**	**0**	**208**	**14,292.08**	**8,003.56**	**22,295.64**	**16,498.78**	**38,794.42**	**3,541.93**	**0.00**	**0.00**	**42,336.35**
3.9 Permitting Assistance		**1**	**4**	**8**					**8**	**4**	**4**	**16**	**4**		**49**	**2,625.57**	**1,470.32**	**4,095.89**	**3,030.96**	**7,126.85**	**650.68**			**7,777.53**
3.10 Not Used															0	0.00	0.00	0.00	0.00	0.00	0.00			0.00
3.1 Not Used															0	0.00	0.00	0.00	0.00	0.00	0.00			0.00
Subtotal - Phase 3 Final Design	**6**	**184**	**212**	**266**	**18**	**12**	**114**	**280**	**168**	**149**	**148**	**312**	**263**	**0**	**2132**	**130,118.32**	**72,866.26**	**202,984.58**	**150,208.59**	**353,193.17**	**32,246.54**	**30,000**	**0**	**415,439.70**
TOTAL - PHASES 2 AND 3	**14**	**314**	**350**	**600**	**89**	**53**	**178**	**446**	**315**	**272**	**255**	**480**	**435**	**88**	**3889**	**236,690.34**	**132,546.59**	**369,236.93**	**273,235.33**	**642,472.26**	**58,657.72**	**82,050**	**1,500**	**784,679.98**
Rounded - Use for Attach E - Fee Proposal Form																**236,690.00**	**132,547.00**	**369,237.00**	**273,235.00**	**642,472.00**	**58,658.00**	**82,050.00**	**1,500.00**	**784,680.00**

Profit Calculations			
Min Threshold	250,000	250,000	10%
Max Threshold	2,500,000	2,500,000	5%
Proposed Burdened Labor & Overhead	273,235.33	642,472.26	9.13%

ATTACHMENT “K”

MINOR SUBCONSULTANT HOURLY RATE SCHEDULE

ATTACHMENT "K"

MINOR SUBCONSULTANT HOURLY RATE SCHEDULE

(Submit with Proposal)

Submitted By: C Below | Subsurface Imaging
(Name of Firm)

Labor Category	Hourly Rate $/hr
Project Coordinator	$95.00
Admin	$95.00
Drafting	$95.00
Locating | Locating Technician	$135.00
Locating | Supervising Technician	$180.00
Mobilization | Crew	$195.00
Mobilization | Single Tech	$110.00

In-House Non-Labor Services	Units	Billing Rate $/unit
Pothole | 0' - 5' Deep	30	$560.00
Pothole | 5' - 10' Deep	10	$610.00
Trenching Per Foot (0-5 feet deep)	20	$325.00
Mapping	16	$215.00
Traffic Control | 25 - 55 MPH	4	$950.00
Permitting	1	$1000.00

Instructions

1. Include one schedule per Minor Subconsultant.
2. For labor charges, list all categories that might be used on the projects, whether such hours are budgeted or not. This schedule will be the only basis for compensation of labor charges during project execution.
3. In-House Non-Labor Services are for services provided by the Minor Subconsultant, but not suitable for an hour labor rate. Examples include laboratory tests and equipment rental.
4. All charges are subject to the Allowable Direct Costs requirements included as Attachment D to the RFP.
5. Allowable Direct Costs will be compensation at actual costs incurred.

ATTACHMENT "K"

MINOR SUBCONSULTANT HOURLY RATE SCHEDULE

(Submit with Proposal)

Submitted By: **Jensen Hughes, Inc.**

(Name of Firm)

Labor Category	Hourly Rate $/hr
Vice President	$350.00
Sr. Fire Protection Engineer III / Sr. Consultant III / Assoc. Director / Director	$300.00
Sr. Fire Protection Engineer II / Sr. Consultant II	$275.00
Sr. Fire Protection Engineer I / Sr. Consultant I	$235.00
Fire Protection Engineer II / Consultant II	$210.00
Fire Protection Engineer I / Consultant	$190.00
Associate	$170.00
Sr. Technician	$125.00
Technician / Intern	$115.00
Sr. Project Administrator	$105.00

In-House Non-Labor Services	Units	Billing Rate $/unit

Instructions

1. Include one schedule per Minor Subconsultant.
2. For labor charges, list all categories that might be used on the projects, whether such hours are budgeted or not. This schedule will be the only basis for compensation of labor charges during project execution.
3. In-House Non-Labor Services are for services provided by the Minor Subconsultant, but not suitable for an hour labor rate. Examples include laboratory tests and equipment rental.
4. All charges are subject to the Allowable Direct Costs requirements included as Attachment D to the RFP.
5. Allowable Direct Costs will be compensation at actual costs incurred.

ATTACHMENT “L”

OCSD SAFETY STANDARDS

Attachment L

The Orange County Sanitation District

OCSD Safety Standards

September 10, 2018 (Revision 8)

Contents

I. INTRODUCTION

A. SAFETY PHILOSOPHY

1. The Orange County Sanitation District (OCSD) is dedicated to the principle that a safe project is a successful and profitable project for all our construction programs and our CONTRACTORs and Subcontractors. We are committed to the safety of our project Employees, the surrounding community, and the environment.

2. Safety is viewed as an integral component of the construction process, the other key components being production and quality. However, safety is a primary component of the success of this project.

3. The CONTRACTOR shall be responsible for initiating, maintaining, supervising, and enforcing all safety precautions and programs regarding the performance of the contract. Their Employees share in that responsibility as well. All Employees are expected to work safely and to contribute to the safety of others. In fact, this is an important condition of employment for everyone working on any OCSD project.

4. Incident prevention contributes to the CONTRACTOR's well-being by avoiding injury or illness to the CONTRACTOR and its' Subcontractor's Employees, improving productivity, contributing to quality, and reducing costs. The community also benefits directly from incident prevention efforts when potential damage to the environment or members of the community is effectively managed.

5. To say that all incidents can be prevented is a realistic goal, not just a theoretical objective. It is achievable, in part by eliminating sources of hazards and unsafe acts, and by incorporating measures such as safety controls, proper training, safe operating procedures and personal protective equipment to meet this goal.

6. For all CONTRACTORs to understand this Safety Philosophy and to meet its expectations, both general and specific training is required. That training is the responsibility of every level of supervision for each Employer. Safety training and the prevention of incidents are logical and appropriate parts of how we expect the operations of each CONTRACTOR and Subcontractor to be conducted.

B. PROGRAM OBJECTIVES

1. These OCSD Safety Standards (Safety Standards) have been designed to establish the minimum standards for which the CONTRACTOR's Site-Specific Safety Program (SSSP) must meet or exceed.

2. The Safety Standards contained in this document were developed as minimum standards to assist the CONTRACTOR in the elimination or reduction of hazards and risk associated with the construction project. These minimum guidelines also assist the CONTRACTOR'S efforts to prevent incidents, ensure the safety of the public, reduce Employee injuries, prevent damage to property, and promote efficiency, and effect savings by reduction of unplanned business interruption. The CONTRACTOR is expected to meet or exceed these standards.

3. All OCSD CONTRACTORS are required to meet or exceed these Safety Standards, OSHA 29 CFR 1926 and Title 8 CCR Subchapter 4 Construction Safety Orders.

4. All OCSD Service Vendors or Visitors performing General Industry work (non-construction) are required to meet or exceed these Safety Standards, OSHA 29 CFR 1910 and Title 8 CCR Subchapter 7 General Industry Safety Orders.

5. OCSD and its authorized representatives will neither assume nor relieve any CONTRACTOR, Service Vendor or Visitor of their direct responsibility for the safety and health of their Employees, the protection of visitors and the public, or the protection of equipment and property.

6. All CONTRACTORS and Subcontractors working on OCSD projects are responsible for initiating, maintaining, supervising, and enforcing all safety precautions and programs identified in the contract documents, OCSD Safety Standards, and Federal, State, and Local regulations. OCSD will make every effort to advise the CONTRACTORS of known hazards associated with our processes; however, the CONTRACTOR is ultimately responsible for the identification of hazards and ensuring they are controlled or eliminated.

7. CONTRACTORs, Subcontractors, and Services Vendors can prevent accidents, injuries and illness through completion of the following:
    a. Perform or attend new hire safety orientations.
    b. Conduct daily toolbox/tailgate safety meetings.
    c. Receive safety training (i.e., hazard communication, trenching shoring, confined space, lockout/tagout, respiratory protection and respirator fit testing, equipment training and certification).
    d. Mandatory personal protective equipment (PPE) programs.
    e. Injury reporting and record keeping maintaining up-to-date incident experience and trend analysis.
    f. Using Incident investigation information to correct deficiencies and eliminate additional losses.
    g. Implementing appropriate and effective Safety Management Systems.
    h. Using safety planning, such as Job Site Safety Analysis and Pre-Planning, as a tool to eliminate workplace injuries and property damage.
    i. Conducting safety audits/inspections to identify, prioritize, and correct non-compliance conditions.
    j. Protecting public and private property adjacent to all construction site work zones.
    k. Informing the OCSD Risk Management and the ENGINEER of any visit from a regulatory agency such as OSHA, EPA or SCAQMD.
    l. Educating and training employees by implementing their respective safety programs.
    m. Maintain a positive and proactive safety culture. A proactive safety culture may mitigate the first incident or accident. A reactive safety culture may prevent the second.

C. CONFLICT BETWEEN REGULATIONS AND SAFETY STANDARDS

1. In the case of conflict between regulations, codes, reference standards (regulatory supported), OCSD Safety Standards, drawings and other Contract Documents, the most stringent requirements shall govern.

2. Conflicts shall be brought to the attention of the ENGINEER. OCSD reserves the right to issue a final determination for conflicts.

3. The CONTRACTOR shall bid for the most stringent regulatory supported and applicable reference standards.

II. EMERGENCY PROCEDURES

A. GENERAL

1. Reporting and notifications times vary depending on the type of emergency, but all emergencies shall be reported as soon as possible and no later than 24 hours from onset of the emergency.

2. In the event of an emergency, the CONTRACTOR shall immediately stop work until it is determined that it is safe to resume. If a person sustains a major injury or a significant near miss has occurred, the work must be stopped and the investigation initiated immediately. First Aid and CPR trained individuals shall begin treatment on injured employees.

3. When working at Plant 1 or Plant 2, the CONTRACTOR shall make emergency notification for Medical Emergencies, Fires, Spills or Chemical Releases, and Workplace Violence to the Plant 1 Control Center by dialing 2222 from a District landline or 714-593-7025 from cell phone. CONTACTOR shall state they are a CONTRACTOR, provide the nature and location of the emergency. Do not contact 911 directly when working in plant. The P1 Control Center will contact 911. CONTRACTOR shall also notify the ENGINEER.

4. When working offsite (including pump stations), the CONTRACTOR shall make emergency notification for Medical Emergencies, Fires, and Workplace Violence by calling 911 or the Local Fire Department/Agency (depending on nature of emergency). CONTRACTOR shall provide at a minimum the location and nature of the incident. CONTRACTOR shall also notify the ENGINEER.

5. Job site emergency telephone numbers shall be posted on the job site bulletin board.

6. A local street map clearly identifying the project and active entrances shall be maintained and posted on the job site bulletin board by the emergency telephone numbers, which shall also identify the nearest hospital.

7. Sufficient employees shall be trained in First Aid and CPR and be available at the job site always.

B. MEDICAL EMERGENCY

1. Assess the scene to make sure it is safe and that hazards are not present that could injury medical responders.

2. Render first aid or cardiopulmonary resuscitation (CPR) promptly to the injured employee(s).

3. Once first aid/CPR is underway, contact 911 if working offsite or P1 Control Center (714-593-7025 or x2222) when at Plant 1 or 2.

4. Call the ENGINEER or OSM to report the medical emergency within 24 hours.

C. FIRES

1. In case of fire in any building:
    a. Evacuate the immediate area, and
    b. Activate the fire alarm system (if available), and
    c. Contact 911 when working offsite or P1 Control Center (714-593-7025 or extension 2222) when at Plant 1 or 2.
    d. Call the ENGINEER or OSM.

2. For fire outside of buildings:
    a. Evacuate the immediate area, and
    b. Contact 911 when working offsite or P1 Control Center (714-593-7025 or extension 2222) when at Plant 1 or 2.
    c. Call the ENGINEER or OSM.

D. EMPLOYEE CONDUCT

1. All project employees must maintain professional behavior always. Horseplay, fighting, sexual harassment, hostile work environments, possession or use of alcohol and/or unauthorized drugs, possession of firearms and gambling are not allowed and shall result in disciplinary action, up to and including immediate removal of the CONTRACTOR and/or Subcontractor(s) and/or the employee(s) from the site.

E. WORKPLACE VIOLENCE

1. The CONTRACTOR and its Subcontractors shall adopt and enforce their written workplace violence policy that covers harassment, intimidation, threats, violence, and weapons. Before the on-site work commences, the CONTRACTOR shall submit the CONTRACTOR's and its Subcontractors' adopted policies for the ENGINEER's information.

2. OCSD reserves the right to remove from the Project any employee of the CONTRACTOR and/or its Subcontractors for violation of the respective policies adopted by the CONTRACTOR and its Subcontractors.

F. NEWS MEDIA

1. CONTRACTORS, Subcontractors, and employees shall refer questions from news media personnel (radio, television, newspaper) to the ENGINEER.

2. Project accidents/incidents resulting in news media coverage (radio, television, newspaper) shall be immediately reported to the ENGINEER.

III. ROLES AND RESPONSIBILITIES

A. GENERAL

1. The CONTRACTOR shall be responsible for initiating, maintaining, supervising, and enforcing all safety precautions and programs regarding the performance of the Contract for the on-site safety of their employees and Subcontractors performing work for the benefit of this project. This includes responsibilities for the public, OCSD Staff, OCSD Representatives, vendors, delivery and transportation services, and service providers at the project location.

2. Each CONTRACTOR shall be responsible for initiating, maintaining, supervising, and enforcing all safety precautions and programs relating to the performance of the contract for the safety of its employees, its Subcontractors, the public, and the work site in general.

3. The CONTRACTOR shall comply with all applicable provisions of Federal, State, and local laws, ordinances, codes and regulations affecting safety and health, including but not limited to the OSHA Act, and OSHA Standards, and these Safety Standards.

4. Each CONTRACTOR and Subcontractors shall comply with the most stringent of the following:
    a. California and Federal OSHA Standards.
    b. The CONTRACTOR's Site-Specific Safety Program.
    c. Applicable consensus standards, including ANSI, NFPA, etc., if specified before or during work by OCSD Risk Management.
    d. The OCSD Program Safety Standards.
    e. Contract Documents.

5. The CONTRACTOR must have full-time safety representative coverage for all construction activities associated with the project.

6. Each CONTRACTOR shall designate a responsible and qualified member of its organization at the work site who has the following:
    a. Authority to enforce the CONTRACTOR's Safety and Substance Abuse programs.
    b. Responsibility to assure compliance with the OSHA Act.
    c. Responsibility to identify and obtain correction of hazards.

7. In addition to requirements described elsewhere in this document, the CONTRACTOR's Safety Manager, Alternate Construction Safety Manager and CONTRACTOR's Safety Representative and Subcontractor Safety Representative shall have at minimum:
    a. Authority to stop work when a serious safety hazard or imminent danger is identified.
    b. Authority to implement corrective actions.
    c. Relevant construction experience in the type of work the CONTRACTOR performs.
    d. Evidence of completion of either the OSHA 30 Hour General Industry or Construction Outreach Training within the last three (3) years.
    e. Current First Aid training from a provider recognized by OSHA.
    f. Current CPR training from a provider recognized by OSHA.

8. The CONTRACTOR shall be required to submit its Injury and Illness Prevention Program (IIPP), Proposed Project/Site Safety Representative, and Site-Specific Safety Program (SSSP) no later than fifteen (15) days from the effective date of the Notice to Proceed for review by OCSD. Upon request by OCSD, CONTRACTOR shall be required to submit the Injury and Illness Prevention Program and/or written SSSP of each Subcontractor providing Work on any OCSD jobsite.

9. CONTRACTOR shall enforce that the Subcontractors are responsible for initiating, maintaining, supervising and enforcing the safety requirements outlined by OCSD Safety Standards and the CONTRACTOR's Site-Specific Safety Program, even though the requirements may be above and beyond the Subcontractor's own safety policies and Federal and State OSHA requirements.

10. The CONTRACTOR shall be responsible for initiating, maintaining, supervising and enforcing all safety precautions and programs relating to the performance of the Contract for the on-site safety of its employees and Subcontractors performing work for the benefit of this project. This includes responsibilities for vendors, delivery and transportation services, and service providers at the project location.

11. The CONTRACTOR shall provide additional safety resources for poor safety performance and demonstrated inability to manage safety in accordance with the Contract. At the ENGINEER's request, the CONTRACTOR shall be required to employ a CSM (full-time) for projects that do not meet the criterion for a CONTRACTOR dedicated safety professional.

12. Each CONTRACTOR shall have at least one (1) copy of all applicable OSHA regulations available for use and reference at the job site.

B. CONTRACTOR SAFETY MANAGER AND REPRESENTATIVE

1. The CSM shall be identified in writing to the ENGINEER prior to the commencement of work.

2. The CSM shall have a minimum of three (3) years of qualified project safety representative (primary project duty) experience on large, similar type construction projects.

3. The CONTRACTOR shall submit the resume of the CSM candidate to the ENGINEER for review, prior to the start of on-site work.

4. OCSD reserves the right to direct the removal and replacement of the CSM if necessary.

5. The CSM shall be provided for the duration of the contract. The CSM shall be provided for the duration of the work when the CONTRACTOR and its' Subcontractors are at the project site.

6. A CSM or CSR shall be present always when work is taking place. If the CONTRACTOR has multiple distinct work locations, each location shall have a CSM or CSR and SSR as required by contract present when work is taking place.

7. Alternate CONTRACTOR Safety Manager (ACSM) or Alternate CONTRACTOR Safety Representative (ACSR) meeting the same qualifications as the CSM or CSR shall be present when the CSM or CSR is not present at the project. The ACSM or ACSR shall hold the same responsibilities as the CSM or CSR. ACSM and/or ACSR duties may be assumed by a similarly qualified project Supervisor.

8. The CONTRACTOR shall notify the ENGINEER in writing when the CSM will not be present on the project. This notification shall include the name of the ACSM.

9. The CONTRACTOR shall maintain a list of CONTRACTOR and Subcontractor Safety Representatives. This list shall be available for review upon request.

10. Specific responsibilities of the CONTRACTOR's Safety Manager / Representative must include, but are not limited to, completing or overseeing the completion of the following by their Employer and all Subcontractors.
    a. Conduct project-specific safety orientation sessions for employees who are new to the site, prior to their beginning work.
    b. Conduct, participate in, or assist Field Supervisors with weekly toolbox safety meetings.
    c. Conduct weekly supervisory and management safety meetings.
    d. Instruct and inform supervisors and management on safety rules and regulations.
    e. Instruct supervisors and employees in the proper use and care of personal protective equipment (PPE).
    f. Instruct supervisors and Employees concerning special procedures (e.g. confined space entry, trench shoring, lockout/tagout, etc.)
    g. Complete incident investigation reports in accordance with the Safety Standards. Records are to be maintained at the site, and distributed as described in these Safety Standards.
    h. Conduct and document weekly (at minimum) project safety inspections. Documentation shall be created and maintained for corrective action taken to correct deficiencies identified during inspections. Records of inspections and corrections are to be maintained at the site.

i. Forward copies of inspection and corrective action records to the ENGINEER, OSM and Risk Management.

j. Maintain training documentation. Records are to be maintained at the site available for review upon request.

k. Implement site-specific safety policies and procedures.

l. Demonstrate, by example, proper safety behavior and a proactive safety culture.

m. Ensure that required first aid supplies are adequate.

n. Coordinate transportation of employees with minor injuries to the designated Medical Clinic.

o. Inform the CSM/CSR (where applicable), ENGINEER, OSM and Risk Management informed of any safety related problems that have or may develop.

p. Maintain records in accordance with OSHA Recordkeeping requirements.

q. The OSHA 300 Log for the CONTRACTOR is to be available for review upon request by the ENGINEER, OSM, or Risk Management.

C. SUBCONTRACTOR SAFETY MANAGER AND REPRESENTATIVE

1. Each subcontractor must have a designated Subcontractor Safety Representative (SSR) who is assigned the responsibilities for managing all safety aspects associated with their Subcontractor.

2. The SSM and SSRs must be approved by the CONTRACTOR based on their experience and qualification to administer and manage safety programs. SSMs and SSRs for each project will need to be reported to the ENGINEER.

3. The CONTRACTOR and OCSD reserve the right to direct the removal and replacement of the SSM if necessary.

4. The SSM shall be provided for the duration of the Contract. The SSR(s) shall be provided for the duration of the work when the Subcontractors are at the project site.

5. A SSM or SSR shall be present always when work is taking place.

6. For Subcontractors, these are the responsibilities of the Subcontractor Safety Representative.

    a. Conduct project-specific safety orientation sessions for employees who are new to the site, prior to their beginning work.

    b. Conduct, participate in, or assist with CONTRACTORS with weekly toolbox safety meetings.

    c. Instruct and inform supervisors and management on safety rules and regulations.

    d. Instruct supervisors and employees in the proper use and care of personal protective equipment (PPE).

e. Instruct supervisors and Employees concerning special procedures (e.g. confined space entry, trench shoring, lockout/tagout, etc.)

f. Complete incident investigation reports in accordance with the Safety Standards. Records are to be maintained at the site, and distributed as described in these Safety Standards.

g. Conduct and document weekly (at minimum) project safety inspections. Documentation shall be created and maintained for corrective action taken to correct deficiencies identified during inspections. Records of inspections and corrections are to be maintained at the site.

h. Forward copies of inspection and corrective action records to the CONTRACTOR for submittal to the ENGINEER.

i. Maintain training documentation. Records are to be maintained at the site available for review upon request.

j. Implement site-specific safety policies and procedures.

k. Demonstrate, by example, proper safety behavior and a proactive safety culture.

l. Ensure that required first aid supplies are adequate.

m. Coordinate transportation of employees with minor injuries to the designated Medical Clinic.

n. Inform the CSM/CSR (where applicable), ENGINEER, OSM and Risk Management informed of any safety related problems that have or may develop.

o. Maintain records in accordance with OSHA Recordkeeping requirements.

p. The OSHA 300 Log for the CONTRACTOR is to be available for review upon request by the ENGINEER, OSM, or Risk Management.

IV. PROGRAM REQUIREMENTS

A. SITE-SPECIFIC SAFETY PROGRAM (SSSP)

1. Each CONTRACTOR shall have an effective and written Site-Specific Safety Program in accordance with OSHA and OCSD requirements that is not its Injury & Illness Prevention Program.

2. This Site-Specific Safety Program shall also include, but not be limited to, the following site-specific components as they apply to the CONTRACTOR's work:

   a. Safety and Health Policy Statement

   b. Assignment of accountability and responsibilities for key personnel responsible for implementation of the Safety Program

   c. Identification of Competent Persons and Qualified Persons

   d. Scope of Work Evaluation

   e. Hazard/Risk/Exposure Assessment

   f. Control Measures / Activity Hazard Analysis

   g. Three Week Look Ahead Planning with a safety focus.

h. Procedures for effectively communicating safety and health matters to employees

i. Safety Incentive Program / Safety Recognition Program

j. Progressive Disciplinary Action Program describing the disciplinary process for non-compliance with safety requirements including criteria for verbal notices, write ups, suspension, and termination for all CONTRACTOR personnel, including Subcontractors and vendors.

k. Workplace Hazard Identification Inspection and Corrective Action Program

l. Safety Training Program (including provisions for Supervisory and Craft Employee training)

m. Project-specific Employee Safety Orientation Program

n. Provisions for maintaining orientation, training, inspection, corrective action and investigation records

o. Hazard Communication Program

p. Job Hazard Analysis (JHA) Program

q. Emergency Response and Evacuation Plan

r. Fire Prevention Program

s. Hot Work Program

t. Drug Free Workplace / Substance Abuse Prevention Program

u. Incident Investigation Program

v. Near Miss Incident Investigation Program

w. Fall Prevention Program (training and rescue plans shall be addressed in the program)

x. Scaffold Safety (shall include scaffold inspection, scaffold erector training, and scaffold user training in the program)

y. Confined Space Entry Program (training and rescue plans shall be addressed in the program)

z. Control of Hazardous Energy Program (LOTO)

aa. Excavation Safety Program

bb. Heat Illness Prevention Program

cc. Site Logistics Plan

dd. Other written programs required by this and other Contract Documents or regulatory agencies

ee. Industrial hygiene air sampling plan when required by Cal OSHA

ff. Measures to mitigate public exposure to hazards as applicable

gg. Proof of drug testing of all CONTRACTOR and Subcontractor employees who will be on site. Drug testing shall be completed within a 30-day period prior to the effective date of the Notice to Proceed.

3. The CONTRACTOR shall submit to OCSD within fifteen (15) days of the effective date of the Notice to Proceed (NTP) an electronic copy of the CONTRACTOR's Site-Specific Safety Program ("Program") for review.
    a. The Program will be reviewed for inclusion of the requirements of the OCSD Safety Standards and applicable sections of the project specifications.
    b. The approval of the Program will be based solely on the content of the Program relative to conformance with these Safety Standards and project specifications. Receipt of program does not constitute approval.
    c. Failure to attain approval of the Program prior to the scheduled commencement of Contract work is not grounds for a time extension.

4. The CONTRACTOR scope shall include these OCSD Safety Standards. This shall include all services required for the complete performance of the Contract work in accordance with the requirements of the Safety Standards.

5. All CONTRACTOR and Subcontractor Project Superintendents and General Foreman(s), for every applicable trade, shall verify completion of either the OSHA 30-hour General Industry or the Construction Safety Course. Additionally, all on-site trade foremen shall verify completion of either the OSHA 10-hour General Industry or Construction Safety Course. All certificates must be from within the last three (3) years.

6. All CONTRACTOR and Subcontractor employees shall receive a project site safety orientation that at minimum reviews the Project Safety Rules and regulations, and applicable Emergency and Evacuation Plans prior to their start of work.
    a. Vendors and visitors shall be provided with an orientation that is appropriate for their exposures during their time on site.
    b. The General CONTRACTOR is to provide this orientation.

7. The CONTRACTOR shall conduct monthly (at minimum) Project Safety Meetings with their Subcontractors to properly coordinate the work within the trades and resolve matters related to safety and health and project work. Minutes shall be kept of each meeting, including topics covered and attendees, and made available to the ENGINEER, OSM, or OCSD Risk Management upon request.
    a. The OCSD reserves the right to request additional Project Safety Meetings be conducted by the CONTRACTOR when requested by the ENGINEER, OSM, or OCSD Risk Management to address specific areas of concern.

8. The CONTRACTOR shall conduct toolbox safety meetings with its employees at least once a calendar week. Minutes of these toolbox meetings are to be prepared and maintained by the CONTRACTOR, and available for review by the ENGINEER, OSM, or OCSD Risk Management, upon request. Meetings should be relevant to the work ahead or in response to lessons learned and contain the following information:
    a. Employee names in a legible format
    b. Identifier for each employee
    c. Employer name
    d. Date of meeting

e. Description of meeting topics

f. Name(s) of person(s) conducting the meeting

9. The CONTRACTOR and its Subcontractor(s) shall ensure that all personnel are properly trained and instructed for all jobs that require specific training and/or competency to meet all applicable OSHA regulations, Federal, State, and local law, and the requirements herein.

10. Each CONTRACTOR and Subcontractor (via the CONTRACTOR) shall submit to the ENGINEER a list of (a) Competent Persons and Qualified Persons as applicable to the Employer's scope of work, and (b) First Aid / CPR trained personnel prior to starting work.

    a. Each list shall be clearly dated, and updated as required throughout the Contract Duration. Each time the list is updated, a copy shall be provided to the OCSD Risk Management and the ENGINEER.

11. Each CONTRACTOR is responsible for handling, daily, rubbish and debris generated by its work. The CONTRACTOR must keep the work place clean.

12. The CONTRACTOR will cooperate in inspections by OCSD, OSHA and other regulatory agencies.

13. The cited Employer(s) shall submit copies of all regulatory agency citation notices to the CONTRACTOR (if applicable), ENGINEER, OSM, and OCSD Risk Management immediately upon receipt.

    a. The CONTRACTOR shall ensure that it posts copies of all citations as required by OSHA or the applicable regulatory agency.

B. PROJECT PLANNING AND PROJECT MEETINGS

1. Safety and loss control activities are key elements in the success of this project.

2. Safety and loss control activities are to be integrated into the work plan such that safety is an integral component of the construction process, rather than treated as a separate activity.

3. There are five main elements to the planning and meeting component of the OCSD Safety Standards.

    a. **Project Survey**: Prior to the start of work, the CONTRACTOR shall conduct a physical survey of the job site. The CONTRACTOR shall also review the plans and specifications.

    b. **Construction Process Plan:** From the Project Survey, the CONTRACTOR shall develop a written Construction Process Plan. The Construction Process Plan shall identify tasks and activities under four main categories:

        1) Construction sequence and procedures

        2) Temporary Structures / Shoring / Reshoring / Bracing / Retention Systems required

3) Critical Structures or Processes

4) Description of required tests and approvals

c. **Job Hazard Analysis:** Job Hazard Analysis (JHA) needs may be pre-determined in part by reviewing the Construction Process Plan and Construction Schedule. The JHA should be prepared far enough in advance of the task or activity to ensure that changes or revisions will not affect the scheduled execution of the task or activity. JHA's are further discussed later in this section.

d. **Construction Progress Meetings**: These meetings are typically held on a weekly or bi-weekly basis, and are typically chaired by the ENGINEER. A sample minimum Safety and Loss Control Agenda is included in this section.

1) The CONTRACTOR shall prepare a Three-Week Look-Ahead Schedule and submit same for review prior to each Construction Progress Meeting.

e. **Pre-Phase Planning Meetings:** Pre-phase meeting needs may be identified from the Construction Process Plan.

1) The CONTRACTOR shall schedule the Pre-Phase Planning Meeting far enough in advance of the start of the relevant phase to ensure that changes or revisions to JHA's and coordination efforts will not affect the scheduled execution of the relevant phase of work.

2) The Pre-Phase Meeting shall include the ENGINEER and OCSD Risk Management, as well as all CONTRACTORs and Subcontractors involved in that phase of work. This meeting shall identify and address the safety and coordination issues of the relevant phase of work.

3) Pre-Phase Hazard Analysis' shall be prepared using the JHA form (or an acceptable equivalent); specific JHAs are to be prepared using the Pre-Phase Hazard Analysis as a guide.

4) Subsequent meetings may be required throughout the phase of work to maintain safety and coordination efforts.

C. JOB HAZARD ANALYSIS

1. Certain activities that are part of the Project shall trigger additional safety evaluation and review by OCSD. The CONTRACTOR is required to participate in the completion of this document prior to the start of work. The CONTRACTOR is required to notify the ENGINEER at least two (2) weeks prior to initiation of the tasks below and when the work activities or environment changes, unless otherwise stated elsewhere. Evaluations are as follows:

   a. Job Site Safety Analysis (JSSA) - The mechanism for defining general and site-specific job hazards. This document is prepared by OCSD, and must be completed prior to the start of the job. CONTRACTOR shall participate in the preparation of the JSSA, which includes a briefing to orient the CONTRACTOR to general hazards at the work location; identifying OCSD expectations for safety performance; reviewing emergency notification

capabilities; and discussing CONTRACTOR activities that may pose a hazard to OCSD employees, visitors and other CONTRACTORs. This document will be reviewed and, if required, revised annually if the work is in progress.

b. Confined Space Entry Job Hazard Analysis (JHA) - OCSD will review the CONTRACTOR's confined space entry procedure, including but not limited to items mentioned in these Safety Standards section entitled CONFINED SPACE. A Job Hazard Analysis (JHA) will be conducted by OCSD with mandatory participation by the CONTRACTOR for both non-permit required and permit-required confined spaces. A separate JHA will be completed for each confined space entry location.

c. Use of OCSD Equipment – In the event the CONTRACTOR must use OCSD-owned equipment, the CONTRACTOR shall be required to demonstrate proficiency on the specific equipment, as well as knowledge of the applicable regulatory requirement(s), and to complete a specific hold harmless agreement prior to such use.

d. Hot Work Permit – The CONTRACTOR shall only conduct Hot Work under a permit issued by OCSD. OCSD defines Hot Work as any work that involves grinding, cutting, welding, brazing, soldering, heating or other operations that generate heat, flames, arcs, sparks or other sources of ignition.

e. Energized Electrical Work Permit – If work on or near energized electrical systems is required, the CONTRACTOR shall be trained in NFPA-70E and obtain ENGINEER's prior authorization for such Work as specified in the section "Working on Energized Systems" of these Safety Standards.

f. Hazardous Materials Usage – All hazardous materials identified by OSHA as a carcinogen or reproductive hazard are subject to use restriction and/or prohibition from use on OCSD facilities. In addition, the CONTRACTOR shall provide a written plan of how their employees will be protected from exposure to these materials. A Job Hazard Analysis (JHA) will be conducted by OCSD with mandatory participation by the CONTRACTOR for operations involving these materials. Notification shall be made and a permit issued at least one (1) week before the material is brought on site.

g. Concurrent Work/Dual Employer Work Activities – If concurrent work activities within the same general area are to be performed at the same time by more than one CONTRACTOR, a permit shall be obtained by the CONTRACTORs at least one (1) week before the work is scheduled to begin.

h. Dust Generating Activities - Whenever harmful dust, fumes, mist, vapors, or gases exist or are produced by the construction activities in quantities giving rise to harmful exposure to employees, such hazards shall be controlled by all applicable engineering controls first and if the engineering controls have not reduced the exposure for the employees below the Permissible Exposure Limit (PEL) then the CONTRACTOR shall implement administrative controls then PPE for their employees.

i. The CONTRACTOR must provide industrial hygiene data showing that employees are not being exposed over the PEL for the appropriate PPE they have selected.

2. Spray Painting, Blast Cleaning, or Hydro Blasting – The CONTRACTOR shall not conduct any spray painting, blast cleaning, or hydro blasting without authorization

from OCSD in writing which may only be issued after receipt and review of an acceptable detailed plan that addresses as a minimum, the following:

a. All spray application of coatings, blast cleaning, or hydro blasting at the project site which is performed outside of a totally enclosed booth shall be kept to a minimum. Alternative application methods (brushing, rolling, etc.) or off-hour work shall be considered and may be required to minimize potential overspray damage.

b. If spray painting, blast cleaning, or hydro blasting is required, the CONTRACTOR shall submit a work plan for review by the ENGINEER in advance outlining specific areas where the work will take place including a schedule and preventative measures being utilized to eliminate the possibility of overspray damage to facilities and vehicles.

c. Tenting or other means of containment shall be utilized for spray coating applications. A minimum of 3 test panels, 2 feet by 3 feet, with a contrasting background to the material being sprayed, shall be placed 10 feet outside of the local work area at elevations to be determined by the inspector. Spraying shall be stopped if the test panels exhibit overspray.

d. Tenting and/or wet blasting shall be considered when grit blasting. Under no circumstances will fugitive dusts or coating particulates be permitted to leave the immediate work area.

e. Spraying/Blasting operations shall be stopped if winds exceed 5 mph.

f. A minimum 14-day notice shall be required prior to painting a blasting to provide adequate notification prior to the scheduled start date.

g. For work within Treatment Plant Sites, the CONTRACTOR shall provide and install signs at Plant entrances, work areas, and roadways to direct traffic as needed to alternate parking areas to prevent overspray damage to vehicles. Parking areas immediately downwind or otherwise in high-risk areas shall be delineated to prevent vehicles from parking in these areas.

h. Any damage incurred by OCSD or its employees due to paint, solvent or sandblasting materials from blasting or coating operations shall be promptly repaired by the CONTRACTOR to the satisfaction of OCSD and its employees at no additional cost to OCSD.

3. Regulatory Requirements

a. Scaffold Erection and Use – OCSD requires a copy of the CONTRACTOR's competent person evaluation and sign off of all scaffolding erected. Signed copies of the CONTRACTOR's competent person evaluation shall be forwarded to OCSD no later than the day the scaffolding is completed and prior to scaffolding use. Scaffolding shall be inspected daily prior to use.

b. Cranes/Hoists – A copy of the operator's training certification shall be provided to OCSD prior to any crane use. CONTRACTOR shall obtain a permit from OCSD for any crane lift over a building/structure at least one (1) week prior to the scheduled crane lift.

c. Excavation and Trenching – The CONTRACTOR is required to provide a copy of the applicable Cal/OSHA permit, the name of the designated CONTRACTOR's competent person and stamped engineering designs as

applicable. Documentation shall be provided prior to the start of the excavation.

d. Fall Protection – The CONTACTOR shall submit a fall protection plan for all work exceeding six (6) feet in elevation. The plan shall include a licensed (California) engineer's approval for the use of all life lines. Documentation shall be provided prior to the start of work. All Service Vendors shall submit a fall protection plan for all work exceeding four (4) feet in elevation.

e. Demolition – Demolition work on OCSD facilities may contain regulated quantities of asbestos or lead. The CONTRACTOR shall be licensed by the California Department of Industrial Relations for demolition involving these materials. The CONTRACTOR shall submit copies of appropriate licenses, work plans, SCAQMD notifications as applicable, copies of worker training certificates and third-party monitoring registrations as applicable. OCSD will be responsible for the disposal of all hazardous waste generated from these operations. Notifications shall be in accordance with applicable Federal, State and local requirements.

D. INCIDENT REVIEW MEETINGS

1. The CONTRACTOR's Safety Manager (CSM) shall adopt a practice of scheduling an Incident Review Meeting within twenty-four (24) hours of the occurrence of an incident.

2. For the purposes of this section, "Incident" may be defined as any or all the following: (as determined by owners authorized representatives.)
    a. Near-Miss Incident
    b. First-Aid Case
    c. Recordable Injury
    d. Lost-Time Injury
    e. Vehicular Incident
    f. General Liability / Third-Party Incident
    g. Incident review as determined by owner's representative.
    h. Property Damage
    i. Other

3. The intent and purpose of this meeting is to interactively and cooperatively identify causal factors that had, or may have had, a role in the incident, and to identify corrective action(s) and practice(s) to implement to avoid potential reoccurrence of the incident. It is NOT a faultfinding or blame-finding event. Attendees should include:
    a. ENGINEER
    b. OSM
    c. CPM
    d. CPS
    e. CSM / CSR

f. SSR (if applicable)

g. OCSD Risk Management

h. CONTRACTOR / Subcontractor (Assistant) Superintendent(s) accountable via functional structure of the project for the incident

i. CONTRACTOR / Subcontractor (General) Foreman / Foremen accountable via functional structure of the project for the incident

j. Craftsperson(s) involved with the incident. (Optional)

4. In the event of an incident, the CONTRACTOR shall submit a written report to OCSD within twenty-four (24) hours of the occurrence of the incident.

E. PRE-SHIFT CREW MEETINGS (PRODUCTION and SAFETY)

1. Each CONTRACTOR and Subcontractor crew shall conduct a pre-shift production and safety meeting at the start of each shift. These meetings shall:
   a. Review of production activities for the shift
   b. Review of safety activities that are a component of the production activities

2. Such meetings are to generally be five (5) to ten (10) minutes long, and are, at minimum, to focus on the following:
   a. Tasks for the shift, including review of applicable Job Hazard Analysis.
   b. Tools and equipment needed for those tasks
   c. Materials needed for those tasks
   d. Proper material handling techniques
   e. Safe work procedures to perform those tasks
   f. PPE needed to safety perform those tasks
   g. Questions from the crew

3. These meetings shall be documented in the same manner as the weekly Safety Meeting.

F. CONTRACTOR / SUBCONTRACTOR SAFETY NON-COMPLIANCE

1. OCSD has the right to stop any work activity imminently dangerous to life or health until safety violations are corrected.

2. Non-compliance with these Safety Standards by a CONTRACTOR's/Subcontractor's employee will result in a notification to the CONTRACTOR's supervisory personnel when observed by the OSM or OCSD staff.

3. Willful or repeat non-compliance with these Safety Standards may result in the ENGINEER or OSM requiring a CONTRACTOR employee to be excluded from the site for a period designated by OCSD.

4. Failure of the CONTRACTOR's onsite project management to enforce the Progressive Disciplinary Action Program included in the Site-Specific Safety

Program (SSSP) may result in the CONTRACTOR's onsite project manager's removal from the project.

5. The removal procedure may be accelerated and/or expanded to include removal of a CONTRACTOR's/Subcontractor's entire workforce by the ENGINEER or OSM where the violation of these Safety Standards is widespread, or where the CONTRACTOR/Subcontractor does not demonstrate good faith effort.

6. CONTRACTORs that are unresponsive to safety issues or that have an unsatisfactory safety evaluation may be deemed ineligible to bid additional contracts for a period designated by the OCSD.

7. CONTRACTORs may report legitimate unsafe actions/activities of other CONTRACTORs to the ENGINEER, OSM, or OCSD Risk Management.

G. SUBSTANCE ABUSE PREVENTION POLICY

1. Purpose
    a. To maintain a safe, healthful and efficient work environment, and to minimize absenteeism and tardiness, all CONTRACTORs shall implement a Substance Abuse Prevention Policy that, at minimum, includes screening and testing as prescribed by this section.
    b. The CONTRACTOR's program shall utilize a testing procedure and protocol that mirrors or exceeds US DOT parameters and protocols with the exception that the testing results will adhere to "zero tolerance" for the presence of alcohol detected in the system. This testing protocol will be required for all post-incident and for reasonable suspicion assessments of individuals.
    c. An industry-accepted, commercially-available, drug screening protocol can be used for pre-project assessments for workers, providing all positive result cases are referred for participation in the formal testing program outlined in section 1.2., The screening method shall be capable of detecting, at a minimum, nanogram per milliliter (ng/ml) quantities of methamphetamine, MDMA (Ecstasy), THC (marijuana), cocaine, amphetamines, opiates, phencyclidine (PCP), and benzodiazepines in human body fluids. This drug screening protocol can be utilized to obtain preliminary results only and would be unacceptable for obtaining any results which could have a legal impact, such as post-incident and for suspicion assessments. The drug screening method must be scientifically-derived with supporting studies confirming the detection capabilities and sensitivities.

2. Requirements
    a. CONTRACTORs shall implement and enforce a policy that prohibits the possession, distribution, promotion, manufacture, sale, use or abuse of illegal and unauthorized drugs, drug paraphernalia, controlled substances and alcoholic beverages by employees, agents or any person otherwise under the control of the CONTRACTOR, including employees and agents of Subcontractors and consultants while on the work site while working on the project. Further, employees shall be prohibited from reporting to the premises under the influence of drugs or alcohol.

b. The Policy must apply to all personnel, including but not limited to regular, part-time, probationary, casual and contract employees of the CONTRACTOR, as well as to employees and agents of Subcontractors and consultants. The CONTRACTOR shall take whatever legally permissible steps are necessary or appropriate to enforce compliance with this policy.

c. Workers governed by this policy may possess a prescription medication in its original container and prescribed for current use of the person in possession by an authorized medical practitioner; provided that the CONTRACTOR provides a mechanism to ensure that employees taking prescription medicine inform their CONTRACTOR about potential side effects of medication which may affect the employee's work ability (particularly their alertness and coordination), safety and the safety of others.

d. At a minimum, any worker shall be subjected to a pre-project drug screening protocol for drug use in accordance with the provisions of the CONTRACTOR's program. A negative assessment result must be obtained prior to commencement of employment on this project.

e. Drug Screening. Any worker shall be subject to a drug screening protocol prior to commencing work on the project in accordance with CONTRACTOR program:

    1) At the time of project safety orientation training. No person showing preliminary positive screening results will be permitted to work on the project

    2) Any positive screening result will be referred for drug testing in accordance with provisions in Section 2) s) ii) (6) if the worker elects for further consideration for project participation.

    3) All preliminary screening results will be managed as medical records that protect the employee's confidentiality.

f. Drug and Alcohol Testing. Any worker shall be drug and alcohol tested in accordance with the provisions of the CONTRACTOR's program:

    1) When preliminary drug screening results are positive indicating potential substance abuse and effected worker elects to have validated testing results. Prescription medication and potential test interferences will be considered during the collection and analysis process.

    2) When involved in any type of incident, whether injury or property damage was incurred or not.

    3) For reasonable suspicion of impairment which has been validated by a third party.

g. Any employee who fails or refuses to take a drug screen or drug and alcohol test in accordance with the terms of the contract shall be removed from the project.

h. Items 2) s) ii) (4), 2) s) ii) (5) (a), and 2) s) ii) (7) may be subject to the terms of any Project Labor Agreement.

V. SAFETY STANDARDS

No attempt has been made to restate applicable OSHA, ANSI, NFPA, Federal, State, and local standards in their entirety. The CONTRACTOR is reminded of its' responsibility to have at least one (1) copy of all applicable OSHA Standards, as well as other standards incorporated by reference into the OSHA Standards, available at the project for use and review.

In some instances, the OCSD Safety Standards are more stringent than the applicable OSHA Standards. The CONTRACTOR is reminded that the most stringent requirement shall apply.

A. ATMOSPHERIC MONITORING EQUIPMENT

1. CONTRACTORs who enter wastewater process areas to have on their person an atmospheric monitor that measures for Lower Explosive Limit (LEL) due to the hazardous area classification associated with wastewater facilities. The LEL atmospheric meter will allow for the use of non-intrinsically safe equipment or personal electronic devices in OCSD facilities.
    a. If working in a group, at least one (1) employee in the group shall have an atmospheric monitor that is properly calibrated and on. The monitor can provide coverage for a ten (10) foot radius. If the group is working over an area greater than 10 feet, then more monitors will be needed to provide coverage.
    b. Air testing equipment must be tested and calibrated as required by the manufacturer before each use.

2. CONTRACTOR personnel working in a confined space (i.e., vault, pit, tank, basin, digester) or excavation greater than five (5) feet, shall utilize air monitoring equipment capable of measuring oxygen levels, flammable gases, hydrogen sulfide and carbon monoxide. The CONTRACTOR or Subcontractor entering these spaces is responsible for the provision, maintenance, calibration and testing of said equipment. Refer to Section M - Confined Space Entry for more information.

3. CONTRACTOR personnel are expected to have properly calibrated and working atmospheric monitoring.

4. Air testing equipment shall be UL classified for use in Class I, Division 1, Groups A, B, C & D Division 1 hazardous locations as defined by the National Electrical Code.

5. All air monitoring equipment must be tested and calibrated as required by the manufacturer before each use. Testing, calibration, use, and repairs shall be in accordance with the manufacturer's operating manual and instructions.

6. Prior to use, employees must be trained per manufacturer requirements on the use, limitations and alarm modes of each air-testing device that they use.

7. Air testing equipment must be fully functional and checked per manufacturer requirements prior to use.

8. Employees must immediately leave a work area whenever an equipment alarm sounds due to one or all of the following alarms:
    a. Low or high oxygen level (acceptable range is 19.5% to 23% oxygen).

b. Combustible gas detected above 10% lower explosive limit (LEL).

c. Set point for a toxic gas level is reached (e.g., 10 ppm hydrogen sulfide)

d. Sensor failure

e. Low battery alarm.

9. Equipment must be carried with the employee or placed immediately adjacent to the work area and set to operate in a continuous monitor mode.

10. Air Contaminant Exposure

    a. The CONTRACTOR is responsible for determining if their employees are being exposed to harmful air contaminants or chemicals with recognized standard industrial hygiene analytical methods.

    b. If the CONTRACTOR determines that their employees are being exposed over the Permissible Exposure Limit (PEL) then they must implement protective measures for their employees following Cal/OSHA Construction Standards Section 1528.

B. ASBESTOS

1. Asbestos is to be handled only by qualified and certified CONTRACTORs and employees.

    a. Abatement CONTRACTORs/Subcontractors must be approved in accordance with applicable Federal, State and local requirements to perform removal and disposal of asbestos containing material and encapsulation.

2. CONTRACTORs must determine the existence of asbestos content in buildings/ building materials PRIOR to any construction, remodeling, or demolition activities.

3. Upon discovery of any asbestos containing materials (ACM) or presumed asbestos containing materials (PACM), CONTRACTOR/Subcontractor shall stop work in such areas and notify the ENGINEER and OSM.

4. The CONTRACTOR/Subcontractor shall ensure employees are trained in asbestos awareness to identify ACM and PACM.

5. All asbestos abatement/removal work must follow all regulations of OSHA, the Environmental Protection Agency (EPA) or applicable state agency, and the applicable Air Quality Management District. Asbestos abatement must be performed by a licensed abatement contractor, implementing industry best practices.

6. ACM products will be doubled bagged and disposed of by OCSD.

C. HAZARDOUS AREA CLASSIFICATION

1. To minimize the risk of explosion or fire in some of these locations, additional barriers and ventilation systems have been installed. Electrical equipment and wiring that is used in these areas must meet specific electrical code requirements for hazardous areas.

2. Before considering the installation of equipment in any process area, the area classification of that location should be determined by reviewing its area class map and/or checking with the OCSD Risk Management and Engineering Divisions.

3. Work that may produce a spark or other source of ignition, or the opening of enclosures with energized electrical systems in Class I, Division 1 or Class I, Division 2 locations will require Hot Work Permits and may require specialized tools, equipment and training.

4. Requirements for Activities in Hazardous Areas

    a. No vehicle parking will be permitted in hazardous areas.

    b. Personal electronic devices are not permitted in hazardous areas. This includes cell phones, personal digital assistants, laptops, cameras, etc. The only exceptions to this policy are those devices specifically approved by the OCSD Risk Management Division. All non-approved devices shall be kept out of the hazardous area. Powering down a device is not sufficient to comply with this requirement

    c. In cases where use of unapproved devices is unavoidable, continuous atmospheric monitoring for combustible gases shall be provided at the location where the device is being used. If the monitor alarms at any time, personnel are to cease use of the unapproved device, de-energize any potential ignition sources, and evacuate the hazardous area until such time that the atmosphere has been tested as clear and management approves entry back to the work area.

    d. Any activity in a hazardous area that could provide a source of ignition must be reviewed and approved in a Hot Work permit process prior to the start of such activity.

D. BARRICADES

1. Barricades or fencing is required around excavations, holes or openings in floor or roof areas, edges of roofs and elevated platforms, around certain types of overhead work, and wherever necessary to warn, protect people, or vehicles against falling in, through or off.

2. Barricades used around an opening in the floor or roof, at the edge of a roof or along an elevated platform shall meet the requirements of a guardrail.

3. Barricades may also be used to isolate people (such as employees of other crews or employers, other project/Owner personnel, and the public) from work activities as required by the activity, potential hazards created by the activity, or the location of the activity.

4. Barricades must be of suitable construction and selected for the area of use (i.e., blinker type barricade for high vehicle traffic areas).

5. To ensure the safety of the public, the CONTRACTOR shall provide and maintain adequate protection, such as chain link fences, gates and barricades, to separate work areas from areas outside job site limits.

6. Barricades/fences are to be placed around all construction trenches.

7. Portable fencing shall be installed around construction work areas, CONTRACTOR storage areas, and CONTRACTOR's heavy equipment if they are not otherwise protected within the confines of the project's perimeter barricade.

E. FENCING

1. Chain link fencing shall be free from barbs, icicles (excess galvanizing material that may form sharp projections) or other projections that may cause injury.

2. Fencing must be in good repair and installed to ensure stability of the fencing from being knocked over by employees or the public.

3. Portable fencing shall be installed/braced to prevent being blown over during windy conditions.

4. Base supports of portable fencing shall be installed/ placed to eliminate tripping hazards when fencing is placed adjacent to sidewalks and walkways.

5. OCSD reserves the right to prohibit use of temporary fence panel systems that require the use of a tubular or pedestal base support system that presents a potential trip hazard to pedestrians or obstruction for vehicles. Nuisance screening shall not be used in traffic areas unless approved by the traffic control engineer.

F. HOT WORK

1. Hot work includes, but is not limited to, the following activities: grinding, cutting, welding, brazing or soldering, heating, hot air welding or other operations that generate heat, flames, arcs, sparks or other sources of ignition.

2. Prior to performing hot work, the CONTRACTOR shall evaluate the following: type of hot work to be performed, site preparation, atmospheric conditions, use of appropriate personal protective equipment, and firefighting equipment. A hot work permit shall be obtained according to the following requirements:

    a. The Permit Authorizing Individual shall initiate the Hot-work Permit. The Hot-work operator shall review the Hot-work permit, inspect work site, and add addition comments if needed. The hot-work operator shall sign under the contact name and the Permit Authorizing Individual will sign as the authorized personnel. If there are any questions or concerns, OCSD Risk Management shall be notified.

    b. Permit shall indicate the date authorized for hot work, identify the object on which hot work is to be performed and posted at worksite.

    c. Permit shall be closed out when finished by the fire watch. If fire watch was not needed, the hot-work operator shall close the permit and send to OCSD Risk Management who will keep permit on file for twenty-four (24) months.

3. Site preparation should include a survey for the following: combustible materials; hazards posed by heat transfer; flammable, corrosive, or toxic residues; equipment linings; appropriate lock/tagout application; and housekeeping.

4. The CONTRACTOR shall also evaluate the work area for the potential consequences of thermal conduction. Thermal conduction is the transfer of heat that could cause ignition by/through an object heated by the hot work operation.

5. A fire watch must be posted for thirty (30) minutes after all hot work activity has stopped to ensure a fire does not start.

6. The CONTRACTOR shall procure and post all permits necessary for hot work as required by OCSD.

7. The CONTRACTOR shall have a Hot Work Program for fire prevention during hot work activities.
    a. This Program shall meet or exceed the requirements of NFPA 51B-2014, "Standard for Fire Prevention during Welding, Cutting and Other Hot Work".

8. An approved fire extinguisher and/or other fire protection equipment are to be provided by the CONTRACTOR for each hot work operation in accordance with OSHA and local Fire Marshal / Fire Code requirements.

9. The CONTRACTOR shall provide appropriate firefighting equipment for each hot work activity. This equipment shall be located on the same elevation of the work and within 5 feet of the hot work activity.

10. When air monitoring is required, the Lower Explosive Limit must be non-detectable (0% LEL), prior to any type of burning, welding, or hot work being conducted by the CONTRACTOR.

11. Air monitoring will be required around or near any areas that may pose a potential fire or explosion threat from flammable or combustible vapors.

12. Welding fumes must be ventilated to protect welders and affected personnel. Approved respirators must be worn for fumes, hexavalent chromium, etc. as required.

G. CLOTHING AND PROFESSIONAL DEMEANOR

1. The CONTRACTOR shall require each employee, agent, or Subcontractor to wear appropriate attire of a form in accordance with the provisions of the Contract.

2. Clothing
    a. Employee dress should be neat in appearance and consistent with good dressing attire, no large holes, obscenities, or inappropriate images.
    b. Shirts and long pants must be worn always on the site.
    c. Sleeveless shirts and tank tops are not permitted.
    d. Clothing should not be torn or frayed.
    e. Clothing contaminated by oily, flammable, toxic or caustic materials should not be worn until properly cleaned.

f. Certain tasks may require the wearing of fire-resistant materials, such as Nomex® or leather. In such circumstances, extremely flammable clothing material such as nylon should be discouraged.

g. All employees shall wear hard hats, and safety glasses while on construction sites.

h. Employees shall wear ANSI Class 2 safety vest while on OCSD construction sites and ANSI Class 3 safety vest while working in roadways.

3. Footwear

   a. Tennis shoes are prohibited in construction areas.

   b. Shoes should be made of heat-resistant materials.

   c. Soles should be made of slip-resistant materials, and not worn to the point where slip resistance is compromised.

   d. Safety footwear meeting the requirements of ASTM F2413, “Standard Specification for Performance Requirements for Foot Protection”, is required in construction and process areas. ASTM numbers must be legible on the tongue or insides of shoes.

4. Professional Demeanor

   a. Personal cellular telephone use is prohibited except during lunch and authorized breaks. Cell phones shall not be used in active construction areas, unless the call specifically relates to the work at hand. Cell phones shall not be used in Hazard Locations where there is a potential explosive environment.

   b. Equipment operators are prohibited from operating their equipment while conducting any (personal or business) cellular telephone conversation or texting.

H. COMPRESSED GAS CYLINDERS

1. All cylinders must be secured and transported in a vertical upright position always.

2. Oxygen and fuel gas cylinders must be:

   a. separated at least 20 ft., or by a 5-foot-high barrier with a 1/2-hour fire rating when in storage, and

   b. Placed away from potential contact that may rupture the tanks.

3. Cylinder valves shall be turned to the off position if left inactive for thirty (30) minutes or longer.

4. Cylinders designed for valve protection caps must have the valve protection caps installed when in storage or when being transported.

5. Cylinders, hoses, and fittings shall be checked for leaks and damage on a regular basis.

6. Cylinders must be labeled as to the nature of their contents per NFPA requirements and the OSHA Hazard Communication Standard.

7. Cylinders shall not be taken into confined spaces.

8. Cylinder storage areas shall have appropriate warning signage posted.

9. Appropriate fire-fighting equipment must be provided for each cylinder storage area.

10. Torches and hoses shall not be left connected to cylinders overnight.

11. Torches and hoses shall not be stored in unventilated gang boxes or storage containers.

12. Flashback arrestors and check valves shall be installed in accordance with manufacturer's instruction on all oxygen-fuel torch sets.

I. CONCRETE AND MASONRY CONSTRUCTION

1. Concrete Construction
    a. The CONTRACTOR must guard all protruding reinforcing steel, form stakes, or other members to eliminate impalement hazards.

2. Structural Concrete
    a. The CONTRACTOR must not remove any forms or shoring until a determination has been made by the testing lab and structural Authorized Representative that the concrete has gained sufficient strength to support its own weight and that of superimposed loads.
    b. The CONTRACTOR must not place loads on any concrete structure until concrete has reached a compressive strength predetermined by the Engineer of Record.

        1) The CONTRACTOR shall be the point of contact for information regarding this item.

    c. Where concrete shoring/reshoring is employed, a shoring/reshoring plan specific to the project shall be available for review at the project.
    d. Deviations from the shoring/reshoring plan will require the issuance of a new shoring/reshoring plan. Sealed by a California licensed Professional Engineer.

        1) The addition of superimposed loads on the floor (such as equipment and/or materials) not considered in the reshoring plan shall be construed as a deviation from the plan.

J. POURING AND PUMPING OPERATIONS

1. Permanent and temporary power lines shall be identified prior to the start of a concrete pour. Appropriate safeguards shall be implemented for the pumping, pouring and finishing operations.

2. A site traffic control plan shall be established for concrete truck traffic. Trained spotters and flaggers shall be used as necessary for worker and public safety.

3. Employees involved in pouring and finishing activities shall have appropriate personal protection equipment, including gloves, mud boots, and eye protection.

4. Concrete truck washout areas shall be in an area acceptable to the ENGINEER, and located out of vehicular and pedestrian travel areas.

5. Diapers or the equivalent shall be provided for the pump and concrete trucks when the truck to pump transfer occurs in a public street or other public area.

6. Concrete or cementitious products shall not come in contact with the skin or clothing.

7. A site logistics plan shall be prepared for each pump location, and shall include provisions for concrete truck traffic routing and control, as well as pedestrian traffic routing and control (if applicable).

K. MASONRY CONSTRUCTION

1. Masonry walls shall be braced and/or supported as required by OSHA and/or local requirements. A clear buffer area shall be maintained during construction and work areas shall be maintained in a workmanlike manner.

2. Clear Zone, unauthorized personnel shall be prohibited from entering the work area.

L. CUTTING, GRINDING AND PROFILING

1. Dry cutting, grinding, and profiling of concrete or masonry shall be prohibited except in instances where it is determined in a manner consistent with applicable safety and health standards that the use of water in the cutting, grinding or profiling is not feasible.

2. If it is determined that the use of water is infeasible:
    a. The CONTRACTOR shall use work practice controls to control the dust, such as a vacuum with a high efficiency particulate air filter (HEPA), or other dust control system;

        1) Any dry cutting which occurs shall be done in a designated area away from other employees if possible; and

        2) The CONTRACTOR shall provide affected employees with appropriate respiratory protection as part of a respiratory protection program in accordance with applicable OSHA standards.

M. CONFINED SPACE ENTRY

1. The CONTRACTOR shall have a written confined space program in accordance with CALOSHA Construction Safety Orders. The contractor's confined space program shall not conflict with and may be used to supplement OCSD's confined space program, whichever is more stringent.

2. The CONTRACTOR shall attend a pre-job safety meeting with personnel from OCSD Risk Management Division and/or with the Senior Safety Inspector a minimum of seven (7) days before the start of the work.

3. The CONTRACTOR shall not perform any work in a confined space until a Confined Space JHA is completed by OCSD's Risk Management or Construction Safety Inspector. Contractor shall submit the following for review five (5) days prior to the start of the job: proof of training, a copy of the contractor's written confined space program, entry procedures, rescue and ventilation plan (where required), hazardous energy control procedures (LOTO), safety data sheets, and any other required documentation for confined space entry. The Confined Space JHA will address:
    a. The OCSD experience with the space, known and potential hazards that could be encountered during the confined space entry.
    b. Any special precautions that must be taken by CONTRACTOR employees who are working in or around the confined space.
    c. Compliance with regulatory requirements and OCSD Safety Standards.
    d. Method of coordination for entry operations if more than one CONTRACTOR is entering the space or if OCSD employees will be entering the space.

4. The CONTRACTOR shall identify and designate those individuals who are educated, trained, competent and/or qualified to perform specific confined space-related duties, including but not limited to, Entry Supervisors, Attendants, Entrants, hazard identification and controls, entering confined spaces, conducting atmospheric monitoring, providing for rescue, and ventilation. Confined space responsibilities shall be listed on the entry procedure and/or permit.

5. The CONTRACTOR shall provide required equipment for entry and ensure that it is properly inspected, tested, maintained, and used in accordance with manufacturer's instructions and applicable safety programs;

6. Ventilation plans shall be prepared by a Certified Safety Professional (CSP), Certified Industrial Hygienist (CIH), or Professional Engineer (PE), where required.

7. The CONTRACTOR shall identify, evaluate and qualify assigned Rescuers or outside emergency services and develop and implement procedures for summoning rescue;

8. CONTRACTOR is responsible to inform all Subcontractors of the terms discussed at all pre-job meetings.

9. After a confined space entry, the CONTRACTOR shall conduct a debriefing meeting with the entry team to discuss any hazards encountered during the confined space entry. If the CONTRACTOR encounters a hazard(s) that was not noted on the OCSD Job Hazard Analysis, then the CONTRACTOR must alert the OCSD Risk Management Division or the Senior Safety Inspector to those hazards.

10. The CONTRACTOR must abide by the applicable OSHA and any other recognized standards for all confined space entry operations and furnish all appropriate personnel, equipment, and support.

11. CONTRACTOR personnel must be trained and certified in the hazards of confined space work, including rescue procedures and provisions, the use of respiratory equipment, and instructions as to the hazards they may encounter. The CONTRACTOR shall submit all certifications and training documents prior to any confined space entry.

12. The CONTRACTOR shall develop a written, understandable and detailed confined space operating and rescue procedure as part of their entry permit. This procedure must be made available to all affected employees.

13. The CONTRACTOR is required to provide all necessary entry and rescue equipment required for all entries into confined spaces (tripod, full body harness, and lifeline or equivalent, etc.) as required by the applicable regulatory Standards. Fire Department shall not be considered first responders for rescue.

14. Prior to entry into a confined space, the CONTRACTOR shall ensure all lines that may convey flammable, injurious, or incapacitating substances into the space are disconnected, blinded, or blocked off by other positive means in accordance with CALOSHA Lockout/Tagout regulations and Section QQ for Control of Hazardous Energy (LOTO).

15. Prior to entry into confined space, the CONTRACTOR shall test the air with an appropriate device or method for: (1) Oxygen content, (2) Flammable gases and vapors, and (3) Potential toxic air contaminants (CO; H2S). A written record shall be made and kept at the work site entry point.

16. CONTRACTORs must conduct stratified testing of each space before entering if there is the potential of gas to have stratified. Stratified sampling will include lowering the sampling hose at approximately four (4) foot intervals and waiting sufficient time for the sampling pump to pull the air to the monitor sensors.

17. All entries into active, ponded, or live sewer systems shall ensure compliance with 9 CCR 5157 Appendix E Sewer System Entry. A “live sewer” is any pipe carrying raw sewage upstream of the Main Sewage Pumps at either plant, including the entire collection system. Specifically ensuring entrants are protected from all potential toxic atmospheres which could be unknown.

    a. CONTRACTORs entering into OCSD active sewer systems who elect to use ventilation, in lieu of atmosphere-supplying respirators, must submit a Ventilation Plan. This plan shall be a component of the Confined Space Entry Procedures, and be reviewed and signed by a Professional Engineer (PE) qualified to practice in the state of California, Certified Safety Professional (CSP), or a Certified Industrial Hygienist (CIH) prior to OCSD Risk Management review.

    b. The plan must include, but not limited to:

        1) Determination of the internal size (volume) and configuration of the permit space.

        2) How have the physical properties (molecular weight, vapor pressure, etc.) of the atmospheric hazards been considered in the design of the Ventilation Plan.

        3) The capacity of each piece of equipment being used, and does the capacity match the requirements of the space?

        4) The air exchange rate required to maintain acceptable entry conditions.

5) Assessment of whether work or activities being performed within the sewer will contribute to the atmospheric hazard.

6) Description of mitigation measures

7) Calculations demonstrating how identified hazards are mitigated.

c. The Ventilation Plan must be submitted and accepted by the ENGINEER and OCSD Risk Management prior to placing workers or equipment into an active sewer.

18. The confined space shall be emptied, flushed, or otherwise purged of flammable or injurious substances to the extent feasible. The CONTRACTOR is required to provide the proper ventilation equipment.

19. Whenever an atmosphere free of dangerous air contamination and/or oxygen deficiency cannot be ensured through ventilation, the CONTRACTOR shall provide approved respiratory equipment to affected employees. Employees using respiratory protection shall be involved in a comprehensive respiratory protection program in accordance with applicable OSHA standards.

20. Where a Standby Employee is required, the Standby Employee must have a valid certificate in First Aid and CPR training from the American Red Cross, or equivalent training verified by documentary evidence.

21. Visual contact or two-way radio communication must be available always.

22. If radios are selected for communication, the CONTRACTOR shall provide the radios.

23. When the CONTRACTOR arranges to have employees of another Subcontractor perform work that involves a permit required confined space entry, the CONTRACTOR shall:

    a. Inform the Subcontractor that the workplace contains permit required confined spaces and entry into them is allowed only through compliance with a permit confined space program that meets the requirements of the CCR Title 8 Sections 1950 through 1961.

    b. Inform the Subcontractor of the elements including the hazards identified and the host employer's experience with the space that make it permit required.

    c. Coordinate entry operations with the Subcontractor when both CONTRACTOR and Subcontractor will be working in or near the permit required confined space.

    d. Debrief the Subcontractor after the permit required confined space operation; ensure that the following questions are asked:

        1) Was the permit required confined space program followed?

        2) Were unpredicted hazards confronted or created in the permit required confined space during the entry operations?

3) Were all the tools and equipment needed for the confined space entry and rescue on site and in good operating order?

24. The CONTRACTOR must establish a means of communication with outside Emergency Services. Outside Emergency Services can only be used to provide medical services. The CONTRACTOR is responsible for rescuing its employees from the confined space.

N. UTILITY CONNECTIONS

1. The CONTRACTOR shall not, or allow any Subcontractor to, make any temporary service connections to electrical, water, air, steam, or other utilities without approval of the ENGINEER.

2. Temporary connections shall comply with all applicable Federal, State, and local regulations.

3. Temporary connections shall be inspected on a regular basis.

4. The CONTRACTOR shall not operate any valves or equipment owned by OCSD or other agency/municipality without authorization.

O. CONSTRUCTION VEHICLE PARKING

1. Park in authorized areas only. Do not block or obstruct intersections, fire lanes and fire hydrants, traffic lanes, driveways or parking lot entrances. Offending vehicles may be towed without notice at the vehicle owner's expense.

2. Private vehicles are not permitted on the project except in authorized and designated parking areas.

P. IDENTIFICATION

1. CONTRACTOR equipment and vehicles entering and/or working at the site must have the company name/identification clearly displayed on the vehicle.

Q. ASSIGNED WORK AREA

1. CONTRACTORs and Subcontractors are confined to their assigned work areas.

2. Wandering throughout the treatment plant and project sites is strictly prohibited.

3. CONTRACTOR is responsible for establishing effective access control to their site.

R. CRANES, BOOM TRUCKS AND HOISTS

1. The term "crane" as used in this section shall include boom trucks, hoists, and similar truck-mounted cranes.

2. Prior to commencing any lifting over buildings/structures, the CONTRACTOR shall request a permit at least one week prior to the scheduled lift.

3. Cranes exceeding three tons rated capacity shall not be used in lifting service until an approved certifying agent has certified the equipment.
    a. Current annual and quadrennial (where required) inspection certificates shall be maintained on each crane.
    b. Cranes that do not have such evidence of inspection shall not be permitted to operate on the project.
    c. Current daily and periodic inspection records shall be maintained on each crane.

4. An approved certifying agent shall re-inspect any crane that is involved in any incident or is damaged during set-up or operation, and a new certificate of inspection issued prior to being returned to service.

5. Only employees authorized by the CONTRACTOR and trained, or known to be qualified, in the safe operation of cranes shall be permitted to operate such equipment.
    a. Operators shall have valid evidence of current licensing or certification in accordance with State and Local requirements. Operators shall not use cell phones or radios while operating, unless the cell phone or radio is required for the lift.
    b. Operators not having such evidence where required shall not be permitted to operate applicable machinery (except under terms and conditions prescribed for trainees by applicable regulations).

6. All mobile cranes having either a maximum rated boom length exceeding 200 feet or a maximum rated capacity exceeding 50 tons shall be equipped with a load indicating device or a load movement device.

7. Cranes shall be equipped with a boom angle or a boom radius indicator and clearly legible load chart in clear view from the Operator's position.

8. An effective, audible warning and operating signal device (such as a horn) shall be provided on the outside of the crane. The controls shall be in easy reach of the Operator.

9. When required by the manufacturer's or certifying agent's instructions, outriggers shall be set so that wheels or crawler tracks within the boundary of the outriggers shall be relieved of all weight by the outrigger jacks or blocking.

10. Plates, pads or mats shall be used under the outriggers or crawlers of all cranes when a lift exceeds seventy-five (75%) of the capacity of the crane as it is configured for that lift. The plates, pads, or mats shall be of suitable material and size to support the crane on the surface that it is set up on.

11. The CONTRACTOR shall ensure that a qualified person visually inspects the crane, controls, rigging and operating mechanism prior to the first operation of any work shift. Records of daily inspections by the Operator or other qualified person shall be maintained on the crane, and must be available for review upon request.

12. Adjustments and repairs to the crane shall only be made by a qualified person.

13. A fire extinguisher of not less than 10-B: C rating shall be kept in serviceable condition and readily accessible to the Operator.

14. Operations shall be conducted and the job controlled in a manner to prevent loads from being passed directly over workers, occupied workspaces, or occupied passageways.

15. A qualified signal person shall be provided when the point of operation is not in full and direct view of the Operator unless a signaling or control device is provided. Only one person shall be permitted to give signals to the Operator.
    a. Any Employee involved in the operation may give a “stop” signal if such a signal is warranted.

16. A legible chart depicting and explaining the system of crane signals used shall be conspicuously posted near the hoisting operation.

17. All loads shall be rigged by an identified, qualified, and authorized Rigger.

18. No Employee shall be permitted to ride on loads, hooks, or slings of any derrick, hoist, or crane.

19. Swing radius protection shall be provided where a rotating crane is positioned to operate in areas where persons may be caught between rotating parts and fixed objects or non-rotating crane components.

20. Tag lines, restraint lines, or guide ropes shall be used on all loads except where their use presents a greater hazard. Such lines or ropes should be insulated to prevent shock, and shall not contain knots or splices that may snag on an object.

21. Cranes shall not be left unattended while the load is suspended unless the load is over water, a barricaded area, or is blocked up or otherwise supported.

22. Before leaving the crane unattended, which means leaving the controls of the crane, the Operator shall:
    a. Land or properly secure any attached load
    b. Disengage clutch (if applicable)
    c. Set travel, swing, boom brakes, and other locking devices unless otherwise specified by the certifying agents
    d. Put controls in the “off” position
    e. Stop the engine
    f. Secure the crane against accidental travel

23. In all operations where the weight of the load being handled is unknown and may approach the rated capacity, a qualified person shall determine the magnitude of the load unless the crane is equipped with a load-indicating device.

24. The CONTRACTOR shall provide a qualified person to direct the lift. The qualified person shall see that:

a. The crane is properly leveled for the work being performed and blocked where necessary.

b. The load is well secured and properly balanced in the sling or lifting device before it is lifted more than a few inches.

25. A designated person shall monitor the clearance between crane booms, load lines, and loads, and power lines and alert the Operator when necessary.

26. For power lines rated 50k V, or less, minimum clearance between the lines and any part of the crane or load is 10 feet. For power lines rated over 50k V, minimum clearance between the lines and any part of the crane or load shall be 10 feet plus 0.4 inch for every 1k V over 50k V.

27. Magnetic lifting devices are not allowed to lift material or equipment. CONTRACTOR personnel cannot use existing OCSD overhead cranes unless approved by OCSD Risk Management and personnel have been certified by CONTRACTOR to operate it.

S. RIGGING, SLINGS AND HOOKS

1. Hoisting hooks shall be of the safety latch-type.

2. Crane hooks with cracks or with deformation of throat opening more than fifteen (15%) percent more than normal opening or more than 10-degree twist from plane of unbent hook shall be removed from service.

3. Ropes shall be inspected for proper lubrication, excessive wear, broken strands, and proper weaving.

4. To determine proper time for replacement, a continuing inspection record shall be maintained for hoisting ropes. Conditions such as the following shall be reason for replacement:

   a. In running ropes, 6 randomly distributed broken wires in one (1) rope lay, or three (3) broken wires in one (1) strand in one (1) lay.

   b. Wear of 1/3 the diameter of outside individual wires.

   c. Kinking, crushing, bird caging, or other damage resulting in distortion of the rope structure.

   d. In stranding ropes, more than two (2) broken wires in one (1) lay in sections beyond end connections or more than one (1) broken wire at an end connection.

   e. Reduction of rope diameter below nominal diameter due to loss of core support, internal or external corrosion, or wear of outside wires.

5. Fixtures are usually attached to wire rope using wire rope clips. The clips must be attached with the inside curve of the U-bolt against the dead, or short end of the wire rope, and flat clip (saddle) against the live, or long end of the wire rope.

6. Each day before being used, wire rope slings, metal mesh slings, and natural and synthetic fiber rope slings, and all fastenings and attachments shall be inspected for damage or defects by a qualified person.

7. Slings shall have permanently affixed tags stating the following:
    a. Manufacturer's name or trademark
    b. Rated capacity
8. Chains shall not be used for rigging.

T. CRITICAL LIFTS

1. A Critical Lift Plan shall be prepared for all lifts that:
    a. exceed seventy-five (75%) percent of the lifting device's capacity as configured for that lift,
    b. is deemed a critical lift by the ENGINEER or INSPECTOR due to potential negative consequences to safety, structure, or schedule,
    c. over a building that normally has occupants, or
    d. Involves two (2) or more cranes or lifting devices.
2. A qualified person shall prepare the Critical Lift Plan. The qualified person preparing the plan may be the crane Operator, lift supervisor, or rigger. The crane Operator, lift supervisor, and rigger shall participate in the preparation of the plan. The plan shall be documented, and a copy provided to the CONTRACTOR and the ENGINEER. The plan shall be reviewed by, and signed by, all personnel involved with the lift.
    a. The plan shall specify the exact size and weight of the load to be lifted and all crane and rigging components that add to the weight. The manufacturer's maximum load limits for the entire range of the lift as listed in the load charts shall also be specified.
    b. The plan shall specify the lift geometry and procedures, including the crane position, height of the lift, the load radius, and the boom length and angle, for the entire range of the lift.
    c. The plan shall designate the crane Operator, lift supervisor, and rigger, and state their qualifications.
    d. The plan will include a rigging plan that shows the lift points and describes rigging procedures and hardware requirements.
    e. The plan will describe the ground conditions, outrigger or crawler track requirements, and, if necessary, the design of mats, necessary to achieve a level, stable foundation of sufficient bearing capacity for the lift.
    f. For floating cranes or derricks, the plan shall describe the operating base (platform) condition and any potential list.
3. The plan will list environmental conditions under which lift operations are to be stopped.
4. The plan will specify coordination and communication requirements for the lift operation.

5. For tandem or tailing crane lifts, the plan will specify the make and model of the cranes, the line, boom and swing speeds, and requirements for an equalizer beam.

6. This plan shall be submitted to OCSD at least two (2) weeks prior to the lift.

U. DEMOLITION

1. Utility companies shall be notified and all utility service shut off, capped, or otherwise controlled, at the building or curb line before starting demolition. The CONTRACTOR is responsible to verify that these actions have been taken.
   a. The CONTRACTOR shall develop an Emergency Call List for all known utility owners prior to the start of demolition activities.
   b. A site plan shall be marked up to show the locations of known utilities, and the nearest identified shut-off valves/controls. This plan shall be available in the CONTRACTOR's Site Office. The ENGINEER shall be provided with a copy. OCSD Risk Management should be provided with a copy.
   c. The CONTRACTOR shall research available documents to identify all utilities prior to digging or boring. The CONTRACTOR shall pot hole to locate critical utilities prior to digging or boring.

2. Existing alarm systems shall be identified and taken out of service prior to commencing demolition operations. Alarm services shall be notified that the alarm will be taken out of service before taking the system out of service.

3. The CONTRACTOR shall determine if any type of hazardous chemicals, gases, explosives, flammable materials, or similarly dangerous substances have been used in any pipes, tanks, or other equipment on the property.

4. When the presence of hazardous substances is apparent or suspected, testing and purging shall be performed and the hazard eliminated prior to demolition.

5. Pipe-covering insulation, steel beam and column fire protection, and HVAC duct shall be surveyed for asbestos.

6. During demolition, continuing inspections shall be made as the work progresses to detect hazards resulting from weakened, load burdened, or deteriorated floors or walls or loosened materials.
   a. The CONTRACTOR shall ensure that floor load limits are not exceeded during demolition operations.
   b. Disperse demolition equipment throughout the structure and remove demolished materials to prevent excessive loads on supporting walls, floors or framing.

7. Adequate dust control measures shall be provided during demolition, stockpiling and loading operations.

8. Walking across exposed floor joists, steel beams, or girders is prohibited.

9. The CONTRACTOR shall ensure safe passage of persons around the area of demolition. Conduct operations to prevent damage to adjacent buildings, structures, other facilities, and people.

10. Provide interior and exterior shoring, bracing, or supports to prevent movement, settlement or collapse of structures to be demolished, and to adjacent facilities.

11. Demolish concrete and masonry in sections. Use bracing and shoring to prevent collapse.

V. ELECTRICAL

1. General

   a. CONTRACTOR and all its employees must follow the NFPA 70 and 70E standards to determine work practices with appropriate arc-resistant personal protective equipment.

   b. All electrical installations shall be performed by an electrician certified by the State of California or a C-10 Electrical CONTRACTOR Licensed in the State of California.

   c. During the commissioning phase of a project, a state certified electrician shall be available to make any changes or adjustments to electrical installations that the commissioning coordinator requires. This would include testing equipment, checking voltage, and installing wire jumpers.

   d. All temporary power panels must have covers installed always. All circuits must be clearly labeled.

   e. The CONTRACTOR is to supply ground fault circuit interrupters (GFCI) for all temporary electrical wiring cords and equipment. Ground Fault Circuit Interrupters shall be tested in accordance with manufacturer's requirements. Logs shall be maintained of all such testing. GFCI with automatic reset feature are not permitted for use at OCSD.

   f. Temporary lighting shall not be suspended by its extension/power cord and must be equipped with guards to prevent contact with the bulb.

   g. Extension cords must be at minimum 12-gauges, three-wire cords. Extension cords shall be used only in continuous lengths without splice or tap. The terminals and insulation shall be free of defects such as cracked, split or nicked insulation; exposed wires; knots; burn marks; loose connectors; or other damage that may present a fire or an electrocution hazard. The ground prong shall not be removed.

   h. Power tools must be double insulated or grounded properly. Power tools shall be inspected before each use. Damaged or defective tools and cords shall be removed from service.

   i. The CONTRACTOR must properly tagout and/or lockout any equipment within the CONTRACTOR's responsibility. Control of the lock and/or tag is also the CONTRACTOR responsibility. The CONTRACTOR shall coordinate instances that require multi-Employer lockout/tagout activities.

   j. The CONTRACTOR shall ensure that all electricians are trained on NFPA-70E (Electrical Safety in the Workplace) to identify electrical hazards. The CONTRACTOR shall provide all personal protection equipment (PPE) as

required by NFPA 70E. The CONTRACTOR shall request the latest arc flash hazard study from OCSD forty-five (45) days prior to performing any Work on existing live systems and/or equipment. The CONTRACTOR shall use care when working around energized parts so as not to contact live parts, causing an electrical outage and/or injury.

2. Electrically Safe Work Condition

   a. Energized electrical conductors and circuit parts operating at voltages equal to or greater than 50 volts shall be locked out and tagged out before an employee performs work within the limited approach boundary or the employee interacts with equipment where conductors or circuit parts are not exposed but an increased likelihood of being burnt from an exposure to an arc flash hazard exists.

   b. Energized electrical work or exposure to open energized panels shall be prohibited without authorization from OCSD.

   c. De-energizing electrical conductors and circuit parts to which an employee may be exposed will be performed by de-energizing and locking out the sources of electrical energy in accordance with the Control of Hazardous Energy (LOTO) section. Electrically safe working conditions will be established by qualified persons only.

   d. When the possibility of induced voltages or stored electrical energy exists, the phase conductors or circuit parts shall be grounded before touching them. Where it could be reasonably anticipated that the conductors or circuit parts being de-energized could contact other exposed energized conductors or circuit parts, temporary protective grounding equipment shall be installed.

   e. Documentation, including facility drawings, shall be reviewed to ensure that no electrical circuit interlock operation can result in reenergizing the circuit being worked on.

   f. Locks and tags shall only be installed on circuit disconnecting means. Control devices such as push-buttons or selector switches shall not be used as the primary isolating device.

3. Energized Work

   a. The CONTRACTOR shall obtain ENGINEER's written approval for and adhere to a plan for such energized work that includes the following:

      1) Description of energized work to be performed, estimated duration of energized work, arc flash hazard category and the required PPE.

      2) Safety Plan and Procedures.

      3) Performance of energized work by CONTRACTOR's qualified, experienced electrician who are NFPA-70E trained and licensed in the State of California.

      4) Installation of barriers, if possible, to isolate the energized parts and/or devices that may cause a shutdown of a process.

5) Obtaining ENGINEER's approval of the plan prior to the notification of OCSD.

6) Written Notification of OCSD a minimum of fourteen (14) days in advance of such Work.

b. Shutdown requests shall be submitted as specified in the General Requirements section entitled "Advance Notification for Plant Shutdown"

c. Working on energized equipment is permitted only if performed by qualified persons, where approved by the OCSD Construction Inspector or Electrical Supervisor, and where it can be demonstrated that de-energizing equipment introduces additional hazards or increased risk.

d. Energized work is permitted where the task is infeasible in a de-energized state due to equipment design or operational limitations, or for equipment operating at less than 50 volts.

e. The CONTRACTOR shall implement safety-related work practices consistent with the electrical hazard and associated risk. The safety-related work practices shall be determined before any person is exposed to the energized equipment using shock and arc flash risk assessments. The shock risk assessment will determine the limited approach boundary and the restricted approach boundary. The arc flash risk assessment will determine the arc flash boundary, including the level of personal protective equipment to protect against arc flash hazards.

f. Employees are prohibited from blindly reaching into areas that might contain exposed energized electrical conductors or circuit parts.

g. Conductive articles of jewelry and clothing (watches, bracelets, rings, key chains, necklaces, metal framed glasses) shall not be worn within restricted approach boundaries or where they present an electrical contact hazard. Additionally, any conductive materials and equipment that are in contact with any part of an employee's body shall be handled in a manner that will prevent contact with exposed energized conductors or circuit parts.

h. When working within a confined or enclosed space that contains exposed energized electrical conductors or circuit parts operating at 50 volts or more, protective shields, protective barriers or insulating materials shall be used to avoid inadvertent contact with these parts.

4. Limited Approach Boundary

a. The limited approach boundary is the established safe distance for unqualified persons. The limited approach boundary is a calculated distance from an exposed live part where a shock hazard may exist. Only qualified persons are permitted to cross this boundary, if needed.

b. Where there is a need for unqualified persons to cross the limited approach boundary, qualified persons shall advise the unqualified person of the hazards and continuously escort the unqualified person while inside the boundary limit. Unqualified persons shall never cross the restricted approach boundary.

5. Restricted Approach Boundary

a. The restricted approach boundary is closer to live parts and may only be crossed by qualified persons. The restricted approach boundary is a calculated distance from an exposed live part where there is an increased risk of shock due to electrical arc combined with inadvertent movement for personnel working near the live part. Energized electrical permits are required when crossing this boundary to perform work on the energized conductor or circuit.

b. No qualified person shall approach or take any conductive object closer to exposed energized electrical parts within the restricted approach boundary, except where approved.

c. Unqualified persons are prohibited from working within the restricted approach boundary.

6. Arc Flash Boundary

a. The arc flash boundary is the calculated distance at which the incident energy equals 1.2 cal/cm^2 (energy capable of causing a curable second degree burn). In theory, persons working outside of the arc flash boundary would only sustain a curable second degree burn or less should an arc flash occur. Work performed inside of the arc flash boundary requires a level of PPE to reduce the incident energy on the human body to quantities lower than 1.2 cal/cm2.

b. The incident energy analysis is based on the working distance of the employee's face and chest from a prospective arc source for the specific tasks to be performed. The analysis is performed as part of the arc flash risk assessment, which considers overcurrent protective devices, fault clearing time, and condition of maintenance.

c. The incident energy analysis shall be evaluated when changes occur in the electrical system or every five years, whichever occurs first.

W. ELEVATING WORK PLATFORM AND AERIAL DEVICES

1. General

a. Only authorized and trained personnel shall operate an aerial device or elevating work platform.

b. Boom, basket, platform load limits specified by the manufacturer shall not be exceeded.

c. Employees shall not sit or climb on the edge of the basket or platform or use planks, ladders, guardrails or other devices to gain greater height.

d. Employees shall not work from elevated work platforms or aerial devices when exposed to high winds. OSHA defines "high winds" as any wind condition above 40 mph.

2. Aerial Devices

a. An aerial device is any vehicle-mounted or self-propelled device, telescoping extensible or articulating, or both, which is primarily designed to position personnel.

b. Belting off to an adjacent pole, structure, or equipment while working from an aerial device is not permitted.

c. Lift controls shall be tested in accordance with the manufacturer's recommendations or instructions prior to use to determine that such controls are in safe working condition.

d. Aerial baskets or platforms shall not be supported by adjacent structures when workers are on the platform or in the baskets while in an elevated position.

e. An employee, while in an elevated aerial device shall be secured to the identified anchorage point using a full body harness and lanyard for fall protection.

f. An employee shall not exit the aerial device to gain access to an elevated work area (i.e. use it as an "elevator").

g. The total load shall not exceed the weight allowed by the manufacturer.

3. Elevating Work Platforms

a. An elevating work platform is a device designed to elevate a platform in a substantially vertical axis. (Vertical Tower, Scissor-Lift)

b. The platform guardrail shall be 42 inches high, plus or minus 3 inches, with a middle railing. Where the guardrail is less than 39 inches high, an approved personal fall protection system shall be used.

c. Powered elevating work platforms shall have both upper and lower control devices. Controls shall be plainly marked as to their function and guarded to prevent accidental operation.

d. An emergency stopping device shall be provided at the upper controls of elevating work platforms.

e. Ladders or other objects shall not be placed on top of units to gain greater height.

f. An employee shall not exit the elevating work platform to gain access to an elevated work area (i.e. use it as an "elevator"), unless a manufacture approved procedure is available.

g. The work platform shall be operated according to manufacturer instructions.

4. Rescue Plan

a. Before work beings, necessary rescue equipment should be determined and made available at the work area.

b. Appropriate emergency rescue procedures shall be in place for an emergency rescue of a person using a fall-arrest system or aerial lift device, as follows:

1) Rescue shall be provided in less than six minutes to prevent suspension trauma. For most work, this shall necessitate a full-time safety watch.

2) If a rescue cannot be performed in less than six minutes, the fall-arrest system shall have a device that automatically lowers the person to the ground safety.

3) If compliance with the above cannot be achieved, a safe and alternative working procedure shall be used.

4) Emergency rescue procedures shall consider the immediate rescue of a person after an arrested fall without the need to rely on emergency services or appropriately trained and competent standby rescue teams.

X. EMERGENCY ACTION AND EVACTUATION PLAN

1. The CONTRACTOR is responsible for the development of a project-specific emergency action plan that shall consider probable and possible emergency situations. This plan shall be included in the SSSP.

2. The plan shall be revised throughout the course of the project to reflect changed conditions. The plan shall be maintained at the site, and available for review upon request. The plan shall contain the following at a minimum:
   a. Project site map
   b. Street map of immediate area showing project location that clearly identifies one-way and dead-end streets.
   c. Building plan, including a plan for each floor
   d. Emergency notification list
   e. Emergency notification procedures
   f. Evacuation procedures
   g. Evacuation route
   h. Evacuation refuge area
   i. How employees will be trained on the contents of this plan
   j. Intervals for refresher training

3. The plan shall contain an Emergency Contact List. The list shall include 24-hour contact information for key project personnel that will respond to emergencies. The CONTRACTOR shall maintain this list throughout the duration of the contract, and provide a revised copy to all parties when made necessary by changes to personnel or their contact information.

Y. ENVIRONMENTAL CONTROLS

1. Spills of hazardous materials (including cutting oil, fuel, solvents, antifreeze, sewage, etc.) must be reported immediately to the appropriate regulatory agencies and to OCSD. The party responsible for the spill is responsible for cleanup costs.

2. Cutting equipment must have secondary containment (drip pans, sandboxes).

3. Drums, jugs and other containers must have secondary containment.

4. All containers must be maintained in good condition, and must be appropriate for the materials to be stored in them.

5. All containers must be labeled with their contents and precautions for use.

6. Containers containing hazardous waste must be labeled “Hazardous Waste” in addition to listing their contents on the label.

7. Weekly inspections of the project must be performed by the CONTRACTOR to assure compliance with this section.

8. Hazardous waste owned by OCSD prior to the notice to proceed will be considered OCSD-generated hazardous waste, which requires OCSD Risk Management personnel to sign and receive copies of manifested paperwork.
    a. The CONTRACOR shall plan with the ENGINEER on the storage of hazardous waste before remediation begins. The CONTRACTOR shall request each storage container from OCSD a minimum of ten (10) work days in advance of remediation of hazardous materials.
    b. OCSD Risk Management will contact an OCSD approved hazardous waste transportation and waste disposal vendor to transport OCSD-generated hazardous waste offsite and dispose of in compliance with applicable Federal and State regulations. CONTRACTOR is responsible for all other construction generated waste.

Z. EQUIPMENT AND TOOLS

1. CONTRACTOR equipment and tools must be in proper working condition and routinely (i.e. daily or prior to use) inspected for defects.

2. Any equipment or tool found to be damaged or defective must be removed from service and repaired before it can be returned to service.

3. Manufacturer’s instructions shall be followed with respect to equipment/tool operation and training requirements.

4. Equipment is not to be used with loads that exceed the recommended rated capacity.

5. The CONTRACTOR is to use only their equipment and tools, and not those of other CONTRACTORS, unless employees are properly trained and authorized.

6. Tools and equipment are to be used for their designated purpose.

7. Tools and equipment are to be used only by trained and authorized employees.

8. Proper guards or shields must be installed on all power tools before use. All guards must be manufactured by and/or approved by the manufacturer for that piece of equipment.

9. The practice of “wedging or pegging” guards on circular saws or other equipment, rendering them non-functional, is not permitted.

10. No internal combustion vehicle or machinery is to be operated inside structures, confined spaces or excavations unless proper engineering controls have been implemented to minimize carbon monoxide levels.

    a. In such cases where vehicles or machinery are operated inside structures, carbon monoxide levels shall be monitored continuously to ensure a safe work environment.

11. All material handling equipment must have an audible backup alarm, unless a designated spotter is used.

12. Tools and equipment must be properly stored, secured and located away from unauthorized access.

13. For pneumatic power tools, all air hoses exceeding ½ inch inside diameter shall have a safety device (commonly known as an “OSHA valve” or “safety check valve) at the source of air supply or branch line origin (such as a manifold) to reduce pressure in case of hose failure.

AA. MACHINE GUARDING

1. Safeguards shall meet these minimum general requirements:

    a. Prevent contact: The safeguard shall prevent hands, arms, and any other part of a worker’s body from contacting dangerous moving parts. An effective safeguarding system eliminates the possibility of the operator or another worker placing parts of their bodies near hazardous moving parts.

    b. All guarding shall meet the minimum distance from the point of operation or moving parts as required per the ANSI B11 standard as listed below:

Distance of opening from point of operation hazard	Maximum width of opening
½” to 2 ½”	1/4”
2 ½” to 3 ½”	3/8”
3 ½” to 6 ½”	5/8”
6 ½” to 17 ½”	1 1/4”
17 ½” to 36”	1 7/8”
Over 36”	5”

c. Secure: Workers should not be able to easily remove or tamper with the safeguard but require a tool to remove them. Guards and safety devices shall be made of durable material that will withstand the conditions of normal use. Guards shall be affixed to the machine where possible and secured elsewhere if for any reason attachment to the machine is not possible.

d. Protect from falling objects: The safeguard shall ensure that no objects can fall into moving parts. A small tool which is dropped into a cycling machine could easily become a projectile that could strike and injure someone.

e. Create no new hazards: A safeguard defeats its own purpose if it creates a hazard of its own such as a shear point, a jagged edge, or an unfinished surface which can cause a laceration. The edges of guards, for instance, should be rolled or bolted in such a way that they eliminate sharp edges.

f. Create no interference: Any safeguard which impedes a worker from performing the job quickly and comfortably might soon be overridden or disregarded. Proper safeguarding can enhance efficiency since it can relieve the worker's apprehensions about injury.

g. Allow safe lubrication: If possible, one should be able to lubricate the machine without removing the safeguards. Locating oil reservoirs outside the guard, with a line leading to the lubrication point, will reduce the need for the operator or maintenance worker to enter the hazardous area.

2. All machines designed for a fixed location shall be securely anchored to prevent walking or moving of the machine.

3. On pieces of equipment where injury to the operator might result if motors were to restart after power has been restored following a power failure, the equipment will have anti-restart devices installed to prevent machines from automatically restarting upon restoration of power

4. Each machine that has the potential for pulling a person into it point of operation shall be equipped with emergency stopping device(s). The device can either be a push button or pull cable that will immediately stop the device and not allow it to continue to operate.

5. The emergency stopping devices shall be colored red and the background around the device shall be colored yellow. The emergency stopping device shall require the operator to manually reset emergency stopping device once it has been pushed.

BB. EXCAVATION AND TRENCHING

1. The Specifications require that all excavations be performed, protected, and supported as required for safety and in a manner set forth in the operation rules, orders, and regulations prescribed by the CAL/OSHA Construction Safety Orders. The Job Hazard Analysis requirements of the Safety Standards section entitled Job Hazard Analysis shall be met by the CONTRACTOR.

2. The CONTRACTOR shall submit to OCSD for acceptance, in advance of excavation, a detailed plan showing the design of shoring, bracing, sloping, or other provisions to be made for worker protection from the hazard of caving ground during the excavation of any trench or trenches five (5) feet or more in

depth. The plan shall be prepared and signed by a Civil or Structural Engineer registered in the State of California as required by all applicable laws including CAL/OSHA construction safety orders. As a part of the plan, a note shall be included stating that the registered Civil or Structural Engineer certifies that the plan complies with the CAL/OSHA Construction Safety Orders, or that the registered Civil or Structural Engineer certifies that the plan is not less effective than the shoring, bracing, sloping, or other provisions of the Safety Orders.

3. The detailed plans showing the design of shoring, etc., shall include surcharge loads for nearby embankments and structures, for spoil banks, and for construction equipment and other construction loading. The plans shall indicate, for all trench conditions, the minimum horizontal distances from the side of the trench at its top to the near side of the surcharge loads.

4. Nothing contained in this section shall be construed as relieving the CONTRACTOR of the full responsibility for providing shoring, bracing, sloping, or other preventive measures which are necessary for worker protection, nor for the liability resulting from the failure to do so.

5. If any Work required by this Contract includes digging trenches or other excavations, the CONTRACTOR shall promptly, and before any of the following earth conditions are excavated, moved or otherwise disturbed, notify OCSD, in writing, or its findings, including, but not limited to:

6. Material that the CONTRACTOR believes may be material that is hazardous waste, as defined in Section 25117 of the California Health and Safety Code, that is required to be removed to a Class I, Class II, or Class III disposal site in accordance with the provisions of existing law;

7. Subsurface or latent physical conditions at the site differing from those indicated on the Plans or otherwise disclosed in writing known by, or made available to, CONTRACTOR prior to bid opening;

8. Unknown physical conditions at the site of any unusual nature, differing materially from those ordinarily encountered and generally recognized as inherent in work of the character provided for in the Contract Documents.

9. OCSD shall promptly investigate the conditions, and if it finds that the conditions do materially so differ, or do involve hazardous waste, and cause a decrease or increase in the CONTRACTOR's cost of, or the time required for, performance of any part of the work, OCSD may issue a Change Order under the procedures described elsewhere in the Contract Documents.

10. If a dispute arises between OCSD and the CONTRACTOR whether the conditions materially differ, or involve hazardous waste, or cause a decrease or increase in the CONTRACTOR's cost of, or time required for, performance of any part of the work, the CONTRACTOR shall not be excused from any scheduled completion date provided for by the Contract, but shall proceed with all work to be performed under the Contract. The CONTRACTOR shall retain all rights provided either by the Contract or by law which pertain to the resolution of disputes and protests between the contracting parties.

11. Nothing in this section is intended to relieve the CONTRACTOR of the responsibility to fully examine the Contract Documents and the site where the Work is to be performed in accordance with the General Conditions; to be familiar with all local conditions and Federal, State, and local laws, rules and regulations that may affect the performance of any work; to study all surveys and investigative reports about subsurface and latent physical conditions pertaining to the worksite; to perform such additional surveys and investigations as the CONTRACTOR deems necessary to complete the work at the bid price; and to correlate the results of all such data with the requirements of the Contract Documents.

12. The CONTRACTOR shall obtain an excavation permit for excavations when required by the ENGINEER or local or state law.

13. Trenching or excavating activities must be under the supervision of a trained Competent Person.

14. The CONTRACTOR's materials for the protection of personnel (i.e., bracing, shoring, shielding, and trench boxes) must be in good condition and of proper dimensions/materials.

15. Excavations must be inspected daily by the Competent Person and whenever conditions change.

16. The CONTRACTOR's Competent Person must determine the soil classification (Type A, B, or C) to determine the appropriate type of protective system required for the excavation.

17. Excavated soils, materials or equipment are to be kept at least two (2) feet from the edge of the excavation.

18. The CONTRACTOR must provide appropriate barriers to protect people and vehicles from falling into the trench (lighted barricades must be provided at night).

19. Ladders or other means of egress must be provided by the CONTRACTOR for access and spaced within 25 feet of any worker inside the excavation when the depth of the excavation exceeds 4 feet (48").

20. Walkways are to be provided over any excavation or trench point that employees may need to cross. Walkway must have handrails, midrails, and toeboards.

21. Where pedestrian traffic must be accommodated over excavations, suitable non-skid plates or other suitable material capable of withstanding at least twice the maximum intended load must be provided to serve as a pedestrian runway for safe passage.

    a. The edges of the runway shall be tapered to minimize trip hazards. In the alternative, the approach to the runway shall be tampered with a suitable and durable material or the runway set into the surface to minimize trip hazards.

22. Rescue equipment must be provided by the CONTRACTOR (full body harness and lifeline, breathing apparatus, basket stretcher, etc.) when hazardous atmospheric conditions are expected to exist.

CC. UTILITY LOCATION

1. The CONTRACTOR must locate buried utilities before digging in accordance with the law.

2. Prior to excavation, all known owners of underground facilities in the area shall be notified by calling the regional One Call Notification System at 811.

3. The nearest shut off valve or control point for known utilities shall be identified on a site plan to be maintained by the CONTRACTOR.

4. The CONTRACTOR shall check the entire job site for visual signs of substructures. This includes such items as manhole covers, water meter boxes, ditch lines, pavement patches, previous location marks, pole risers, and the obvious absence of overhead utilities.

5. Most utilities inside of treatment plans are not within USA jurisdiction and are not required to be marked up. The CONTRACTOR must meet with project staff to view the excavation plans and all utility information resources prior to potholing.

6. The CONTRACTOR must expose substructures by hand after locations are determined.

7. The CONTRACTOR shall be careful not to damage the utility substructure by scraping, hammering, or other forms of excavation or locating efforts.

8. The CONTRACTOR shall be aware of the possibility of joint use of an excavation/trench for power, telephone, gas, fiber optics, cable, etc.

DD. FALL PROTECTION

1. General
   a. The CONTRACTOR must have a written fall protection program if work is required to be performed at elevated locations. The fall program shall be developed by a competent person and in accordance with applicable governmental regulations and this procedure. The program may be part of the Injury and Illness Prevention Program or maintained as a separate program.
   b. CONTRACTOR shall conform to all applicable Federal and State OSHA regulations.
   c. The CONTRACTOR shall submit a fall protection plan as part of the SSSP for all work exceeding six (6) feet in elevation. The plan shall include a licensed (CA) engineer's approval for the use of all lifelines. Documentation shall be prior to the start of work.
   d. Personal fall restraint, fall arrest, work positioning, horizontal lifelines, and vertical lifeline systems shall be designed and installed under the supervision of a California Professional Engineer.

e. The CONTRACTOR shall meet with OCSD's Risk Management Division prior to the start of the job and complete a Job Site Safety Analysis (JSSA) that addresses where fall protection may be required and how fall protection is to be achieved.

f. Shall verify the use, inspection, storage and maintenance of fall protection equipment with the requirements outlined in this document and all other applicable regulations

2. Hierarchy of Fall Protection Controls

a. The hierarchy of controls listed below shall be utilized to eliminate or reduce fall hazards. When elimination is not feasible, various engineering and administrative controls will be evaluated to determine appropriate personal protection against the fall hazard. Fall hazards and existing controls shall be periodically reassessed to determine if a greater level of protection can be applied or if the hazard can be eliminated.

b. Elimination - Eliminating the fall hazard or preventing exposure to a fall hazard is the most effective control measure and should be considered for existing hazards or during new construction. This can be achieved by modifying a structure, isolating the authorized person from the hazard, changing a process, substituting equipment or using work procedures so that the authorized person is not exposed to the fall hazard.

c. Passive Fall Protection - If it is not possible to eliminate the risk of a fall, reduce the risk using passive fall protection equipment. Passive fall protection offers a greater level of protection than active fall protection systems, since there is no reliance on the authorized person. Passive systems include: guardrails, covers capable of supporting weight, scaffolds and aerial lift devices. Note: Aerial lift devices require the use of a personal fall restraint system.

d. Personal Fall Restraint System – These systems allow the authorized person access to conduct their work but prevent them from reaching a point of where a fall could occur. The system is generally suited if the authorized person needs to work at the edge of a hazard, such as a roof's edge or at a hatchway in a process area. The fall hazard shall be positioned a greater distance away as compared to the fixed length of lanyard.

e. Personal Fall Arrest System - If it is not possible to use the above options, the use of a personal fall arrest system (PFAS) to arrest a fall after it occurs shall be used. This system provides the maximum freedom of movement for workers to conduct work. In the event of a fall, the fall will be arrested requiring the person to be self-rescued or be rescued.

f. Work Positioning System - These systems are different from a PFAS in that the length of the lanyard is shorter and rigged in such a way that will both restrict the range of movement of the authorized person and prevent falls of more than two feet. These systems secure the worker in place, allowing the authorized person to perform tasks with both hands. This requires the use of special harnesses and lanyards.

g. Administrative Controls - If none of the above measures are possible, or the risk of a fall remains, the risk shall be reduced using administrative controls to further reduce the risk of falling. These controls may include erection of a

controlled access zone, warning line system, warning signs, training or safety monitoring system. The use of controlled access zones, warning line systems and safety monitoring systems shall be approved by Division supervisors (or designee) and Risk Management before they are implemented. These controls attempt to increase worker awareness of fall hazard and alone should not be relied upon.

3. Passive Fall Protection Systems
   a. Guardrails
      1) Guardrails shall consist of a top rail, midrail and vertical posts. Midrails shall be approximately half-way between the top rail and floor, ground or working level.
      2) Guardrails shall be installed within 42 inches to 45 inches from the upper surface of the top rail to the working level.
      3) Guardrails used around floor openings will be erected on all unprotected edges of the hole, except on the side with a cover that can be locked in a vertical position and can provide equivalent fall protection. Note: cover must be at least 42 inches in height.
      4) Guardrails may be temporary or permanent. Temporary guardrails may relocatable or job-made, and typically used while more permanent systems are being installed or when work is of short duration or at a space not is not intended as a permanent work area.
      5) Access and egress openings in guardrails shall be equipped with a swinging, self-closing gate or shall be offset so that a person cannot walk directly into the opening. As a minimum, guardrails shall be able to withstand 200 pounds of force in any direction, except upwards, at the midpoint between posts without exceeding 1 ½ inches of deflection.
      6) Mid-rails, screens, mesh, intermediate vertical members, solid panels, and equivalent structural members shall be capable of withstanding, without failure, a force of at least 150 pounds applied in any downward or outward direction at any point along the mid-rail or other member.
      7) Mid-rails shall be installed at a height midway between the top edge of the guardrail system and the walking/working level.
      8) All guardrail posts shall not exceed a separation distance of 8-foot on center.
   b. Toe-Boards

1) When used as falling object protection, shall be erected along the edge of the overhead walking/working surface for a distance sufficient to protect employees below.

2) Toe-boards shall be capable of withstanding, a force of 50 pounds applied in any downward or outward direction at any point along the toe-board without failure.

3) Toe-boards shall be a minimum of 3 ½ inches in vertical height from their top edge to the level of the walking/working surface. They shall have not more than ¼-inch clearance above the walking/working surface. They shall be solid or have openings not over 1 inch in greatest dimension.

c. Covers

1) Shall be designed by a qualified person and capable of supporting at least 400 pounds or twice the weight of the employee, equipment and materials imposed on one square foot.

2) Shall be secured to prevent accidental displacement.

3) Covers in the process areas shall only be opened by authorized persons.

4) Covers used in temporary construction shall bear painted or stenciled sign stating: “Opening – Do Not Remove”.

5) Shall not project more than one inches above the surface.

6) When covers are not in place, the opening shall be constantly attended by an authorized person or protected by guardrails.

4. Personal Fall Prevention Equipment

a. Body Harness

1) Only ANSI-approved full body harnesses shall be used for personal fall protection systems.

2) The full body harness shall be equipped with a descent control device for rescue.

3) The weight limit of the harness and other system components shall be determined and not exceeded. Weight limit is determined by calculating the body weight of the user and weight of any tools and materials being carried.

4) All full body harnesses must come equipped with both a back and front “D-ring”.

5) Body or safety belts are not permitted for use as part of a personal fall protection system.

6) Harnesses should be equipped with suspension trauma safety straps.

b. Lanyards

1) Only ANSI-approved lanyards shall be used for personal fall protection.

2) Lanyards used for fall protection shall not exceed 6 feet in length and shall not exceed the distance from the anchor to the level below.

3) Lanyards shall be connected to secure anchor points in such a manner that will limit an employee free fall distance to 6 feet or less.

4) Lanyards shall be protected from abrasions, cuts, or deterioration caused by ultra-violet light, dirt, adverse weather conditions and chemicals.

5) Synthetic rope lanyards shall be rated to support at a minimum 900 pounds.

6) Lanyards with a shock absorbing device shall be used with the lanyard to reduce fall arresting forces to 500-600 pounds.

7) Lanyards shall be free from knots.

8) Lanyards shall not be tied back to themselves, except where designed to do so and approved by a qualified person.

9) Self-retracting lanyards shall only be attached using rated shackles or carabineers.

10) Lanyards shall only be connected to the “D” ring on a harness.

c. Self-Retracting Devices (Lifelines/Lanyards)

1) Only ANSI-approved self-retracting devices shall be used for personal fall protection.

2) Self-retracting devices that automatically limit free fall distance to 2 feet or less shall be capable of sustaining a minimum tensile load of 3,000 pounds applied to the device, with the line in the fully extended position.

3) Self-retracting devices that do not limit free fall distance to 2 feet or less shall be capable of sustaining a minimum tensile load of 5,000 pounds applied to the device, with the line or lanyard in the fully extended position.

4) Self-retracting devices shall not be used on horizontal or vertical lifeline systems unless the length of the lifeline on the drum of the device will not permit the worker to reach the hazard even when fully deployed.

5) Each employee shall be attached to a separate self-retracting device.

6) Self-retracting devices shall be protected against being cut or abraded.

d. Anchorages

1) All anchorages shall be designed and certified by a California Professional Engineer regarding strength, location and compatibility with fall protection equipment.

a) Anchorage points for personal fall arrest systems shall be capable of supporting 5,000 pounds per employee attached.

b) Anchorage systems for personal fall restraint systems shall be capable of supporting 4 times the intended load.

c) Anchorage systems for horizontal lifeline systems shall be capable of supporting two times the maximum tension developed in the lifeline during a fall. The number of persons attached to a horizontal system shall be used in determining the maximum tension in the lifeline.

d) Vertical lifelines shall have a minimum breaking strength of at least 5,000 pounds.

2) The anchorage systems are to be inspected for physical damage by the user prior to each use and a documented inspection at a minimum frequency of 5 years and more frequently if environmental conditions warrant.

3) The correct placement of anchorage systems for personal fall arrest should be installed at or above shoulder height to reduce the fall distance. The anchor point should be located in a manner to minimize swinging, should not be affected by the environment or contamination, and should prevent contact with lower level or an object.

4) The following may never be used as an anchor point:

a) Top rails, midrails or vertical posts associated with a guardrail system

b) Handrails or stair rails

c) Ladders, except approved ladder safety systems

d) C-Clamps

e) Piping or conduit

f) Wood structures

g) Unistrut support systems

e. D-Rings and Snap Hooks

1) D-rings and snap hooks shall have a minimum tensile strength of 5,000 pounds.

2) D-rings and snap hooks shall be proof-tested to a minimum tensile strength of 3,600 pounds without cracking, breaking or taking permanent deformation.

3) Snap hooks shall be of locking-type designed and used to prevent disengagement.

4) Snap hooks shall not be used unless they are a locking type and designed for the following connections:

a) Directly to webbing, rope or wire rope.

b) To other snap hooks.

c) To a D-ring to which another snap hook or other connector is attached.

d) To a horizontal lifeline.

e) To any object that is incompatibly shaped in relation to the snap hook.

f) D-rings and snap hooks shall have a minimum tensile strength of 5,000 pounds.

g) Lanyard snap hooks shall not be wrapped around anchor points and connected back to the lanyard, except where designed for such use.

5. Personal Fall Restraint

a. A Personal Fall Restraint System shall not allow the employee to fall. Fall restraint and horizontal/vertical lifeline systems shall be designed and installed under the supervision of a California Professional Engineer.

b. Fall restraint systems shall be limited to flat or low sloped working surfaces.

c. The fall restraint system shall include anchorage, connecting devices (lanyard/lifeline) and full body harnesses. Only approved connecting devices and full body harnesses are permitted.

d. The connecting device shall be of sufficient length to allow movement of the authorized person only as far as the sides of the working level or working area. The authorized person shall not be capable of reaching the fall hazard.

e. The connecting device may only be connected to the back D-ring of the fully body harness.

f. Non-certified anchorages are not permitted for horizontal or vertical lifeline systems.

6. Personal Fall Arrest Systems

    a. Fall arrest systems shall be designed and installed under the supervision of a California Professional Engineer.

    b. The fall arrest system shall be designed such that authorized person subjected to a fall shall not strike an obstruction or encounter a lower level or object.

    c. The fall arrest system shall include anchorage, connecting devices (lanyard), deceleration device and full body harnesses. Safety belts are not permitted for fall arrest or fall restraint.

    d. The connecting device shall be of sufficient length to allow movement of the authorized person only as far as the sides of the working level or working area. The authorized person shall not be capable of reaching the fall hazard.

    e. The connecting device may only be connected to the back D-ring of the fully body harness.

    f. Personal Fall Arrest Systems shall limit the fall distance to a maximum of 6 feet and prohibit the employee from contacting a lower level or structural element.

        1) Where practicable, the anchor end of the lanyard shall be secured at a level not lower than the employee's waist.

        2) Prohibit the employee from contacting a lower level or structural element.

    g. When using a lifeline, the CONTRACTOR shall submit a fall protection plan for all work exceeding 6 feet in elevation and the plan shall include a California licensed engineer's stamp of approval.

    h. Self-retracting devices that automatically limit free fall distance to 2 feet or less shall be capable of sustaining a minimum tensile load of 3,000 pounds applied to the device, with the line in the fully extended position.

    i. Self-retracting devices that do not limit free fall distance to 2 feet or less shall be capable of sustaining a minimum tensile load of 5,000 pounds applied to the device, with the line or lanyard in the fully extended position.

    j. Anchorages used for attachment of personal fall arrest equipment:

        1) shall be independent of any anchorage being used to support or suspend platforms, and

        2) capable of supporting at least 5,000 pounds per employee, or

        3) Part of a complete personal fall protection system used under the supervision of a qualified person that maintains a safety factor of at least two (2).

    k. The system shall be designed to bring an employee to a complete stop and limit maximum deceleration distance an employee travels to 3.5 feet (shock-absorbing lanyards).

    l. The system shall limit maximum arresting force on an employee to 1,800 pounds and withstand twice the potential impact energy of an employee free-

falling 6 feet or the free fall distance permitted by the system, whichever is less.

m. Personal fall arrest systems and components subjected to impact loading will be immediately removed from service and will not be used again for employee protection until inspected by a competent person and determined to be undamaged and suitable for re-use according to the manufacturers' specifications.

n. Personal fall arrest systems shall be inspected at least two times per year by a competent person. The date of the inspection shall be documented.

o. Personnel shall avoid carrying tools or sharp objects in their front or back pockets. Should a fall occur, these objects may become a puncture hazard.

p. The use of non-locking snap hooks is prohibited.

q. Body belts shall not be used for fall protection, fall restraint nor fall arrest.

7. Positioning Device Systems

   a. Work positioning systems shall be designed and installed under the supervision of a California Professional Engineer.

   b. Positioning devices shall be rigged such that an employee cannot free fall more than 2 feet.

   c. Positioning device systems shall be inspected prior to each use.

   d. Anchorage points for positioning device systems shall be capable of supporting 2 times the intended load or 3,000 pounds, whichever is greater.

8. Permanent Platforms

   a. Walking/working surfaces 6 feet and above shall be guarded by standard railing and toe board.

   b. No fall arresting equipment is required when working on a platform with fall protection (handrails, mid-rails, and toe boards) designed to regulatory specification.

   c. When employees perform work outside of the guarded area, they shall have on a full body harness and lanyard. The lanyard must be secured to the back-D ring of the harness and to a suitable anchor point.

   d. OSHA requires gates on ladders on work platforms. For this reason, all fixed ladders on work platforms should have gates at the top. Chains are not an acceptable substitute for ladder gates. Spring loaded double bar gates should be installed at the top of ladders on work platforms.

9. Elevated Work Surfaces

   a. Standard guardrails shall be provided on all open sides of unenclosed elevated work locations, such as: roof openings, landings, balconies or porches, platforms, runways, ramps or working levels more than 30 inches above the floor, ground, or other working areas.

   b. Fall protection systems, or other measures will be required whenever employees who are exposed to fall hazards from work/walking surfaces which are six (6) feet or more above the adjacent ground, floor or other work

surface, or when elevated work involves a potential hazard for falling outside existing railing that surrounds the platform below.

c. Elevated platforms shall be maintained as to eliminate hazards from slips and trips.

d. Guardrails used around holes will be erected on all unprotected edges of the hole. If the hole is used for the passage of materials, no more than two (2) sides may have removable guardrail sections

10. Floor Holes

a. Holes in the floor that are greater than 2 inches in its least dimension shall be covered.

b. Holes through which materials or tools may fall and create a hazard or through which parts of a person's body may contact dangerous moving parts, shall be completely covered except when in use.

11. Roof Fall Protection

a. Guardrail systems shall be provided for work within 6 feet of the roofs edge. When temporary or leading-edge work is being performed, an approved fall restraint/arrest system may be implemented. Toeboards shall be installed at guardrail locations. Guardrails may be permanent or temporary. Routine walkways should be identified on the roofs. Parapet walls meeting the height and strength requirements of a guardrail are an acceptable form of fall protection.

b. Guardrails shall extend at least 6 feet beyond the areas occupied by employees accessing, servicing or repairing permanently mounted rooftop equipment.

c. When roof access is provided along the roof edge, guardrails shall extend 6 feet on both sides along the roof edge. When roof access is provided through a roof hatch, guardrails shall be provided around the access hatch, except along the side with the hatch cover. A swinging gate shall be provided.

d. Personnel who need to travel beyond the protection of the guardrails must be protected by a personal fall arrest or restraint system.

e. Roof work shall be prohibited during lightning storms, heavy rain, high winds or dense fog conditions. Roof work shall be prohibited after dusk, except during emergency repairs or planned work where all appropriate safety precautions have been implemented in advance (i.e. portable lighting). Use of a personal flashlight is acceptable as a back-up only.

f. If personal fall protection is utilized, provisions need to be made to protect people below from falling object hazards. This may include delineating surfaces below the elevation location or positively securing equipment/tools on the roof.

g. Skylights shall be protected using skylight screens, approved covered or guardrails.

12. Ramps, Walkways and Sloped Surfaces.

a. Employees on ramps, runways, and other walkways shall be protected from falling 6 feet or more to lower levels by guardrail systems.

b. Ramps or Sloped Surfaces with an incline greater than 40 degrees will require an employee to use fall protection while on the ramp or sloped surface.

13. Leading Edge

a. All personnel working within 6 feet from a leading edge that could cause a fall of 6 feet or more (including diagonal falls of 40 degrees or more) shall be protected from falling by guardrails systems, personal fall arrest systems, body positioning device, warning line system including a Safety Monitor/ Attendant.

b. Personnel working within the first 6 feet from the roof edge will be required to use personal fall arrest or fall restraint devices that will not allow them access to the roof edge. Self-Retractable Lanyard (SRL) cannot be used as part of a personal fall protection or fall restraint system, unless the full length of the lanyard is less than the distance to the roof edge.

c. When a fall protection plan utilizes a warning line system in lieu of railing, fall arrest or fall restraint systems, warning lines constructed of ropes, wires or chain, and support stanchions shall be erected as follows:

1) Warning line shall be installed no less than 6 feet from the roof edge.

2) Warning line shall be rigged and supported in such a way that its lowest point including sag is no less than 34 inches from the walking surface and its highest point is no more than 39 inches from the walking surface.

3) The warning line shall be flagged at not more than 6-foot intervals with high visibility material.

4) After being erected warning line stanchions shall be capable of resisting without tip over a force of at least 16 pounds.

5) Warning line shall have a minimum tensile strength of 500 pounds and after being attached to the stanchion, shall be capable of supporting 16 pounds without breaking.

6) No work or work-related activity is to take place in the area between the warning line and the edge.

7) The use of warning lines closer than 6 feet from the edge is not permitted as substitute for conventional fall protection for work other than roof construction/repair.

14. Excavations

a. Excavations 6 feet or more in depth shall be protected from falling by wooden sawhorse style barriers, K-rails, fences, or similar appropriate devices. The authorized individual shall determine the degree of hazard and implement an effective method of control.

b. Personnel shall travel directly to the point of entry of the excavation.

c. The CONTRACTOR who created the hole or opening is responsible for implementing the preventative measure.

15. Wells, Service Pits, Shafts, Manholes, and Sumps

    a. Each person at the edge of a service pit, shaft, manhole, sump 6 feet or more in depth shall be protected from falling by guardrails systems, fences, rigid barricades, or covers.

    b. Unused portions of service pits not in actual use shall be either covered or protected by guardrails, this may be accomplished by movable post or stanchions and other guardrails which will provide equivalent protection.

    c. When performing work activities near of an open manhole or vault, the opening shall be guarded with a temporary cover, barricade or removal guardrail system.

    d. During the performance of any task where a manhole or vault will be open without a temporary cover, barricade or protective hand-railing. A crew member shall be assigned the responsibility of a Safety Monitor, whose sole duty is to warn co-workers and bystanders when they exceed the 6-foot safety perimeter around the hole or opening.

    e. All floor holes and floor openings located in shut down or abandoned structures must be covered or guarded.

16. Confined Spaces

    a. Confined Spaces that are 5 feet or more in depth shall require the use of a mechanical retrieval device for both fall arrest and rescue. Exception – the required use of a mechanical retrieval device can be circumvented, only if the Entry Supervisor can justify that its use poses a greater hazard to the entrant(s). All exceptions must be documented on OCSD's JHA form.

    b. The Confined Space Entry Supervisor shall be responsible for developing an alternate method for fall protection and rescue as well as provide the required fall protection, rescue equipment and personnel if a mechanical retrieval device is not used.

    c. One hundred percent (100%) Fall Protection shall be implemented by all trades for all fall exposures of six (6) feet or more.

    d. When walkways or other work areas are elevated over six (6) feet, the CONTRACTOR will use warning lines or other means to alert employees to the presence of the leading edge.

    e. Rescue shall be addressed in the CONTRACTOR's fall protection policies and fall protection training. CONTRACTOR may be required to submit site specific fall protection and rescue plan, as well as training documentation for review by persons with authorized oversight.

    f. Calling 911 and depending on local fire department shall not be allowed in lieu of the CONTRACTOR preparing and utilizing its own site-specific fall protection and rescue plan.

17. Training

a. CONTRACTORS are required to provide training for any employee who might be exposed to a fall hazard prior to the exposure or upon hiring. Documentation shall be maintained and available for review upon request.

b. Training must include an explanation of the company's fall protection policies and safe work practices with general instructions and precautions; specific instruction where required; hazard identification and correction; selection and proper use of protective devices; and maintenance of equipment. Instruction will also include correct procedures for inspecting, erecting, disassembling, and maintaining fall protection systems used; and the employee's role in fall prevention and protection

c. Retraining. When the CONTRACTOR has reason to believe that any affected employee who has already been trained does not have the understanding and skill required by paragraph (a) of this section, the CONTRACTOR shall retrain each such employee. Circumstances where retraining is required include, but are not limited to, situations where:

    1) Changes in the workplace render previous training obsolete; or

    2) Changes in the types of fall protection systems or equipment to be used render previous training obsolete; or

    3) Inadequacies in an affected employee's knowledge or use of fall protection systems or equipment indicate that the employee has not retained the requisite understanding or skill.

18. Inspection, Maintenance and Storage

a. Fall protection equipment shall be inspected by the authorized person before each use to verify that it has not sustained any wear or damage that would require removal from service. These inspections are visual only, and not documented.

b. Fall protection equipment (including rescue equipment) shall be inspected twice annually by a competent person to verify the equipment is safe for use. The inspections shall be documented and copies submitted to Risk Management.

c. Horizontal and vertical lifelines shall be inspected prior to each use, and not to exceed annually for any degradation, and if necessary, replace damaged or worn parts. Check torque on any bolts against specification.

d. Inspections shall look for illegible or missing tags, elements affecting fit or function, defects or damage to hardware including cracks, sharp edges, corrosion, chemicals, elongation, alteration, heat or excessive wear. Records of inspections shall be maintained throughout the service life of the equipment and submitted to Risk Management.

e. If inspections reveal damage or determined to be inadequate for service shall be tagged so equipment will not be returned to service. The competent person shall destroy the equipment.

f. The competent person shall verify that the equipment is maintained according to the manufacturer's instructions.

g. Equipment shall be stored in a manner that protects it from exposure to any conditions that could result in damage.

h. Anchorage systems shall be inspected by the authorized person prior to each use and by a qualified person or competent person at least annually or in accordance with the manufacturer's instructions. Inspections by qualified or competent persons shall be documented.

i. Damaged anchorages shall be repaired or replaced and recertified by a qualified person.

j. Anchorage inspections shall look for cracks, deformation or bending in the structure around the anchorage or if the connection is unstable or loose.

k. Equipment involved in a fall arrest incident must be taken out of service immediately and handled according to the manufacturer's instructions. Retractable lifelines/lanyards must be sent back to the manufacturer for repair and re-certification.

l. The service life of harnesses and lanyards is determined by the manufacturer and shall be discarded upon expiration. This information is found on a tag located on the device itself.

m. Fall protection equipment must be used in accordance with manufacturer instructions, including weight and size limitations, and must not be altered in any way without written manufacturer authorization.

EE.FIRE PROTECTION AND PREVENTION

1. The CONTRACTOR shall be especially careful to avoid fire hazards in all welding, cutting, and equipment fueling. The CONTRACTOR shall attain a hot-work permit before any work begins.

2. Many areas of the treatment plant, pump stations and collection system are classified as Class 1, Division 1 or Class 1, Division 2 environments. The CONTRACTOR shall ensure that equipment used in these locations is approved for use by a Nationally Recognized Testing Laboratory (NRTL) for use in these locations.

3. Many areas of the treatment plant and pump stations have flammable gas warning systems. The CONTRACTOR shall stop work and evacuate the area if an alarm is activated.

4. The CONTRACTOR shall stop work and evacuate the area if a fire alarm is activated or a public-address announcement indicates a fire is possible or another emergency exists.

5. Sprinkler systems shall be maintained in an operable condition by the CONTRACTOR at all times while the building is occupied.

6. The CONTRACTOR shall furnish all safety devices, fire extinguishers and fire watch personnel required to protect the work and provide for worksite and public safety.

7. The CONTRACTOR must develop a fire protection program to be followed throughout all phases of construction. The fire protection program shall be included in the SSSP.

8. The program shall include the most stringent of OSHA, local Fire Marshal, and/or local Fire Code requirements and comply with the following OCSD fire prevention procedures and controls:

    a. Housekeeping is essential to fire prevention and to a well-run operation. The following general housekeeping rules will be followed:

        1) Prevention of accumulation of loose debris, waste and trash.

        2) Control of combustible waste and refuse in covered metal cans with at least shift-end removal from the building.

        3) Storage racks and stacks of materials on pallets are in a neat and orderly manner and in their designated stock locations.

        4) Immediate clean-up of stock or chemical spills.

        5) Aisles and exit ways clear and free of obstructions.

        6) Prohibition of any storage in exit ways, stairwells, and inside or outside fire exits doors.

        7) Clear 36-inch access to all fire protection and emergency equipment and electrical panels.

    b. Smoking is a recognized hazard and should be prohibited or prevented wherever possible.

        1) The State of California prohibits smoking within 20 feet of the entrance to a building.

        2) Smoking will be restricted to designated areas.

        3) Such areas will be provided with appropriate non-combustible ashtrays, and will be emptied daily into metal trash containers not containing combustible waste.

        4) It is important to inform all visitors, truck drivers, etc. of the company's smoking restrictions, and insist on their compliance.

    c. Electrical Maintenance

        1) Only qualified and trained personnel will be permitted to repair or work on electrical installations and equipment.

        2) Any defective wiring or electrical equipment should be reported immediately to Construction Management. Such equipment will be immediately taken out of use, tagged as defective, and a work order issued for its repair or evaluation.

3) Strict attention should be paid to cleanliness. Combustible materials should be prohibited from accumulating in substations, electrical rooms, control rooms, cable trays, around motors and other electrical installations.

4) Extension cords will be permitted only for emergency or truly temporary situations, and shall be properly sized for the equipment to be operated. Care should be taken to assure such temporary wiring is visible and protected from fraying or pinching.

5) All electrical installations will meet appropriate electrical codes and listings.

6) Access clearances will be maintained to all electrical panel boxes and switchgear.

d. Flammable Liquids

1) Storage of flammable liquids only in specially approved and designated cabinets, storage rooms or outbuildings.

2) Use of only manufacturer's original containers or U. L. approved flammable liquid containers.

3) Proper handling and dispensing procedures to include grounding, quantity limits, and pressure relief, and personal protective equipment.

4) Control and reporting of spills.

5) Control and reporting of any potential ignition sources such as faulty electrical, open lights and flames

e. Flammable Gasses

1) All storage and handling procedures for specific flammable gases and operations will be strictly observed.

2) Flammable gases will be stored separately from oxygen or other oxidizers. Only exception will be one oxygen cylinder in use on an acetylene welding cart.

3) Unless the cylinder valve is protected by a recess in the head, keep the metal cap in place to protect the valve when the cylinder is not connected for use.

4) Do not use a cylinder of compressed gas without a pressure reducing regulator attached to the cylinder valve, except where cylinders are attached to a manifold, in which case the regulator will be attached to the manifold header.

f. Follow proper welding and cutting procedures listed in 3.e of this document.

g. Firefighting equipment must be conspicuously located or conspicuously marked.

h. A fire extinguisher, rated not less than 2A, shall be provided for each 3,000 square feet of floor and fraction thereof. Where the floor is less than 3, 000 square feet at least one fire extinguisher is required.

i. The clear and unobstructed travel distance from any point of the protected area to the nearest fire extinguisher shall not exceed 75 feet.

j. In multi-story buildings, at least one (1) fire extinguisher shall be provided on each floor and located adjacent to the stairway.

k. A fire extinguisher, rated not less than 10B, shall be provided within 50 feet of wherever more than 5 gallons of flammable or combustible liquids are stored.

l. Portable fire extinguishers shall be fully charged, inspected monthly and serviced annually.

m. Storage of more than 25 gallons of flammable liquids shall be in a NFPA approved storage cabinet. Not more than 120 gallons of Class I, II, or IIIA liquids may be stored in a storage cabinet.

n. A fire extinguisher, rated not less than 20-B, shall be located outside of, but not more than 10 feet from the door opening of storage rooms.

o. A portable fire extinguisher rated at least 10B: C shall be kept near operations where fuel gas cylinders/bottles are being used.

p. Portable fire extinguisher shall be readily available for use where temporary heating devices are used.

q. “No Smoking” signs shall be posted as required by operations or material exposures.

r. The OCSD reserves the right to designate no smoking areas on the project.

s. Fire extinguisher must be at least either a 20-pound ABC or two 10-pound ABC within five (5) feet of any hot work activity.

FF. FIRST AID

1. Each CONTRACTOR shall ensure the availability of a suitable number of appropriately trained persons to render First Aid and CPR.

2. Field Supervisors and Safety Representatives must be trained in First Aid and CPR and identified on the project.
   a. Evidence of training shall be available for review upon request.

3. Each CONTRACTOR shall provide at least one (1) appropriately sized and stocked first-aid kit in a weatherproof container.
   a. The first-aid kit shall be inspected regularly to ensure that the expended items are promptly replaced.

4. Eye wash capabilities shall be provided by the CONTRACTOR as required by the SDS for products used at the job site.

5. Each CONTRACTOR and Subcontractor shall submit (via the CONTRACTOR) to the ENGINEER a list of First Aid / CPR trained personnel prior to starting work.

a. Each list shall be clearly dated, and updated as required throughout the Contract Duration. Each time the list is updated, a copy shall be provided to the ENGINEER.

GG. FLAMMABLE AND COMBUSTIBLE MATERIALS

1. The CONTRACTOR is required to supply extinguisher, fire blankets, and other sufficient fire protection devices for the immediate work area where flammable and combustible material is stored or used. All fire extinguishers must be provided by the CONTRACTOR and rated at a minimum of 2A, 20BC.

2. Fire extinguishers shall be checked to verify that they are fully charged.

3. All CONTRACTOR supplied flammable liquids must be stored in approved safety containers.

4. All containers must be properly labeled and stored when not in use.

5. Only approved metal safety cans will be allowed for flammable storage.

6. The CONTRACTOR shall identify non-compatible materials in advance, and provide for separate storage as required.

7. Storage more than 25 gallons of flammable liquids or 60 gallons of combustible liquids shall be within cabinets constructed to the requirements of NFPA 30.

8. All outside storage areas must be at least 20 feet from any building.

9. For roof work:
   a. No more than a one-day supply of flammables may be placed on the roof during working hours.
   b. All flammables must be removed from the roof at the end of each workday by the CONTRACTOR.
   c. At least two extinguishers appropriate for the type and quality of flammable materials present must be provided if flammables are present.

10. All CONTRACTOR-supplied flammable and combustible materials must be kept away from sparks, heaters, and any other heat source.

HH. FORKLIFT (INDUSTRIAL TRUCKS AND TRACTORS)

1. Only drivers authorized by the CONTRACTOR and trained in the safe operations of industrial trucks shall be permitted to operate forklifts.

2. Operator training and posting of information regarding forklift operations shall be in accordance with applicable OSHA Standards.

3. The CONTRACTOR shall certify that each Operator has been trained and evaluated for each type of equipment.

4. All forklifts and industrial trucks and tractors shall be equipped with an audible back-up alarm which can be normally be clearly heard from 200 feet

a. In congested areas or areas with high ambient noise which obscures the audible alarm, a signal person in clear view of the Operator shall direct the backing operation.

5. The rated capacity of all industrial trucks and industrial tractors and manufacturers manual shall be displayed always on the vehicle in such a manner that it is readily visible to the Operator.

6. Every industrial truck and tractor shall be equipped with operable brakes, a parking brake, and a horn.

7. Seat belts shall be provided on industrial trucks and tractors where rollover protection is installed. Employees shall be instructed in their use.

8. No riders shall be permitted on vehicles unless the vehicles are equipped with adequate riding facilities and specifically designed for riders.

9. Employees shall not ride on, or be elevated on the forks of lift trucks.

10. Industrial trucks may be used to elevate employees in accordance with applicable OSHA Standards and manufacturer's recommendations using appropriate personnel platforms.

11. Employees shall not be allowed to stand, pass, or work under the elevated portion of an industrial truck, loaded or empty.

12. Drivers shall check the vehicle at least once per shift. Attention shall be given to tires, horn, lights, battery, controller, brakes, steering mechanism, cooling system, and the lift system (forks, cable and limit switches).

13. Vehicles shall not exceed the authorized or safe speed, always maintaining a safe distance from other vehicles, keeping the truck under positive control always.

14. The driver shall slow down and sound the horn at cross aisles and other locations where vision is obstructed.

15. Grades shall be ascended or descended slowly.

16. The forks shall always be carried as low as possible, consistent with safe operation. When traveling forward with an obstructed view due to the load, the operator must travel in reverse or utilize a flagger.

17. When leaving a vehicle unattended, the power shall be shut off, brakes set, the mast brought to the vertical position, and forks left in the down position.

18. Forklifts (Industrial Trucks and Tractors) shall not be loaded more than their rated capacity.

19. Any vehicle attachments must be manufacturer approved or stamped by a licensed Professional Engineer.

II. HAZARD COMMUNICATION

1. The CONTRACTOR shall maintain a copy of all Safety Data Sheets, and a chemical inventory list, for all hazardous substances used at the jobsite by their firm, as well as for all hazardous substances used at the jobsite by all Subcontractors regardless of tier.
    a. The location of the project's Safety Data Sheets and chemical inventory list shall be communicated to the ENGINEER and OCSD Risk Management.
    b. All hazardous materials identified by OSHA as a carcinogen or reproductive hazard as subject to use restriction and/or prohibition from use on OCSD facilities. In addition, the CONTRACTOR shall provide a written plan of how their employees will be protected from exposure of these materials. A permit shall be issued by OCSD; notification shall be made and a permit issued one week before the material is brought on site.

2. In accordance with the provisions of the Hazard Communication Standard, each CONTRACTOR must have a comprehensive written Hazard Communication Program which includes:
    a. A list of hazardous substances known to be on site.
    b. Methods the CONTRACTOR will use to inform employees of the hazards of non-routine tasks.
    c. On Multi-CONTRACTOR/Subcontractor job sites, the program shall include the methods CONTRACTOR will use to inform its Subcontractors of any precautionary measures to protect their employees.
    d. The methods used to provide other CONTRACTOR(s) with access to Safety Data Sheets.
    e. The methods the CONTRACTOR will use to inform the other CONTRACTOR(s) of the labeling system in use.

3. The CONTRACTOR must submit a copy of its Hazard Communication Program to the ENGINEER and OSM.

4. Each CONTRACTOR must have a job site binder which contains the following items:
    a. A comprehensive written Hazard Communication Policy.
    b. A chemical inventory listing all hazardous materials brought onto or used on the project site by the CONTRACTOR.
    c. Safety Data Sheets (SDSs) for all hazardous materials used on the project site.

5. The CONTRACTOR shall ensure that all employees have received training in the safe use of hazardous materials; and that employees are able to read and understand the information on Safety Data Sheets. The training shall include at least:
    a. Methods and observations that may be used to detect the presence or release of a hazardous chemical.
    b. The physical and health hazards of the chemicals used in the work area.

c. Measures employees can take to protect themselves from the hazards.

d. Details of the hazard communication program, including the labeling systems and the use of MSDS.

6. The CONTRACTOR shall ensure that all containers used on the construction site are properly labeled as to their contents, including gas and diesel containers.

7. The CONTRACTOR will provide a Safety Data Sheet (SDS) for any hazardous substance that will be used on the job site to the CONTRACTOR prior to its use.

8. Pipelines or process areas must be barricaded and/or signed to inform employees of potential dangers during testing.

JJ. HEAVY EQUIPMENT AND MATERIAL HANDLING

1. Equipment shall be maintained in good working order. All vital parts such as motors, chassis, blades, blade holders, tracks, drives, hydraulic and pneumatic mechanisms, and transmissions must be inspected each day.

2. Whenever visibility conditions warrant additional light, all vehicles, or combinations of vehicles, in use shall be equipped with at least two headlights and two taillights in operable condition.

3. All vehicles, or combination of vehicles, shall have brake lights in operable condition.

4. All vehicles shall be equipped with an adequate audible warning device (horn) at the Operator's station.

5. All vehicles must have a back-up alarm that is normally audible for 200 feet.

   a. In congested areas or areas with high ambient noise which obscures the audible alarm, a signal person in clear view of the operator shall direct the backing operation.

6. All vehicles with cabs shall be equipped with windshields and powered wipers.

7. Vehicles operating in areas or conditions that causes fogging or frosting of windshields shall be equipped with operable defogging or defrosting devices.

8. Cracked or broken windshields shall be promptly replaced.

9. Windshields and mirrors shall be kept clean such that vision is not compromised or obstructed.

10. Seat belts with approved proper anchorage points shall be installed in all haulage, earth moving, and material handling heavy equipment.

11. The CONTRACTOR shall ensure employee use of seat belts on motor vehicles.

12. Trucks with dump bodies shall be equipped with positive means of support, permanently attached, to prevent accidental lowering of the body while maintenance or inspection work is being done.

13. Operating levers controlling hoisting or dumping devices on haulage bodies shall be equipped with a latch or other device that will prevent accidental starting or tripping of the mechanism.

14. Trip handles for tailgates of dump trucks shall be so arranged that, in dumping, the Operator will be in the clear.

15. All rubber-tired motor vehicle equipment shall be equipped with fenders.

16. All vehicles in use shall be checked at the beginning of each shift for defects in:
    a. Service brakes, trailer brake connections, parking brake system, and emergency stopping system (brakes).
    b. Tires, horn, steering mechanism, seat belts, operating controls and safety devices.
    c. Lights, reflectors, windshield wipers, defrosters, and fire extinguishers.

17. Before starting a job, the Operator shall be given instructions regarding the work to be done.

18. Before starting the motor, the Operator shall check to make sure that all operating controls are in the neutral position.

19. Before starting the equipment, or moving the equipment after re-entering the cab, the Operator shall walk entirely around the equipment to make sure no other personnel, equipment or material will be struck.

20. CONTRACTOR shall ensure that Operators of heavy equipment wear appropriate hearing protection devices.

21. At no time shall a piece of equipment be left unattended while the motor is running, especially if the machine is on an inclined surface or on loose material.

22. Block or chock wheels when parking on inclines.

23. Machines shall be operated at speeds and in a manner consistent with conditions on the project.

24. No employee other than the Operator shall ride on equipment.

25. During refueling operations equipment motors shall be turned off. Smoking is prohibited during refueling.

26. If possible, equipment shall be driven entirely off the roadway at night.

27. Unattended equipment must be left in a secure area not accessible to members of the public or unauthorized third parties.

28. Keys shall be removed from unattended equipment.

29. Spotters and/or Flaggers must be used when equipment Operator's view is obstructed whether moving forward or backward.

30. Equipment maintenance must be performed within a containment area where spilled fluids will not contaminate the ground and can be readily cleaned up.

KK. HORIZONTAL BORING / PIPE JACKING

1. Prior to boring/jacking operations the CONTRACTOR must contact the regional One Call Notification System (811) to ensure all owners of underground facilities are notified to mark their utility locations.

2. The CONTRACTOR shall locate all buried utilities before commencing boring/jacking operations.

3. Open a guide hole (bore slot) over any existing utility that is in line with the bore shot.

4. Excavate bore slot, bell hole and guide holes as necessary.

5. If resistance is encountered during the boring/jacking operation, cease the boring operation immediately and excavate at the point of resistance to determine necessary action.

6. The Operator must be trained in the use of the boring/jacking machine.

7. At least two (2) crewmembers must operate the bore motor always.

8. Stay clear of rotating bore pipe and the rotating head of boring machine. Loose clothing, long hair, or gloves can cause injury if caught in rotating bore pipe.

9. Only one (1) crewmember shall transmit signals to the Operator.

10. Do not hold rotating bore pipe with hands or feet.

11. Operate the boring machine only at slow RPM's when used to connect or disconnect bore pipe.

LL. HOUSEKEEPING

1. Housekeeping shall be performed daily.

2. All construction materials must be stored in an orderly manner.

3. All exits and access ways must be kept unobstructed.

4. All work areas must be cleaned and free of debris.

5. Puncture hazards (nails, staples, fasteners, etc.) created by stripped formwork, scrap lumber, pallets, shipping materials, etc. shall be eliminated or controlled by CONTRACTOR.

6. Metal containers with covers must be provided for disposal of oily and paint soaked rags.

7. Maintain all exits.

8. Emergency exits must be available.

9. Panic hardware, where present, must remain unobstructed.

10. Walkways and sidewalks must be kept free of construction materials, debris, dirt, tools and extension cords.

11. Where steel plates are used to bridge excavations or other similar type construction activities in walkways or sidewalks, the leading edges of the steel plates must be recessed or tapered with temporary asphalt or other suitable materials to prevent trip hazards, and meet the approval of the ENGINEER.

MM. PORTABLE HEATERS

1. All heaters must be Factory Mutual and/or Underwriters Laboratory approved.

2. The CONTRACTOR must notify the Inspector to review and approve all liquid/gas fueled CONTRACTOR heaters brought onto the site prior to use.

3. The use of liquid/gas fueled heaters inside of buildings requires OCSD approval.

4. Tent Heater use requirements are as follows:
   a. Use only in tents made of fire resistant material.
   b. Avoid contact with heating elements or other hot parts.
   c. Keep flammable materials and clothing away from hot equipment.
   d. Never use heaters in a utility hole or in a tent that covers a utility hole.
   e. Ensure adequate ventilation is provided when using a tent.
   f. Secure a fire extinguisher within the tent in an accessible location.

5. All portable heaters shall be protected from moisture.

NN. LADDERS

1. General
   a. Type II (225lb. limit) and Type III (200lb. limit) ladders are prohibited.
   b. Ladders must be at least Type I (250lb. limit), Type IA (300lb. limit) or Type IAA (375lb. limit).
   c. The CONTRACTOR shall provide a training program for each employee using ladders and stairways, as necessary. The program shall enable each employee to recognize hazards related to ladders and stairways, and shall train each employee in the procedures to be followed to minimize these hazards.
   d. Tools, equipment and other materials shall never be carried when ascending or descending a ladder, but rather hoisted using a rope and bucket system or provided by mechanical means (hoist, forklift, etc.).
   e. Ladders shall always be faced when ascending or descending.

f. All ladders shall be maintained in a safe condition. All ladders shall be inspected prior to use. Any ladders identified with unsafe conditions shall be tagged out of service until repairs can be made.

g. Ladders shall be maintained free of oil, grease or slippery materials.

h. Ladders shall not be painted, sanded or otherwise altered.

i. Retaining shall be provided for each employee as necessary so that the employee maintains the understanding and knowledge acquired through compliance with this section.

j. Employees must maintain a 3-point contact while climbing ladders.

k. Job-Made ladders shall be constructed in accordance with OSHA provisions.

l. All types of ladders must be inspected at least daily for:

    1) Cracks, splits, splinters, and decay.

    2) Protruding nails and loose rivets.

    3) Loose, bent or broken braces, tie rods, guide irons, locks, pulleys and strand hooks.

    4) Broken, worn or defective spurs and pads.

2. Extension Ladders

    a. Portable ladder feet shall be placed on a substantial base.

    b. Straight and extension ladders must be tied off or secured to prevent displacement.

    c. Metal ladders must not be used near energized equipment.

    d. No more than one (1) employee is allowed on a ladder.

    e. Ladders are not to be used for skids, braces, workbenches, or any other purpose other than climbing.

    f. Ladders shall be used at such a pitch that the horizontal distance from the top support to the foot of the ladder is about one-quarter of the working length of the ladder.

    g. Extension ladders shall be selected to meet the requirements of the person, task and environment. Consideration shall be given to the length or height required, working load, duty rating, worker position to the task and frequency in which the ladder will be subjected.

    h. The ladder shall be positioned so that the distance from the vertical wall is equal to one-fourth the working length of the ladder or a 4:1 slope. The ladder shall be placed on a firm level surface.

    i. The ladder shall be placed to prevent slipping, or shall be tied, blocked, held, or secured to prevent slipping. If the ladder cannot be secured, the ladder may be held by a coworker.

    j. Ladders shall not be used in the horizontal position as a platform, runway, or scaffold unless designed for such use.

k. The ladder shall extend no less than 36 inches above the landing surface to which the ladder is used to gain access.

l. Ladders shall have nonconductive side rails if they are used where the employee or the ladder could contact exposed energized electrical Equipment.

m. Employees shall climb or work from the ladder with the body positioned near the middle of the step or rung. Overextending or reaching where the belt buckle extends beyond the side rails is not permitted, except where the user is protected by a personal fall arrest system.

n. Ladders used in aisle ways or placed in doorways shall be protected from incidental contact. Doorways shall be secured in an open position, locked, attended or barricaded.

o. Additional height should not be gained by the addition of any type of extension or an object being placed on the unit. Ladders shall not be tied or fastened together to provide longer sections, except where designed for such purpose.

3. Step Ladders

a. Stepladders must be fully open and the spreader set in the open and locked position.

b. Step ladders shall be selected to meet the requirements of the person, task and environment. Consideration shall be given to the length or height required, working load, duty rating, worker position to the task and frequency in which the ladder will be subjected.

c. Step ladders shall be restricted to the purpose for which was the ladder was designed. For example, a step ladder should not be used as a straight ladder.

d. The top three steps of the ladder shall not be stood or worked from. No personal may stand or climb on the back side (non-working side) of a ladder, except where the ladder was designed for such purpose.

e. Step ladders shall only be used by one person, except where designed for use by more than one person.

f. Ladders shall be placed on a secure and level footing. When necessary, ladder levelers shall be used to achieve equal rail support on uneven surfaces. Ladders shall never be placed on boxes, barrels, or other unstable surfaces.

g. Ladders are not to be moved or shifted while occupied.

h. Ladders shall have nonconductive side rails if they are used where the employee or the ladder could contact exposed energized electrical equipment.

i. Ladders used in doorways, aisle ways or roadways shall be protected from incidental contact.

j. Employees shall climb or work from the ladder with the body positioned near the middle of the step or rung. Overextending or reaching where the belt buckle extends beyond the side rails is not permitted, except where the user is protected by a personal fall arrest system.

k. Do not lean a stepladder against a wall in the unopened position.

l. Always ascend and descend facing the ladder.

m. Do not exceed the designated weight capacity.

OO. LEAD-BASED PAINT

1. The CONTRACTOR shall identify any Lead-Based Paint (LBP) or products within the proposed scope of work PRIOR to any construction, remodeling, or demolition activities.

2. The CONTRACTOR shall identify any sheet lead, such as in laboratories, x-ray facilities and prior to commencing demolition or construction activities.

3. The CONTRACTOR shall arrange for disposal of the hazardous waste stream (e.g. paint chips), through OCSD.

4. All employees and supervisors who perform lead abatement work shall have a current training certificate by an approved trainer.

5. CONTRACTOR stabilizing loose and flaky LBP shall utilize industry standard lead safe work practices and controls.

PP.CORROSIVE MATERIALS

1. CONTRACTOR shall not store, handle, apply or use acids or caustics until a proper procedure has been developed

2. Never add water to acid - if dilution is needed, add acid to water.

3. Emergency eyewash and/or shower facilities must be immediately available to any person working with acids and caustics.

4. Proper personal protection must include a face shield, apron, chemical resistant gloves and sleeve lets as well as any other equipment deemed necessary by the SDS or manufacturer's usage instructions. Gloves shall be equipped with rolled cuffs.

QQ. CONTROL OF HAZARDOUS ENERGY (LOTO)

1. General

   a. The CONTRACTOR must have a written Control of Hazardous Energy (LOTO) program that meets or exceeds OSHA regulations, including requirements of this Section.

   b. OCSD will administer LOTO, including development of energy control procedures, for District owned or operated equipment or facilities.

      1) The CONTRACTOR is responsible for verification and shall apply personal locks and tags to the OCSD Group Lockbox.

      2) OCSD shall **not release** energized equipment to the CONTRACTOR, with exception to the following:

a) Equipment that is cord and plug may be unplugged by the CONTRACTOR if it is the only source of hazardous energy and maintained under exclusive control by the CONTRACTOR.

b) Equipment that will be tested by the CONTRACTOR as part of the routine servicing of the equipment may be energized provided that the CONTRACTOR's authorized employee is made aware that the equipment is energized. The CONTRACOTOR shall implement necessary engineering and administrative controls to render the equipment safe.

3) OCSD will isolate equipment using OCSD provided lockout devices. The CONTRACTOR is not required to provide lockout devices. The CONTRACTOR will apply their locks and tags to the Group Lockbox.

4) The OCSD PAE must be the first to lock on and the last to lock off the Group Lockbox.

c. The CONTRACTOR is responsible LOTO on CONTRACTOR rented or owned equipment. The CONTRACTOR shall develop written energy control procedures for CONTRACTOR rented or owned equipment. The CONTRACTOR is responsible for provision and retention of such procedures. LOTO on such equipment shall be performed in accordance with OSHA regulations.

d. CONTRACTOR personnel performing or directly supervising construction-related activities that contain or store hazardous energy must be trained as a LOTO Authorized Employee. The CONTRACTOR is responsible for this training.

e. The CONTRACTOR shall coordinate shutdown requests with the designated OCSD Construction Inspector, who in turn will coordinate with OCSD Operations and/or Maintenance. LOTO on OCSD owned or operated equipment or facilities will be performed under the direction of an OCSD Primary Authorized Employee utilizing Group LOTO.

f. The CONTRACTOR shall verify isolation of hazardous energy with the OCSD PAE and OCSD Inspector.

g. CONTRACTOR personnel shall not manipulate energy isolation devices or lockout devices on machinery, equipment or facilities.

h. It is the responsibility of each CONTRACTOR employee to verify that all hazardous energy has been isolated and released prior to the start of work.

i. CONTRACTOR employees shall remove all personal locks and tags once they have completed the job.

2. Energy Control Procedures

a. Equipment to be de-energized and released to a CONTRACTOR for repair, servicing, maintenance or construction shall have a written energy control procedure that includes the steps to follow to ensure that equipment will be de-energized and to verify that hazardous energy has been released. The procedure shall be developed by OCSD Authorized Employees. A hard copy of the energy control procedure shall be provided in the field.

b. Moveable parts shall be mechanically blocked or locked out by OCSD prior to cleaning, servicing, or adjusting operations.

c. Equipment that has lockable controls or that is readily adaptable to lockable controls shall be locked out or positively sealed in the off position.

d. Isolating and de-energizing of equipment may begin prior to the CONTRACTOR's arrival on site. The CONTRACTOR PAE in the presence of an OCSD PAE and Inspector shall verify that all hazardous energy has been de-energized and controlled before the CONTRACTOR starts work. It will be the responsibility of the CONTRACTOR PAE to inform each CONTRACTOR and Subcontractor employee working on the equipment regarding the LOTO procedures implemented and verification steps used to control all identified hazardous energy before starting work.

3. Duties of CONTRACTOR Personnel

a. Use only OCSD approved and furnished lockout devices.

b. Not manipulate isolation devices on process equipment.

c. Apply locks and tags only under the direction of an OCSD PAE.

d. Apply lock to isolation devices that are lockable.

e. Each employee working on the equipment shall be responsible for attaching their personal locks without exception. No employee shall perform work under another Authorized Employee's lock and tag. Employees shall maintain possession of their own key.

f. Once the authorized person completes or leaves the work task indefinitely, they must remove their personal locks and tags. Authorized persons joining the work task, must place their locks and tags on the isolation devices prior to any potential exposure to hazardous energy.

g. Each Authorized Employee working on the equipment shall review the energy control procedure, verify release of residual and stored energy, and perform verify isolation.

h. Each employee working on the equipment shall be responsible for attaching their personal locks without exception. No employee shall perform work under another Authorized Employee's lockout or tagout devices. Employees shall maintain possession of their own key.

i. Authorized employees who arrive later to the work site shall not work on the isolated equipment until they have reviewed the control procedure, conducted a visual and physical verification of all isolation points, and attached their personal lock and tag on the group lockbox.

4. Shift/Personnel Change

a. Transfer of control will occur between authorized personnel only. The PAE shall be responsible for transferring LOTO authority to the next shifts PAE.

b. The PAE shall not remove their personal lock(s) from any of the lockout devices or group lockbox until the arriving PAE has applied their personal lock and tags.

c. During transfer of LOTO authority between arriving and outgoing PAEs, the following must be performed:

1) Ensure that all Authorized Employees who are leaving the work site have removed their personal locks.

2) All oncoming shift Authorized Employees shall review the control procedure and verify that all the isolated machinery, equipment, or systems are in the proper positions and secured by group locks and tags. Each time an Authorized Employee attaches their personal lock, they must physically and visually verify that the equipment is still isolated, per the energy control procedure.

3) Once the verification is completed, all oncoming shift Authorized Employees shall attach their personal lock and tag to the group lock box, and then they may resume the work.

4) All Affected Employees in the job site area shall be notified that the service or maintenance work is in progress.

5) The control procedure shall remain attached to the Group Lockbox to allow the oncoming Authorized Employees an opportunity to review and verify the LOTO conducted.

5. Lockout and Tagout Device Removal

   a. CONTRACTOR Authorized Employee(s) shall:

      1) Remove only lockout and tagout devices applied by the CONTRACTOR.

      2) Shall not re-energize any equipment unless in the presence of the OCSD Authorized Employee.

      3) Provide an emergency callout person who has the authority to remove locks and tagout devices applied by personnel.

   b. The Inspector is responsible for notifying the OCSD PAE when CONTRACTOR work is complete and all the CONTRACTOR locks and tags have been removed.

6. Locks

   a. The CONTRACTOR shall supply unique and personally identifiable keyed locks to each Authorized Employee.

   b. Locks issued to an Authorized Employee may only contain one key, which remains in possession of the Authorized Employee in which the locks were issued. Note: OCSD will not provide locks for CONTRACTOR use.

   c. Locks shall only be used for energy isolation of machinery, equipment, and/or facilities and not to be used for another purpose.

7. Tags

   a. Tags shall be of sufficient material that is capable of enduring adverse conditions (weather, wet locations, corrosive materials, etc.) that will not cause the tag to deteriorate or message on tag to become illegible.

b. Tags must offer clean instructions such as: “Do Not Start”, “Do Not Open”, “Do Not Close”, “Do Not Energize” or “Do Not Operate”. Tags must include standard language of “Danger”. The tags must be black, red and white.

c. OCSD will not provide tags for CONTRACTOR use.

d. Tags shall contain at a minimum the following legible information:

    1) Name of person placing tag

    2) Phone number of person placing tag

    3) Date of installation

    4) Reason for application

e. Tags installed as a tagout device shall be installed to prevent inadvertent or accidental removal. The securing means shall be of sufficient strength to prevent removal without destroying the securing means (such as a zip or cable tie) or require the use of a tool to remove it.

f. If lockout is not feasible, tagout tags shall be secured directly on the energy isolating device on or as close as possible to the isolation point.

g. Tags installed on a lock shall be affixed to the lock through the manufactured eyelet.

8. OCSD Oversight

a. The OCSD Division responsible for having a contract issued to a CONTRACTOR shall ensure that the CONTRACTOR is following District procedures.

b. OCSD personnel shall be the first persons to place a lock and tag before the CONTRACTOR starts work and the last to remove the lock and tag when the CONTRACTOR completes work.

c. Group lockboxes shall be implemented by the designated OCSD Authorized Employee when the total staff affected is greater than three (3).

d. Under no circumstance shall a CONTRACTOR lock and tag be on equipment without being accompanied by either a OCSD Out of Service lock and tag or a personal LTV lock, unless it is a newly constructed piece of equipment still under the CONTRACTOR’s control.

9. MOTOR VEHICLES

10. All employees driving job site motor vehicles shall have a valid driver’s license for the state in which the employee resides and for the class vehicle driven.

11. Drivers of vehicles over 26,000 pounds gross vehicle weight (GVW) are required by Federal and State Departments of Transportation regulations to possess a Commercial Driver’s License (CDL).

12. Drivers on the project site shall obey all street and highway speed and traffic laws.

13. Posted speed for the plants is 15 mph but shall not drive any faster than is safe.

14. Drivers are to limit their speed to 10 mph in construction zones.

15. Drivers shall check the mechanical condition of their vehicles at least daily.

16. Drivers are required to observe the “right of way” rule. Yield to other drivers whose driving actions demand the right-of-way or have obscured visibility.

17. Drive defensively. Anticipate what the other driver may do. Leave yourself an out.

18. Drivers shall keep a distance of AT LEAST one (1) vehicle length for each 10 miles of speed between their vehicle and the vehicle in front of them.

19. Employees driving and riding in CONTRACTOR vehicles must wear seat belts.

20. Block or chock vehicle wheels when parking on inclines.

21. All passengers in motor vehicles must be seated and within the confines of the vehicle.

22. All vehicles must be shut off when unoccupied.

23. Pedestrians have the right of way.

24. Parking shall be in specified areas only. Do not block entrances and do not park in reserved spaces.

25. The CONTRACTOR is responsible for the stability of any material being hauled.

26. Employees are not allowed to ride in the open bed of a pickup truck.

27. Unauthorized passengers shall not be transported in any vehicle or on any equipment at any time.

RR. OVERHEAD UTILITIES

1. The CONTRACTOR shall identify all overhead utilities prior to the start of any work.

2. The CONTRACTOR shall identify the voltage carried by each power line, and identify the minimum required clearances prior to commencing work near the line.
    a. Identifications of all lines and minimum clearances shall be documented on a site plan that is made available to all employees, subcontractors, vendors and suppliers.
    b. This site plan shall include identification of all lines that are within 42 feet of the perimeter of the site.
    c. Temporary utilities shall be added to the site plan as required by the CONTRACTOR.

3. Proper distances must be maintained from all overhead power lines as described in the following table:

Power line voltage Phase to phase (kV)	Minimum Safe Clearance (ft)
50 or below	10
Above 200 to 350	20
Above 350 to 500	25
Above 500 to 750	35
Above 750 to 1,000	45

4. When working less than 10 feet, power lines shall be locked out and visually grounded.

5. Guy wires shall be delineated and protected.

SS. PERMITS

1. Unless otherwise relieved via contract provisions, each CONTRACTOR shall obtain relevant permits pertinent to the safety of employees and operations.

2. Permits shall be available for review at the job site upon request of the ENGINEER, OSM, or OCSD Risk Management.

3. If a bulk fuel storage tank will be used on a project then the CONTRACTOR must obtain a Bulk Fuel permit from the local Fire Department having jurisdiction.

4. CONTRACTORs must obtain and post Cal/OSHA Activity Permits for the following construction activities:
   a. Construction of trenches or excavations which are 5 feet or deeper and into which a person is required to descend.
   b. Constructions of any building, structure, scaffolding or false work more than 3 stories high, or the equivalent height (36 feet).
   c. Demolitions of any building structure or dismantling of scaffolding or false work more than three (3) stories high, or the equivalent height (36 feet).
   d. Erection or dismantling of vertical shoring systems more than three (3) stories high, or the equivalent height (36 feet).
   e. Use of fixed or mobile tower cranes.

5. OCSD also requires permits for work it considers to be high hazard; the scope of work that requires OCSD pre-approval includes: Confined Space Entry, Use of OCSD equipment, and Hot work, LTV for Energized Systems, Hazardous Materials usage, Concurrent/Dual Employer Work Activities, and Spray Painting.

TT. PERSONAL PROTECTIVE EQUIPMENT

1. The CONTRACTOR shall ensure that employees are trained in the proper use, care and sanitation, and limitations of Personal Protective Equipment (PPE) in accordance with applicable OSHA Standards and manufacturer's instructions and recommendations.

2. CONTRACTORs are required to assess the workplace to determine if hazards that require the use of personal protective equipment are present or are likely to be present.

3. Employers must select and have affected employees use properly fitted personal protective equipment (PPE) suitable for protection from existing hazards.

4. Employees must wear hard hats complying with or exceeding the requirements of ANSI Z89.1-2014 while on the job site. “Cowboy” and similar novelty hard hats are not permitted.

5. Each CONTRACTOR is responsible to supply required personal protective equipment to their employees.

6. Safety glasses shall be worn by all personnel always while on the project.

7. All safety glasses, goggles, and face shields must meet or exceed the requirements of ANSI Z87.1-2015.

8. The addition of side shields to prescription safety glasses is not permitted unless the side shields meet the ANSI standards.

9. Face shields must be worn in conjunction with safety glasses when grinding, chipping, jack hammering, and power sawing, or conducting other tasks that involve serious face/eye hazards.

10. Respiratory, hearing, face, skin, and hand protection are required for any applicable areas and operations on the job site.

11. Employees who are required to wear respiratory protection must receive a medical assessment of their physical ability to wear the equipment, be properly fit tested, and be trained in the use, care, maintenance, and limitations of the respiratory device.

    a. The CONTRACTOR must be able to show how respiratory protection was determined to provide adequate protection to employees by either industrial hygiene data or representative data from a previous project.

12. Tennis shoes, running shoes, casual street shoes, sandals or shoes made of other thin material shall not be worn by CONTRACTOR employees on the job site.

13. CONTRACTOR employees shall wear protective footwear that meets the requirements of ASTM F2413-2017. ASTM numbers must be legible on the tongue or insides of shoes. The footwear shall provide impact, compression and electrical hazard resistant, be non-conducting, and puncture resistant, as required per site-specific hazards and trade.

14. High visibility vests are required by all employees always. Class III yellow vests with reflective striping are required for night work or work in roadways that are under California Department of Transportation jurisdiction.

15. In multi-employer worksites, CONTRACTOR/OCSD must comply with the Other CONTRACTOR/OCSD safety standards, whichever is most stringent.

UU. POSTING REQUIREMENTS

1. The CONTRACTOR shall be required to construct a weatherproof job site bulletin board. Federal and State regulations require CONTRACTORs to conspicuously display all required posters at locations where employees report each day.

2. At minimum, the following items shall be posted:
   a. Industrial Welfare Commission's Order Regulating Wages, Hours, and Working Conditions
      1) Pay Day Notice
      2) OSHA "Job Safety and Health Protection"
      3) Employer's "Code of Safe Practices" / Safety Rules
      4) Discrimination in Employment is Prohibited by Law
      5) Sexual Harassment Poster
      6) Americans with Disabilities Act (ADA)
      7) Notice of Compensation Carrier
      8) Notice to Employees of Unemployment Insurance and Disability Insurance
      9) Cal/OSHA Operating Rules for Industrial Trucks
      10) Emergency Telephone Numbers

VV.POWDER-ACTUATED TOOLS

1. Powder-actuated tools must meet or exceed the requirements of ANSI A10-3.1977.

2. Only trained workers holding a valid Operator's card can use a powder-actuated tool.

3. Containers for powder-actuated tools must be lockable and bear the label POWDER-ACTUATED TOOL on the outside. The container must be kept under lock and key storage. The following must be provided with each tool:
   a. Operating and service manuals.
   b. Power load chart.
   c. Inspection-Service record.
   d. Repair and servicing tools.

4. Eye or face protection is required for Operators and assistants.

5. Tools must be inspected prior to use. Defective tools must not be used.

6. Powder-actuated tools must not be left unattended.

7. Powder-actuated tools must be unloaded if work is interrupted. Tools must not be loaded until ready for use.

8. On misfire, the tool must be held in place for thirty (30) seconds.

9. Misfires shall be placed in a can of water.

10. Different power loads must be kept in separate compartments.

11. Warning signs must be posted bearing the words: “POWDER-ACTUATED TOOLS IN USE” within 50 feet of the point of use.

WW. PUBLIC PROTECTION PLAN

1. The CONTRACTOR shall develop a Public Protection Plan prior to the commencement of work. The Public Protection Plan shall be reviewed and revised as necessary throughout the project.
   a. The Plan shall be in writing and available at the job site for review upon request.
   b. For the purposes of this section, “Public” refers to parties not involved in the execution of work related to this construction project.

2. The Public Protection Plan shall include following components:
   a. Policy statement
   b. Assignment of responsibilities
   c. Identification of existing and predictable public concerns
   d. Provisions to monitor and inspect the implementation of the provisions of the Public Protection Plan
   e. Provisions for incident investigation
   f. Hazard abatement procedures

3. The Public Protection Plan shall consider at minimum the following items as they apply to the project:
   a. Noise
   b. Dust, Fumes, Mists, Smoke, Vapors, Odors
   c. Traffic Hazards
   d. Pedestrian and Bicyclist Hazards
   e. Radiation (including lasers, x-rays, and welding rays)
   f. Machinery and Vehicles
   g. Falling Objects

h. Wind-Borne Objects

i. Security

j. Utilities

k. Hazardous Materials and Hazardous Substances (including use and storage)

l. Response to Incidents Involving the Public

m. Public Demonstrations or Protests

XX.SANITATION

1. The CONTRACTOR must provide in a clean and sanitary condition:
   a. All potable water for drinking,
   b. Adequate toilet facilities and wash facilities,
   c. Hand wash facilities as required by the Safety Data Sheet or state standards
   d. Appropriate containers for disposal of garbage,

2. A minimum of one (1) separate toilet facility shall be provided for each twenty (20) employees or fraction thereof of each sex.

3. Toilet facilities shall be kept clean, maintained in good working order, designed and maintained in a manner that will assure privacy, and provided with an adequate supply of toilet paper.

4. Employees shall not drink the plant water or other liquids involved with the treatment process.

YY.SCAFFOLDS

1. Scaffolds shall be erected, moved, dismantled or altered only under the supervision and direction of a Competent Person qualified in scaffold erection, moving, dismantling or alteration.

2. CONTRACTORs shall provide a copy of the competent person evaluation and the Competent Person will sign off on scaffolds that are erected prior to use.

3. The CONTRACTOR shall have a Competent Person determine the feasibility and safety of providing fall protection for employees erecting or dismantling supported scaffolds. Fall protection is required for employees erecting or dismantling supported scaffolds where the installation and use of such protection is feasible and does not create a greater hazard.

4. The CONTRACTOR shall have each employee who performs work while on a scaffold trained by a person qualified in the subject matter to recognize the hazards associated with the type of scaffold being used and to understand the procedures to control or minimize those hazards. The training shall include the following topics, as applicable:
   a. The nature of any electrical hazards, fall hazards, and falling object hazards in the work area,
   b. The correct procedures for dealing with electrical hazards

c. The correct procedures for erecting, maintaining, and dismantling the fall protection and falling object protection systems being used

d. The proper use of the scaffold, including the proper handling of materials on the scaffold

e. The maximum intended load and the load-carrying capacities of the scaffold

f. Any other pertinent procedures or safety requirements

5. The CONTRACTOR shall have each employee who is involved in erecting, disassembling, moving, operating, repairing, maintaining, or inspecting a scaffold trained by a Competent Person to recognize any hazards associated with the work in question. The training shall include the following topics, as applicable:

   a. The nature of scaffold hazards

   b. The correct procedures for erecting, disassembling, moving, operating, repairing, inspecting and maintaining the type of scaffold in question

   c. The design criteria, maximum intended load-carrying capacity, and intended use of the scaffold

   d. Any other pertinent procedures or safety requirements.

6. When the CONTRACTOR has reason to believe that an employee lacks the skill or understanding needed for safe work involving the erection, use or dismantling of scaffolds, the CONTRACTOR shall retrain each such employee so that the requisite proficiency is regained.

7. Handrails, midrails and toeboards are required on all scaffolds over six (6) feet high.

8. If the guardrail system is incomplete or missing, personal fall protection is required.

9. A ladder or other acceptable means for access must be provided.

10. Wheels must be locked on rolling scaffolds before use.

11. There is no riding of manually propelled scaffolds.

12. All connections, including casters, on rolling scaffolds shall be pinned.

13. The CONTRACTOR must keep the platform load within the safe platform work load limit.

14. Scaffolds must be erected level on a firm base. When the scaffold is resting on earth or other such material, the uprights shall rest on and be secured to the equivalent of a 2-inch by 10-inch by 10-inch wood base.

15. Suspended scaffolds must have adequate anchorage points. Occupants shall have a full body harness, lifeline and deceleration device that must be attached to a separate anchorage point than that of the scaffold prior to stepping out onto any suspended scaffold over 10 feet per OSHA...

16. Scaffold planks must be laid tight and secured to prevent movement. Planks must overlap between 6 and 12 inches over the scaffold supports.

17. A stair tower or built-in stair/ladder system shall be provided for access to all scaffolds four frames or more in height.

18. All scaffolds shall be inspected and tagged to identify that they meet the requirements for use by a Competent Person prior to initial use, before each work shift, and after any event that could affect the structural integrity or safety of the scaffold. Scaffolds that are not tagged shall not be used.

ZZ. ERECTION

1. No building, structure, or part thereof, or any temporary support shall be loaded more than its designed capacity.

2. Trusses and beams shall be braced laterally and progressively during construction to prevent buckling or overturning.

3. During placing of structural members, the load shall not be released from the hoisting line until the members are secured with not less than two (2) bolts drawn up wrench tight.

4. Where skeleton steel is being erected, a tightly planked and substantial floor shall be maintained within two (2) stories or 30 feet, whichever is less, below and directly under that portion of each tier of beams on which any work is being performed.

5. When connecting beams at the periphery or interior of a building or structure where the fall distance is greater than six (6) feet, the Connector shall be provided with and use appropriate personal fall protection equipment in accordance with OSHA requirements.
    a. Connector means an employee who, working with hoisting equipment, is placing and connecting beams or other structural members.
    b. When performing work other than connecting, Employees shall be provided and use personal fall protection equipment in accordance with OSHA requirements where the fall distance is greater than six (6) feet.

6. Open web steel joists shall not be placed on any structural steel framework unless such framework is safely bolted or welded.

7. Containers shall be provided for storing or carrying rivets, bolts, and drift pins, and secured against accidental displacement when aloft.

8. When bolts or drift pins are being knocked out, means shall be provided to keep them from falling.

9. Impact wrenches shall be provided with a locking device for retaining the socket.

10. Connections of equipment used in plumbing-up shall be properly secured.

11. Turnbuckles shall be secured to prevent unwinding while under stress.

12. Plumbing-up guys shall be removed only under the supervision of a Competent Person.

13. Employees working above grade or any surface and exposed to protruding reinforcing steel or other similar projections shall be protected against the hazard of impalement using guardrails, or approved fall protection systems, or protective covers.

14. Exposed edges of all temporary planked or temporary metal decked floors at the periphery of the building, or at interior openings, such as stairways and elevator shafts shall be protected by a single 3/8-inch minimum diameter wire rope located between 42 and 45 inches above design finish floor height. Midrail protection shall be installed at the completion of the installation of decking.

15. Employees shall be trained in accordance with applicable OSHA standards and project-specific requirements.

AAA.TAR AND MELTING POTS

1. Any melting chamber must be vented and must have a working thermometer.

2. No melting pots or tar kettles may be located on roof surfaces. All melting pots must be on the ground outside, and at least 25 feet from any building.

3. Pipelines shall be adequately braced or supported to prevent collapse.

4. Barricades must be provided when hot liquids are present overhead on a roof or upper floor.

5. Buckets containing hot asphalt or pitch shall not be carried on ladders.

6. A fire extinguisher shall be kept near each kettle in use. Extinguisher capacity shall be at least:
   a. Less than 150-gallon kettle – 8:B.C.
   b. 150 to 350-gallon kettle – 16:B.C.
   c. Larger than 350-gallon kettle – 20:B.C.

7. At a minimum, an 8: BC fire extinguisher shall be kept near each kettle in use.

8. Kettle and tanker pumps shall be provided with a means of stopping the flow of hot asphalt or pitch manually from the rooftop in emergencies.

9. Pumper pipelines shall be securely fastened at rooftop and shall not be supported by ladders used for access.

BBB.WARNING SIGNS

1. The CONTRACTOR shall post site access and warning signage, including emergency contact information, in accordance with applicable requirements.

2. Project employees shall obey all warning signs.

3. Signage shall be maintained in legible condition, and cleaned or replaced as necessary to maintain legibility.

4. All CONTRACTOR-installed warning signs, signals and barricades must be removed when the hazard no longer exists.

5. The CONTRACTOR shall monitor conditions to ensure timely and accurate removal of these devices.

CCC.WORK ZONE TRAFFIC CONTROL

1. The CONTRACTOR shall establish work area protection zones necessary to protect employees and the public when work is performed in areas where pedestrians or vehicles have access.

2. All employees in work zones shall wear Class II (for Class I and Class II exposures) or Class III reflectorized garments in accordance with the requirements of the U.S. Department of Transportation Manual on Uniform Traffic Control Devices (MUTCD).

3. Traffic control shall be established in compliance with the MUTCD, State and local traffic control regulations, the WATCH Handbook (where referenced by contract), or other contract-referenced documents/standards and approved by the agency having jurisdiction.

4. The CONTRACTOR shall establish Work Area Protection in consideration of the location of the worksite, pedestrian and traffic conditions, and the time of day (daylight or dark).

5. The CONTRACTOR shall ensure adequate protection to passing vehicles on a roadway by providing a Flagger when barricades, signs and signals may be insufficient.

6. When placing or removing Work Area Protection, the Employee shall:
   a. Be consistently alert to traffic conditions.
   b. Face oncoming traffic.
   c. Wear proper personal protection (e.g. traffic warning vest, hard hat, eye protection).

7. Place the initial warning sign (e.g., Construction Ahead) first and remove last.

8. Work zone sites must be made safe for pedestrians by using:
   a. Rope or vinyl warning tape.
   b. Fencing or other barricades.
   c. Cones and signs.
   d. Pedestrian crossings (designated and painted).
   e. Other appropriate means, methods and devices.

9. All night work requires adequate illumination to light the work area and warn public vehicular traffic.

10. For night work, the illumination used to light the work area shall be aimed such that it does not create glare for, or blind, the public driving through the work zone.

11. The CONTRACTOR shall ensure adequate protection to passing vehicles on a roadway by providing a Flagger when barricades, signs and signals may be insufficient.

DDD.FLAGGING OPERATIONS

1. Flagging Operations shall be conducted in accordance with the following unless a more specific standard applies.

2. Flaggers shall be trained in the proper fundamentals of flagging (signaling) traffic before being assigned as Flaggers.

3. The Flagger must be protected and the motorist forewarned by use of warning signs and cones.

4. Use cones before the Flaggers position to mark the traffic lane.

5. The use of high visibility orange or Class III yellow vests shall be required to all Flaggers.

6. During the hours of darkness, the Flaggers shall be outfitted with a reflectorized garment, and the Flagger's position shall be illuminated.

7. To Stop Traffic - The Flagger shall face traffic and hold the stop paddle in a vertical position at arm's length.

8. When It Is Safe for Traffic to Proceed - The Flagger shall stand parallel to the traffic movement, and with the slow paddle held in a vertical position at arm's length.

9. Flags shall be a minimum of 18" x 18" in size, and orange in color.

EEE. PLATE BRIDGING

1. Trenches, excavations, or other surface openings or significant depressions must be covered with a bridge plate to permit safe and unobstructed flow of traffic.

2. Bridging plates must be secured from movement by a holding device(s) such as cleats, angles, bolts, tack welding, etc.

3. Bridging plates must be installed to produce a minimum amount of noise and be recessed or have appropriate asphalt tapers at edges, per present agency or requirements.

4. Bridging plates must extend a minimum of one foot beyond the edges, with pavement materials feathering the edges for a reasonably smooth transition and installed in accordance with manufacturer/engineer instructions.

5. Warning signs shall be posted when steel plates are used in a travel path.

6. Refer to the WATCH Manual (where applicable) for specific requirements.

FFF. WORKING AROUND WATER

1. Where the CONTRACTOR's or Subcontractor's employees are not protected from falling into water by railing, netting, or body positioning devices the following safety devices shall be provided for and used by employees at those locations where the danger of drowning exists.

2. Personal Flotation Devices (PFD). Any employee who has the potential for falling into water shall be required to wear U. S. Coast Guard approved personal flotation devices that are marked or labeled Type I PFD, Type II PFD, or Type III PFD, or a U.S. Coast Guard approved Type V PFD that is marked or labeled for use as a work vest for commercial use or for use on vessels.

3. Ring Buoys. U. S. Coast Guard approved 30-inch ring buoys with at least 150 feet of 600-pound capacity line shall be readily available for emergency rescue operations. Distance between ring buoys shall not exceed 200 feet.

4. Lifesaving Boats. One or more lifesaving boats, either manually or power-operated, shall be provided and readily accessible always. Lifesaving boats shall be properly maintained, ready for emergency use and equipped with oars and oarlocks attached to the gunwales, boathook, anchor, ring buoy with 50 feet of 600-pound capacity line and two (2) life preservers. Oars are not required on boats that are powered by an inboard motor.

5. Where, because of swift current, lifeboats cannot be used, a line shall be stretched across the stream with tag lines or floating planks trailing in the water at intervals not to exceed 6 feet. If this is impracticable, some other arrangement for providing effective life lines near the water surface shall be provided.

GGG. USE OF X-RAY

1. If X-Ray is utilized for any part of the project, OCSD must be notified at least two (2) weeks prior to the use of X-Ray. The area in question shall be isolated prior to any X-Ray use.

2. OCSD may require all X-Ray work to occur during afterhours to minimize exposure of OCSD employees. Proper warning signs and delineation will be required.

VI. DEFINITIONS

The following definitions may not reflect the actual titles and definitions in use by all entities on this project and do not have any force or effect beyond their use in the Safety Standards. Due to such differences in nomenclature among Owners and CONTRACTORs, the following are used throughout the Safety Standards to establish the functional framework for the Safety Program.

Alternate CONTRACTOR Safety Manager (ACSM). Individual meeting the same requirements of the CSM that assumes the role of the CSM on a temporary basis.

Alternate CONTRACTOR Safety Representative (ACSR). Individual meeting the same requirements of the CSR that assumes the role of the CSR on a temporary basis Authorized Person.

Authorized Representative. The Orange County Sanitation District's Authorized Representative to act on behalf of OCSD on a project.

Competent Person. One who can identify existing and predictable hazards in the surroundings or working conditions which are unsanitary, hazardous, or dangerous to employees, and who has authorization to take prompt corrective measures to eliminate them.

CONTRACTOR. The individual, partnership, joint venture, corporation, or other combination thereof, identified as such in the Contract, and referred to throughout the Contract Documents as if singular in number and who directly contracts with OCSD. The term "CONTRACTOR" means the CONTRACTOR or its authorized representative. For these Standards, the term "CONTRACTOR" will also include the definition of Service Vendor.

CONTRACTOR Project Manager (CPM). The senior on-site management person for the CONTRACTOR with responsibility for execution of the contract, including compliance with the Safety Standards. In some cases, the actual on-site representative may be a Superintendent or a Foreman. In such cases, this is the applicable person when the CPM is referenced. The CPM is responsible for the ongoing implementation and enforcement of the CONTRACTOR's Site-Specific Safety Program.

CONTRACTOR Project Superintendent (CPS). The senior on-site Superintendent for the CONTRACTOR with responsibility for execution of the contract, including compliance with the Safety Standards. In some cases, the actual on-site representative may be an Assistant Superintendent or a Foreman. In such cases, this is the applicable person when the CPS is referenced. The CPS is responsible for and accountable for the ongoing implementation and enforcement of the CONTRACTOR's Site-Specific Safety Program.

CONTRACTOR Safety Manager (CSM). Specific CONTRACTORs who are responsible for managing a project of 100 or more construction workers shall have a full-time CONTRACTOR Safety Manager assigned to the project, to carry out the duties as described in this document. The CONTRACTOR Safety Manager shall have no other duties other than safety (dedicated), regardless of the number of employees on site. In the absence of a contract safety manager, at a minimum the CONTRACTOR will be responsible for having a CONTRACTOR Safety Representative (CSR) assigned to the project. In addition, the owner reserves the right to require the CONTRACTOR to supply CSM if the CONTRACTOR demonstrates the inability to manage safety in accordance with the Cal/OSHA and OCSD Safety Standards.

CONTRACTOR Safety Representative (CSR). CONTRACTOR employee assigned safety responsibilities of implementing the CONTRACTOR's Safety program and Injury and Illness Prevention Program, including ongoing identification and correction of hazards for shift work and distinct work locations as required. The CSR reports to the CSM. Additional SSR personnel shall cover shift work and distinct work locations as required. The CONTRACTOR can delegate the CSR duties to an on-site Field Supervisor. CSR responsibilities cannot be delegated to an office or staff employee.

Control of Hazardous Energy (LOTO). The process of isolating energy sources (thermal, electrical, pneumatic, gravity, chemical, and hydraulic) to prevent employees from being exposed to unexpected release of energy by using a lock and tag to prevent the energy releases. Also referred to as Lockout Tagout (LOTO).

ENGINEER. OCSD's Director of Engineering or designee.

Foreman. The first line supervision or lead for a CONTRACTOR.

Hazardous Area Classification. A method of evaluating a location or process for any risks (hazards) of explosion or fire that substances located there may be present and determining how best to minimize those risks for all probable circumstances that may be encountered. The location is divided up (that is, classified) into areas by risk level. Each area is assigned specific ventilation and electrical installation requirements. Areas with the highest risk level will have the most specialized requirements.

Injury and Illness Prevention Plan (IIPP). The Injury and Illness Prevention Plan (IIPP) is a basic written workplace safety program. Title 8 of the California Code of Regulations (T8CCR) section 3203 requires every employer to develop and employ an effective IIPP.

INSPECTOR. The individual(s) designated by the ENGINEER as the field Project representative with delegated authority to enforce the requirements of the Contract Documents, subject to the approval of the General Manager.

Job Site Safety Analysis (JSSA). A briefing to orient the CONTRACTOR to general hazards at the work location, identify OCSD expectations for safety performance, review emergency notification capabilities, and discuss CONTRACTOR activities that may pose a hazard to OCSD employees, visitors and other CONTRACTORs.

Job Hazard Analysis (JHA). An activity specific analysis that is completed for tasks such as confined space entry, hot-work, hazardous materials usage, and other activities required by the Contract Documents.

Non-Compliance. Is any violation, failure to comply, non-conformance, or infraction of the standards specified in these Safety Standards, or of any regulations to include State and Federal OSHA, DOT, NFPA, Building Codes, Fire Codes, and local ordinances.

OSHA. OSHA as used in the context of these Safety Standards refers to the State or Federal agency with jurisdiction over workplace occupational safety and health at the project site.

Owner. Orange County Sanitation District, the entity for which this project is being performed.

Owner Authorized Representative. The Owner's Employee or agent with overall responsibility for the project.

Owner Safety Manager (OSM). The Owner's Employee or agent with overall responsibility for the implementation of the Owner's Safety Program, including the OCSD Safety Standards.

Qualified Person, Attendant or Operator. A person designated by the employer who by possession of a recognized degree, certificate, or professional standing, or who, by extensive knowledge, training and experience, has successfully demonstrated his/her ability to solve or resolve problems relating to the subject matter, the work, or the project.

Service Vendor. Any group, company or supplier providing non-construction related goods and services to the OCSD. All Service Vendors will be required to adhere to these Standards and the OSHA and Cal/OSHA General Industry Safety Orders.

Site-Specific Safety Program (SSSP). The Employer's Site-Specific Safety Program prepared in accordance with the requirements of this document and the Contract.

Subcontractor. One who is licensed pursuant to California Business and Professions Code, Section 7000 et. seq., and who contracts directly with the prime CONTRACTOR or with another Subcontractor to perform some part of the Work. A Subcontractor does not have any direct contract with OCSD related to the Work.

Subcontractor Project Manager (SPM). The senior on-site management person for the Subcontractor with responsibility for execution of the contract, including compliance with the OCSD Safety Standards. In some cases, the actual on-site representative may be a Superintendent or a Foreman. In such cases, this is the applicable person when the SPM is referenced. The SPM is responsible for and accountable for the ongoing implementation and enforcement of the Subcontractor's Site-Specific Safety Program.

Subcontractor Project Superintendent (SPS). The senior on-site management person for the Subcontractor with responsibility for execution of the contract, including compliance with the OCSD Safety Standards. In some cases, the actual on-site representative may be an Assistant Superintendent or a Foreman. In such cases, this is the applicable person when the SPS is referenced. The SPS is responsible for and accountable for the ongoing implementation and enforcement of the Subcontractor's Site-Specific Safety Program.

Subcontractor Safety Manager (SSM). A dedicated full-time Subcontractor Employee assigned safety responsibilities for the project for Subcontractors having one hundred (100) or more employees. The SSM has the same responsibilities for safety for the Subcontractors that the CSM has for the CONTRACTOR.

Subcontractor Safety Representative (SSR). CONTRACTOR Employee assigned safety responsibilities of implementing the CONTRACTOR's Injury and Illness Prevention Program, including ongoing identification and correction of hazards for shift work and distinct work locations as required. The SSR reports to the SPM. Additional SSR personnel shall cover shift work and distinct work locations as required. The Subcontractor can delegate the SSR duties to an on-site Field Supervisor. SSR responsibilities cannot be delegated to an office or staff employee.

Superintendent. A management representative for the CONTRACTOR who oversees a project.

VII. ACRONYMS

The following acronyms may not reflect the actual acronyms in use by all entities on this project and do not have any force or effect beyond their use in the Safety Standards. Due to such differences in nomenclature among Owners and CONTRACTORs, the following are used throughout the Safety Standards to establish the functional framework for the Safety Program.

ACM	Asbestos-Containing Material
ACSM	Alternate CONTRACTOR Safety Manager
ACSR	Alternate CONTRACTOR Safety Representative
ANSI	American National Standards Institute
CDL	Commercial Driver License
CPM	CONTRACTOR Project Manager
CPR	Cardiopulmonary Resuscitation
CPS	CONTRACTOR Project Superintendent
CSM	CONTRACTOR Safety Manager
CSR	CONTRACTOR Safety Representative
EPA	Environmental Protection Agency
GVW	Gross Vehicle Weight
HEPA	High Efficiency Particulate Air
JHA	Job Hazard Analysis
JSSA	Job Site Safety Analysis
LBP	Lead-Based Paint
LEL	Lower Explosive Limit
LTV	Lock-Tag-Verify
MUTCD	Manual on Uniform Traffic Control Devices
NFPA	National Fire Protection Association
OCSD	Orange County Sanitation District
OSHA	Cal/OSHA and/or Federal OSHA (refer to context)
OSM	Owner Safety Manager
PACM	Presumed Asbestos-Containing Material

PPE	Personal Protective Equipment
RPM	Revolutions Per Minute
SCAQMD	South Coast Air Quality Management District
SDS	Safety Data Sheet
SPM	Subcontractor Project Manager
SPS	Subcontractor Project Superintendent
SSR	Subcontractor Safety Representative
SSSP	Site-Specific Safety Program
USDOT	United States Department of Transportation
WATCH	Work Area Traffic Control Handbook